Exemption No. 9722

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

In the matter of the petition of

Aeronautical Engineers, Inc.

for an exemption from §§ 25.785(d), 25.812(e), 25.855(a), 25.857(e), 25.1447(c)(1), and 25.1449 of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2008-0114

PARTIAL GRANT OF EXEMPTION

By letter dated, January 16, 2008, Mr. David McDonald, VP, Aeronautical Engineers, Inc. (AEI), 7765 NW 54th Street, Miami, FL, 33166, petitioned the Federal Aviation Administration (FAA) for an exemption from §§ 25.785(d), 25.812(e), 25.855(a), 25.857(e), 25.1447(c)(1), and 25.1449 of Title 14 Code of Federal Regulations (14 CFR) for Boeing Model 737-300 and -400 series passenger airplanes converted to freighter airplanes. The proposed exemption, if granted, would allow carriage of four non-crewmembers (commonly referred to as supernumeraries) in an area just aft and outside of the flight deck on these freighter airplanes. The maximum occupancy for these freighter airplanes is seven persons, including the flightcrew.

The petitioner requests relief from the following regulations:

Section 25.785(d), at Amendment 25-88, requires, in pertinent part, handholds to enable passengers to steady themselves when moving about the cabin, in the event the airplane encounters moderately rough air.

Section 25.812(e), at Amendment 25-116, requires, in pertinent part, that floor proximity emergency escape path markings must provide emergency evacuation guidance for passengers.

Section 25.855(a), at Amendment 25-116, requires, in pertinent part, that cargo compartments must meet one of the class requirements of §25.857.

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 be 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. 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.

Section 25.1449 requires the crew be able to determine there is oxygen being delivered to the dispensing unit.

Related sections of 14 CFR:

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 of the requirements of part 121 pertaining to carriage of passengers.

Section 121.547 contains, in pertinent part, a listing of categories of persons who may be admitted to the flight deck during operation.

The petitioner supports its request with the following information:

"§ 25.785(j), Amendment 25-88, requires there to be a firm handgrip or rail for persons using the aisles during moderately rough flight. The exemption from § 25.785(j) is necessary as hand holds are not available in this area.

"§ 25.812(e), Amendment 25-116, requires floor proximity emergency escape path lighting. The exemption from § 25.812(e) will allow trained supernumeraries to occupy the Supernumerary Area during taxi, takeoff, flight, and landing. This area is in the immediate proximity of the forward emergency exits. Since the supernumeraries will be trained on emergency procedures, including emergency egress, and immediately adjacent to the exits, the lack of additional lighting will not adversely affect safety.

"§ 25.855(a), Amendment 25-116, requires that cargo compartments must meet one of the class requirements of § 25.857. AEI's conversion results in the main deck being classified as a Class E cargo compartment. Exemption from 14 CFR 25.855(a) is requested as this CFR requires any cargo compartment to comply with a designated classification of § 25.857 which would exclude the carriage of supernumeraries in the area forward of the 9G bulkhead. The 9G bulkhead also functions as a smoke barrier between the main cargo compartment and the Supernumerary Area and cockpit.

"§ 25.857(e), Amendment 25-93, defines the attributes of a Class E cargo compartment, and mandates that a Class E cargo compartment may not be on any airplane other than one utilized exclusively for the carriage of cargo. The exemption from § 25.857(e) will allow for up to 4 supernumeraries on the aircraft who are otherwise prohibited from being present on an aircraft with a Class E cargo compartment.

"§ 25.1447(c)(1), Amendment 25-116, requires, in pertinent part, that oxygen masks must be immediately available to each seated occupant, be automatically deployed with manual backup, and exceed in number the quantity of seats by ten percent, with the extra units distributed evenly throughout the cabin. The exemption from § 25.1447(c)(1) will mandate an equivalent level of safety for supernumeraries in the Supernumerary Area by requiring portable oxygen bottles that will be mounted within reach of the supernumeraries while in their seats. These bottles will meet the requirements of § 25.1447(c)(1), excluding the requirement that the number of oxygen units must exceed the number of seats by at least ten percent. Since the supernumeraries will be trained in emergency procedures and will be within reach of a portable oxygen bottle at all times, an equivalent level of safety is maintained without having an additional 10% supply cushion. All features of the Class E cargo compartment required by § 25.855 and § 25.857 will be retained and all safety requirements of part 25 as defined by the certification basis of the airplane in Type Certificate Data Sheet (TCDS) A16WE will be complied with.

"§ 25.1449 requires the pilots be able to determine there is oxygen being delivered to the dispensing unit. To the extent that § 25.1449 requires the crew to be able to determine if oxygen is being provided to the portable bottles being utilized by the supernumeraries, AEI also seeks exemption from compliance with this CFR as it is technically and commercially infeasible to comply with the requirements of § 25.1449.

"AEI holds numerous Supplemental Type Certificates for modification of transport aircraft. With regard to this petition, AEI holds STC ST01827LA which allows conversion of Boeing 737-300/400 aircraft to a freighter with a Class E main deck cargo compartment. Over 200 Boeing aircraft have been converted by AEI to freighters. Some operators of AEI freighters need to be able to carry supernumeraries to assist with special cargo such a valuable cargo requiring security and/or perishable, fragile, or live cargo requiring special attention to ensure its safe delivery. The interest of the petitioner is in providing a level of safety for the crew, supernumeraries, cargo and aircraft that will allow operators of AEI converted 737 freighters to meet the needs of their clientele.

"The AEI 737 freighters presently have no provisions for a sufficient number of supernumerary seats for handlers to help in the care of such cargo. This request generally follows those granted to other freighter operators and STC holders.

"The FAA approved Aircraft Flight Manual (AFM) will contain a supplement with the operating limitation restricting the carriage of occupants accommodated to those defined by § 121.583 who have been trained for such duties. In addition, an FAA approved training plan will be initiated to instruct the supernumeraries in the prohibition against smoking, and procedures in equipment use relating to fire suppression, ditching, and emergency evacuation. In addition, the Supernumerary Area will meet the following safety requirements: An automatically activated visual and aural decompression signal immediately recognizable throughout the cabin area will be provided to automatically notify supernumeraries when to don oxygen. Flightcrew activated, lighted, "Fasten Seat

Belt" signs will be provided that are visible to the supernumeraries while seated. In addition, flightcrew activated “Return to Seat” signage will be provided in the Supernumerary Area. A standard aircraft intercom/public address (PA) system will be retained and the PA system will be audible within the Supernumerary Area. Two-way communication from the supernumerary seating area to the flight deck will be provided by means of a flight phone installed within reach of at least one of the supernumerary seats. Finally, the following placards will be provided: 1. No Smoking Signs; 2. Door Operating Instructions; 3. Emergency Slide or Rope Operating Instructions; and, 4. External Door Exit Marking.”

“Request for Waiver of Public Comment

“AEI requests waiver of the normal public comment process since this request is substantially similar to those already granted to other freighter STC holders and because the granting of this petition will not create new precedent.

“2. Public Interest
The carriage of an appropriate number of attendants aboard an aircraft to monitor and to attend to the special requirements of valuable, fragile, perishable, or live animal cargo, serves the public interest in raising the level of safety of the cargo, the airplane, the flightcrew, and consequently, the public in general. In addition, these exemptions will enhance the utility of the aircraft thereby helping to reduce shipping costs, which will in turn be in the public interest.

“This exemption, therefore, serves the public interest for safety reasons and also for increased airfreight utility, both domestically and internationally and consistent commercial operations among all AEI freighter operators.

“AEI respectfully requests that this petition be granted.”

Federal Register publication

A summary of this petition was not published in the *Federal Register*. The nature of this exemption is effectively identical to those of previous petitions for which there were no public comments received.

The FAA's analysis

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 were not granted; and
>
> The FAA has granted several exemptions for the carriage of supernumeraries 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 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 petitioner is requesting that supernumeraries be located in an area aft 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 purpose of the handholds requirement 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 flightcrew activated, lighted, "Fasten Seat Belt" signs and the 'Return to Seat' signage in the Supernumerary Area. This visual alert system enables the crew to indicate, at the onset of turbulence, that supernumeraries in the cargo compartment return to their seats. The visual alert must be recognized in accessible areas of the airplane, and indicate, during turbulence, that persons must return to their seats.

The petitioner has requested an exemption from § 25.855(a). The FAA has previously granted exemptions for carriage of supernumeraries in addition to crew on freighter airplanes, provided that certain other conditions are met. These conditions have varied, depending on the airplane design and the number of supernumeraries involved. Due to

the way that fire in the cargo compartment is to be controlled, it is necessary to limit supernumeraries on board the airplane to those who have been found physically fit by the operator and have been briefed on the use of emergency equipment. This limitation on the supernumeraries is consistent with previous approvals and will be included in this approval. Also, there must be suitable means of preventing smoke penetration into occupied areas. The petitioner's design accounts for this by providing a barrier, consisting of a smoke barrier for the supernumeraries located aft of the flight deck, which must comply with the smoke penetration requirements of § 25.855.

The petitioner requested an exemption from § 25.812(e), at Amendment 25-116, that requires floor proximity, emergency escape path marking, in the passenger areas of the airplane. During the evaluation of this petition, the FAA determined the original certification basis for the Boeing Model 737-300 and -400 series airplanes did not include Amendment 25-58, which codified the requirements for floor proximity, emergency escape path marking. We have determined, therefore, that an exemption to this regulation is not required.

The FAA considers that the supernumeraries should have an oxygen system that is comparable to that of passengers. However, taking into account the extra knowledge and training that these persons will have, it is not necessary that an equivalent system be installed. Section 25.1447(c)(1) 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. Supernumeraries on the petitioner's Boeing Model 737 airplanes will not have this indication. For an acceptable level of safety to be provided, an automatically activated aural and visual decompression signal must be immediately recognizable throughout the supernumerary seating area. Operation of this signal must be automatic with flightcrew manual action as a backup. Supernumeraries must be trained regarding the location and use of the 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.

The combination of the aural and visual alert, along with the supernumerary training, compensates for the oxygen mask in the supernumerary seating area not being automatically presented.

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

The petitioner has not requested an exemption from the lavatory oxygen requirements of § 25.1447(c)(1).

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.

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, Aeronautical Engineers, Inc. is hereby granted a exemption from 14 CFR 25.785(d), 25.855(a), 25.857(e), and 25.1447(c)(1) to the extent necessary to allow type certification of Boeing Model 737-300 and -400 series airplanes with provisions for the carriage of supernumeraries. The following conditions and limitations apply and procedures related to items 1 through 5 and 7 through 9, below, must be documented in the Limitations Section of the Airplane Flight Manual:

1. A maximum of four supernumeraries may occupy the area aft of the flight deck and forward of the 9G bulkhead. The total maximum occupancy of the airplane is limited to six persons, including the flightcrew (two on-duty flightcrew members, and up to four off-duty flightcrew members, observers, or supernumeraries).

2. The supernumeraries are limited to the categories specified in §§ 121.583(a)(1) through 121.583(a)(7).

3. Supernumeraries are prohibited from being in the cargo area during any flight operation. The pre-flight briefing must inform supernumeraries of this requirement.

4. 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 landing can be achieved before using an assist means and emergency equipment.

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

6. Supernumeraries Supplemental Oxygen:

Locations and Use:

a. Supplemental oxygen equipment with a mask connected to it must be located so each occupant can put on the mask and activate oxygen flow while seated.

b. The FAA does not grant an exemption to the lavatory oxygen requirements of § 25.1447(c)(1)

Design Requirements:

a. The units must provide oxygen flow indication.

b. The oxygen units must be sized adequately for continuous and uninterrupted use during worst-case flight duration following decompression.

7. 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.

8. Decompression Alert:

An automatically activated aural and visual decompression alert must be provided and immediately recognizable throughout the supernumerary seating area to notify supernumeraries when to don oxygen masks. The pre-flight briefing must include training in the meaning of the alert, and the response to the alert (i.e., procedures for donning the mask and activating the flow of oxygen).

9. Turbulence, Alert:

A flightcrew activated visual alert, which is recognized in the supernumerary seating area, must be installed to indicate that, in the event of turbulence, or predicted turbulence, persons must return to their seats. Appropriate procedures and limitations must be established to ensure that, at the onset of turbulence, the flightcrew alerts the supernumeraries to return to their seats. The pre-flight briefing must explain these alerts to the supernumeraries.

10. 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.

11. Placards:

Placard(s) located outside of the cargo compartment in a conspicuous location, either on or adjacent to the smoke barrier door must indicate the following:

- Do not occupy the Class E cargo compartment.
- The smoke barrier must be secured (i.e., the door must be closed).
- Smoking is not allowed.

The pre-flight briefing must inform supernumeraries of these requirements.

12. Alerting requirements:

- Must be distinctive and effective. Alerts shall distinguish between decompression and turbulence.
- 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.

13. A standard airplane public address (PA) system must be installed. It must be audible throughout the supernumeraries' seating area.

14. An interphone system must be installed that provides two-way communication between the supernumerary seating area and the flight deck and is within reach of at least one of the supernumeraries at his or her seat. This system must be independent of the PA system, except for handsets, headsets, microphones, selector switches, and signaling devices.

Issued in Renton Washington, on July 8, 2008.

Signed by Ali Bahrami

Ali Bahrami
Manager, Transport Airplane Directorate
Aircraft Certification Service