

CORRECTED COPY

This is a correction to Grant of Exemption No. 9894, dated July 1, 2009. The changes made correct an error in the stated total number of occupants permitted in the airplane. The original number of 14 given in this exemption, which included 12 supernumeraries and 2 crewmembers, did not account for persons occupying the 2 observer seats in the cockpit. We have corrected that omission. The total number of occupants to which the airplane is limited has been changed from 14 to 16. We have made these changes in our records as of March 26, 2010. Please file this with the originally signed Grant of Exemption.

Exemption No. 9894

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

In the matter of the petition of

Airbus

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

Regulatory Docket No. FAA-2009-0265

PARTIAL GRANT OF EXEMPTION

By letter G25M08017888, dated March 11, 2009, Mr. Y. Regis, Head of Product Integrity, Airbus, 1 Rond-Point Maurice Bellonte, 31707 Blagnac Cedex, France, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of §§ 25.785(j), 25.813(b), 25.857(e), and 25.1447(c)(1) of Title 14 Code of Federal Regulations (CFR). This exemption will allow the non-crewmembers 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)

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 25.813(b), at Amendment 25-116, requires that each emergency exit addressed by § 25.810(a) have adjacent assist space.

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 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, 10 percent extra oxygen masks, and that two oxygen masks are in each lavatory.

Related sections:

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 supports its request with the following information. This information is quoted from the petition, with minor edits for clarity.

1. Sections of the Federal Aviation Regulations (FAR) that are affected

a. Related Section of the FAR:

Section 121.583(a) contains a listing of categories of the people who may be carried aboard an airplane in part 121 services without complying with the entire passenger - carrying airplane requirements of Part 121.

b. For Cargo-only (TC Configuration):

Exemption from 14 CFR 25.813(b) at Amendment 116 requires that each floor-level exit requiring crewmember assistance have enough space next to each exit to allow a crewmember to assist in the evacuation of passengers without reducing the unobstructed width of the passageway below that is required for the exit.

Exemption from 14 CFR 25.857(e) at Amendment 25-116 requires that when a class E cargo compartment is installed on the aircraft, the aircraft is used for the carriage of cargo only.

c. If Access to Cargo is Permitted (Post-TC Configuration):

Exemption from 14 CFR 25.785(d) is necessary because firm handholds are not available inside the main-deck cargo compartment.

Exemption from 14 CFR 25.1447(c)(1) is necessary because automatically dispensed oxygen units are not available inside the main-deck cargo compartment.

2. Description of the aircraft

The A330-200F will be included on the U.S. Type Certificate. Airbus applied for an amended TC to derivate the A330-200 model into a freighter that includes a Class E compartment in the main deck, with a courier compartment consisting of a main-deck (courier area) supernumerary area, forward of the cargo bulkhead (9g barrier wall). The courier area provides a maximum of twelve (12) seats. The cockpit is designed for two flightcrew seats and two observer seats. The total occupancy of the airplane is limited to sixteen persons, including the flightcrew (two on-duty flightcrew members, and up to fourteen off-duty flightcrew members, observers or supernumeraries).

Except for the Sections from which exemption is requested, all design criteria applicable to the carriage of passengers have been taken into account for the design of the seating arrangement. In particular, protection against crash and penetration of smoke and noxious gases is provided in the form of a 9g-barrier wall, which isolates the main deck cargo compartment from the zone where the supernumerary persons are seated. Two emergency exits identical to the ones installed and qualified as Type A on the A330-200 passenger version of the type are located on each side of the fuselage, both equipped with the basic escape slide-raft. Two-way communication with the cockpit is possible through dedicated communication panels, and other emergency equipment as required by the applicable Airworthiness Standards, is also provided.

Supernumeraries are instructed persons and are briefed for the duty on board they are responsible for. The Airplane flight manual will contain the definition and the conditions under which the supernumerary persons may be carried, and provide specific instruction for preflight briefing. Airbus believes that an equivalent level of safety with the parts of the requirements from which relief is sought will be achieved by these design features and by introduction in the A330-200F Airplane Flight Manual of limitations defining the conditions under which supernumerary persons may be carried, for all cargo operations.

a. TC Configuration:

The type certificate configuration will not include access during flight, to the cargo compartment as per the flight manual. Airbus standard design for a non-accessible compartment is a latch (no special tool to open and close the door) and a placard stating, "Access for Authorized Personnel Only" in the cargo compartment.

One portable fire extinguisher and one Protective Breathing Equipment (PBE) are provided in the courier area for compliance with §§ 25.851 and 25.1439.

b. Post-TC Configuration:

After the type certification, an operator may wish to carry up to twelve (12) supernumeraries, and allow them access to the main-deck cargo during flight for all types of cargo operations (live animals, perishables, pallets or containers). For these configurations, full compliance with all the requirements of Part 25, relative to a Class E cargo compartment, will be maintained, except as specified in this petition.

The following features are already incorporated by basic design (TC Configuration) and will now be used for the operational access to the main deck cargo compartment:

1. One fire extinguisher that meets the requirement of § 25.851 will be provided. The number of supernumeraries allowed in the a Class E cargo compartment at one time depends on the portable oxygen bottle available for this purpose (one supernumerary per bottle).
2. One PBE that meets the requirement of § 25.1439 is installed (one PBE per fire extinguisher).
3. An aircraft public-address system capable of providing announcements from the cockpit and the courier area through the main-deck cargo compartment.
4. A flightcrew-operated (visual and oral) signal to alert the supernumeraries in the a Class E cargo compartment to return to his or her seat. This will be used for smoke, fire, or turbulences. In case of depressurization, this warning will be used in advance of the depressurization aural warning. Eight Loudspeaker and Indicator Boxes (LIB) are installed in the MDCC to provide the announcements and warnings to any location.
5. An automatically activated aural-alerting system in the a Class E cargo compartment and in the flight deck. The cabin altitude switch (10,000 ft.) will activate the aural warning.

3. Requested regulatory relief

The main objective of this request for exemption is to permit the carriage of non-crewmembers on an all-freighter airplane. This is the reason for requesting exemption from § 25.857(e). Specific sections from which exemption is sought are as follows:

Section 25.785(d): Relief is necessary because firm handholds are not available inside the main-deck cargo compartment, when access is permitted in the cargo compartment.

Section 25.813(b): Assist space is not provided next to the emergency exits.

Section 25.857(e): Relief is sought to permit carriage up to twelve (12) persons on an all-freighter airplane, which has a Class E cargo compartment.

Section 25.1447(c)(1): Relief is necessary because automatically dispensed oxygen units are not available inside the main-deck cargo compartment.

4. Supporting Argumentations

Cargo operators need a number of support personnel for safe loading and off-loading of cargo. Such personnel are obviously needed both at departure and destination of a cargo flight. It is particularly important that the cargo handlers are present upon airplane arrival if perishable goods or live animals are carried. The most efficient, safest and cheapest way to assure support-personnel presence at the destination airport is to ferry them aboard the cargo flight.

Cargo operators may have to carry cargo such as live animals, hazardous materials, valuable or perishable goods, or a combination of these, that 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 in flight and immediately upon landing. Safety and efficiency of the operation will therefore be enhanced. Cargo operators also need to have qualified personnel for operations and maintenance purposes at various locations, many of which are remote and do not have regular commercial airline service. They will optimize their missions if they are permitted to carry their personnel aboard their cargo flights, thus ensuring availability of qualified personnel in flight and immediately upon landing.

The Airworthiness Standards applicable to the type certification of the Airbus A330-200F, as well as the current Airworthiness Standards, do consider carriage aboard commercial flights of crewmembers, including flight crewmembers and cabin attendants, who are assigned duties associated with the operation of the airplane, and of passengers who are not accustomed to emergency provisions and therefore need to be attended.

The categories of occupants for which this exemption is sought are qualified aeronautical personnel. Furthermore, they are instructed in the autonomous use of emergency equipment and emergency-exit operation. The operator will also be required to allow

access to these seats only to persons found able to perform these tasks on their own. Therefore, the assist space adjacent to the emergency exits required by § 25.813(b) for assisting the passengers in evacuating is not necessary, because the categories of personnel considered will be instructed for door operation and autonomous evacuation. Both doors are equipped with self-deploying slides.

5. Public interest

Airbus presents the argument that the granting of this exemption will be in the public interest by allowing US airlines to compete with other freighter operators with such a configuration. If allowed to carry supernumerary persons aboard their cargo flights, the U.S. operators of the Airbus A330-200F airplanes will be able to operate under optimal safety conditions, to render their operation more efficient, and to realize substantial savings in carrying their personnel from one place to another. The reasons for these benefits are developed in the arguments above.

6. Request for wavier of publication:

No new design feature is introduced, and the reasons presented for exemption are comparable to exemptions that have been previously granted for other Airbus aircraft. Therefore, this request will not set a precedent and, considering the imminent date of certification – February 2010 – Airbus requests a waiver for the publication and comment period, so that the airplane can rapidly enter into service with the essential capacity of carrying supernumerary persons.

Airbus believes that good cause exists to waive the publication and comment requirements of §§ 11.85, 11.87, and 11.89. In particular, they feel that the main purpose of this petition and the reasons presented in it are identical to those for exemptions previously granted by the FAA.

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for Federal Register publication because this exemption, if granted, would not set a precedent.

The FAA's analysis

By allowing the carriage of the supernumerary persons aboard cargo flights, operators can 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 air cargo.
- A significant disruption of air commerce could occur if the petition is not granted.
- The FAA has granted several exemptions for the carriage of supernumeraries with access into the Class E cargo compartment in-flight to attend to cargo on freighter airplanes.

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 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 depressurizing the airplane and maintaining an altitude that will not support combustion. For this reason, only crewmembers are permitted on board such airplanes. The petitioner is requesting that supernumeraries be located in the flight deck.

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 has previously granted exemptions for in-flight access to Class E cargo compartments by supernumeraries, provided that certain other conditions are met. These conditions have varied, depending on the airplane design, certification basis, and the number of supernumeraries involved. 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 access to the main-deck Class E cargo compartment into three types of operations:

1. Carriage of live animals requiring care or attention during flight, and associated material only, no other cargo.
2. Cargo only, no live animal requiring care or attention during flight.
3. Carriage of live animals requiring care or 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 to four horses. Considering the size of the A330-200F airplane, many horses could be carried in the Class E cargo compartment. In considering this

type of operation, we have considered that live animals present less of a fire hazard than other types of cargo. Therefore, we have allowed less restrictive access for this type of cargo configuration.

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

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 12 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 12 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 one 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.

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 be found physically fit by the operator. Supernumeraries must also be 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 hand-holds requirement of § 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/aural alerting system. These alerting systems enable the crew to indicate, at the onset of turbulence, that supernumeraries in the cargo compartment must return to their seats. The alerts must be recognized in accessible areas in 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).

With respect to the lack of an assist space adjacent to each exit as required by § 25.813(b), Amendment 25-88, the FAA has determined that the supernumeraries will have a higher level of training than does a typical passenger, and will, therefore, have less need for crew assistance. Additionally, the flight crew can easily provide instructions and some physical assistance to non-crewmembers, if needed, because the non-crewmembers are seated in relatively small confines within easy access of the flight deck.

To comply with §§ 25.855(h)(2) and 25.857(e)(4), there must be a suitable means of preventing smoke penetrating into the occupied areas. 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. To provide an appropriate level of safety, the petitioner must install a placard 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.

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 into 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).

The petitioner has proposed visual/aural alerts to indicate that persons must return to their seats and secure the smoke barrier (i.e., close the door or curtain) in the event of a fire. On the proposed airplane, we agree with the petitioner that an acceptable level of safety will be provided by the crew-operated visual alert system. These visual and aural alerting systems enable the crew to indicate, at the onset of smoke or fire, that supernumeraries in the cargo compartment must return to their seats. The visual/aural alerts must be recognized in accessible areas in the Class E cargo compartment, and indicate, during smoke/fire, that persons must return to their seats and secure the smoke barrier (i.e., the door or curtain must be closed). Appropriate

procedures and limitations must be established to ensure that the flightcrew member alerts the supernumeraries to return to their seats and secure the smoke-barrier door at the onset of a fire. The pre-flight briefing would need to explain these alerts to the supernumeraries.

Section 25.1447(c)(1) also requires automatic presentation of 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 has proposed an automatically activated, aural, decompression-alert system in the event of cabin decompression. We find that the proposed system provides an acceptable level of safety, as long as the automatically activated, aural, decompression alert is present and immediately recognizable throughout the accessible areas in the Class E cargo compartment. As a backup to the automated alert system, the flight crew must be able to manually initiate the alerts.

Additionally, the petitioner proposes to provide supernumeraries with portable walk-around oxygen bottles equipped with a supplemental, passenger-oxygen mask when accessing the main-deck Class E cargo compartment. This will provide an acceptable level of safety to the immediately available requirement of § 25.1447(c)(1) while in the Class E cargo compartment. The proposed equipment should supply at least 3.6 liters of oxygen per minute, at 40,000 feet cabin altitude, for not less than 25 minutes. The FAA determines that the proposed equipment, with additional specifications, 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 (§ 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 their seat following a rapid decompression to 25,000 feet cabin altitude. One acceptable means of compliance is the use of a continuous-flow, passenger-oxygen mask that meets FAA Technical Standard Order TSO-C64a, or later revision, and is approved for use up to at least 40,000 feet cabin altitude, and is connected to an oxygen bottle that supplies a flow rate of at least 4 liters per minute Normal Temperature and Pressure Dry (NTPD) at a cabin altitude of 23,000 feet. If the oxygen bottle regulator has more than one flow rate it must be set to 4 liters per minute NTPD.

The fixed and portable oxygen units must still meet the intent of § 25.1449, which states that a means must be available 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 on the oxygen equipment.

Section 25.1447(c)(1) also requires 10 percent extra oxygen masks. The intent is that these masks will be used by flight attendants and children sitting on passengers' laps. Because neither will be aboard the airplane, installing 10 percent 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 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.

Based on the information from the petitioner regarding the decompression alerts and supplemental oxygen equipment, we have the following comments:

Aural Alert Intensity:

The petitioner must account for operational conditions. 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.

Adequacy of oxygen equipment:

The oxygen units for the supernumeraries must meet the requirements in the FAA's analysis, above, and the limitations in the decision, below.

Note that this exemption does not provide relief, beyond that explicitly stated, from applicable airworthiness requirements. This exemption discusses specific regulations that must be met for approval of the proposed design but does not discuss all the applicable regulations.

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, Airbus is hereby granted an exemption from 14 CFR 25.785(j), 25.813(b), 25.857(e), and 25.1447(c)(1). The petition is granted to the extent necessary to allow type certification of Airbus Model A330-200F series freighter airplanes with provisions for the carriage of supernumeraries, but limits the supernumeraries' Class E cargo compartment access to specific types of operation as described in 2.b below. This exemption is subject to the conditions and limitations below.

The FAA considers two types of operations occur in cargo service:

- I. The airplane does not carry cargo that requires special attention during any operation. Therefore, supernumeraries do not need to access the Class E cargo compartment in

flight during any operation. The following conditions and limitations listed below apply: 1, 4.b.i, 4.b.ii, 5, 6.b, 7 (for lavatory only), 9, and 10. Limitations 1 and 5, and the pre-flight briefings, must be documented in the Limitations Section of the AFM. Access to the cargo compartment is prohibited during taxi, takeoff, flight, and landing. A placard to identify this prohibited access is required to be located outside the cargo compartment in a conspicuous location, either on or adjacent to the smoke-barrier door or curtain. This placard must be documented in the Limitations Section of the AFM.

II. The airplane carries cargo that needs special attention during flight and therefore supernumerary access to the Class E cargo compartment during flight is required. For those operations, conditions and limitations 1 through 11, listed below, apply, except for limitation 1.e. Limitations 1, 2, 5, 7, and 8, and the pre-flight briefings, must be documented in the Limitations Section of the AFM.

Conditions and Limitations

1. Supernumeraries

- a. A maximum of twelve supernumeraries may occupy the courier area located aft of the flight-deck compartment. The total occupancy of the airplane is limited to 16 persons, including the flightcrew (two on-duty flightcrew members, and up to 14 off-duty flightcrew members, observers or supernumeraries).
- b. The supernumeraries are limited to the categories specified in §§ 121.583(a)(1) through 121.583(a)(7).
- c. Prior to each flight, a flightcrew member must brief each supernumerary on the use of exits, including instructions to inspect the ground to determine whether a safe evacuation can be achieved, before using an exit-assist means and emergency equipment.
- d. The operator must determine that each supernumerary is physically capable and trained to accomplish the necessary emergency procedures.
- e. Supernumeraries are prohibited from being in the cargo area behind the smoke barrier during taxi, takeoff, landing, and in flight. The pre-flight briefing must inform the supernumeraries of this requirement.

2. Main Deck Class E Cargo Compartment Access Limitations

- a. Supernumeraries are prohibited from being in the cargo area behind the smoke barrier during taxi, takeoff, and landing. The pre-flight briefing must inform supernumeraries of this requirement. Access is limited to the main-deck Class E cargo compartment.

- b. Access into the main-deck Class E cargo compartment in-flight is allowed for only three types of operation:
 - i) Carriage of live animals requiring care or attention during flight, and associated material only, no other cargo. The maximum number of supernumeraries allowed in the cargo compartment in-flight is twelve.
 - ii) Operations for cargo only, no live animal carriage. The maximum number of supernumeraries allowed in the cargo compartment in-flight is limited to three.
 - iii) Carriage of live animals, requiring care/attention during flight, and cargo. The maximum number of supernumeraries allowed in the cargo compartment is twelve.
3. 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 evacuation 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 decompression-alerting system, and what supernumerary actions are required
 - the lavatory visual decompression-alerting system and what supernumerary actions are required
 - the aural and visual turbulence-alerting system and the requirement that persons must return to their seats
 - the fire or smoke visual-alerting system, and what supernumerary actions are required
 - access is limited to the care and handling of animals and cargo only
 - access is limited to a maximum of three, unless attending to live animals requiring care or attention in-flight, and with carriage of associated materials
 - access is limited to a maximum of twelve with carriage of live animals requiring care or attention in-flight
 - the smoke barrier must be secured (i.e., the door or curtain must be closed) except when entering or leaving the cargo compartment
 - a portable oxygen bottle, with full face mask attached, must be carried at all times by each person entering the cargo compartment
 - smoking is not allowed within the cargo compartment
 - the cargo compartment must not be entered in the event of fire or smoke detected inside the Class E cargo compartment
4. Supernumeraries' Supplemental Oxygen and Protection from Smoke Inhalation

a. Locations and Use

- i) At least one portable oxygen unit, with a mask connected to it, must be provided for each supernumerary allowed to enter the main-deck Class E cargo compartment during flight. These portable units must be located outside the cargo compartment (e.g., in the common area).
- ii) Each supernumerary must carry a portable oxygen unit with a mask connected to it when he or she is in the cargo compartment during flight.
- iii) If Class E cargo-compartment access is approved for twelve supernumeraries for the mixed-cargo-and-live-animals type of operation, a portable system (e.g., ~~smoke hood~~, full-face-mask oxygen system, etc.) that provides protection from smoke inhalation must be carried at all times when accessing the cargo compartment. Note that a single system that meets both protection from smoke inhalation and hypoxia could be used (e.g., a full face mask with oxygen bottle).

b. Design Requirements

- i) The oxygen units must indicate to the user that oxygen is flowing through the unit.
- ii) 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 supernumerary to return to his or her seat where oxygen is readily accessible for the remainder of the decompression.
- iii) To ensure adequate protection during non-sedentary use, the portable oxygen unit must meet the performance requirements of § 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.
- iv) One acceptable means of compliance is the use of a continuous-flow, passenger-oxygen mask that meets FAA technical standard order TSO-C64a, or later revision, and is approved for use up to at least 40,000 feet cabin altitude, connected to an oxygen bottle that supplies a flow rate of at least 4 liters per minute NTPD at 23,000 feet cabin altitude. If the petitioner uses this means of compliance and the bottle has more than one setting for flow rate, the supernumeraries must be trained to use the 4 liters per minute NTPD setting.

5. Training

The supernumeraries must be trained in the use of the oxygen units. The supernumeraries must also be trained in making the determination whether oxygen is being delivered to the dispensing units.

6. Decompression Alert:

- a. An automatically activated, aural, decompression alert must be provided and immediately recognizable in accessible areas of the Class E cargo compartment to notify supernumeraries when to don the portable oxygen units, return to their seats, and ensure that the smoke barrier is secured (i.e., the door or curtain is closed). As a backup to the automated alert system, the flight crew must be able to manually activate the alert.
- b. An automatically activated high-cabin-altitude warning must be provided to notify the supernumeraries in the supernumerary seating area to return to their seats and don oxygen masks.

7. Turbulence, Smoke, and/or Fire Alert

A visual/aural alert operated by a flightcrew member, which is recognized in the lavatory and in accessible areas in the main-deck Class E cargo compartment, must be installed to indicate, during turbulence or predicted turbulence, fire, or smoke in a Class E cargo compartment, that 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 turbulence, fire, or smoke event, the flightcrew member alerts the supernumeraries to return to their seats and to secure the smoke barrier.

8. Placards

Placard(s) are to be located outside the cargo compartment in a conspicuous location, either on or adjacent to the smoke barrier door or curtain. The 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 or perishable cargo only.
- c. Access is limited to a maximum of three persons unless transporting live animals and associated material. Access is limited to twelve persons when transporting live animals. Access is limited to twelve persons when transporting live animals and cargo.

- 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. A portable oxygen bottle, with mask attached, must be carried at all times when in the cargo compartment.
- f. Smoking is not allowed within the cargo compartment.
- g. The compartment must not be entered in the event of fire or smoke detected inside any Class E cargo compartment.

9. Alerting Requirements

- a. Alerts must be distinctive and effective. Alerts must distinguish between decompression and turbulence, smoke, and fire.
- b. 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 on visual-alert devices.
- c. 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.

10. Public Address System

A standard airplane public address (PA) system must be installed. It must be audible throughout the supernumeraries' seating area, the galley, the lavatory, and the Class E cargo compartment.

11. Flight Tests

Flight tests are conducted in accordance with § 25.855(h) 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: Based on the results of these tests, the occupancy of the main-deck Class E cargo compartment may be limited to less than the maximum allowed in Condition 2.

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/s/

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