

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

In the matter of the petition of

FedEx Express

for an exemption from §§ 25.785(j),
25.812(e), 25.857(e), and 25.1447(c)(2)(i)
of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2015-1731

PARTIAL GRANT OF EXEMPTION

By letter dated May 8, 2015, Mr. Craig Greer, Manager, Fleet Engineering - Structures, FedEx Express, 3131 Democrat Road, Memphis, Tennessee, 38118, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of §§ 25.785(j), 25.812(e), 25.857(e), and 25.1447(c)(2)(i) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted would permit the carriage of up to two supernumeraries in a crew rest module (CRM) located in the Class E cargo compartment of Boeing Model 767-300F and 767-300 passenger airplanes converted to freighter airplanes.

The petitioner requests relief from the following regulations:

Section 25.785(j) at Amendment 25-88, requires that, if the seat backs do not provide a firm handhold, a handgrip or rail must be available along each aisle to enable persons to steady themselves while using the aisles in moderately rough air.

Section 25.812(e) at Amendment 25-128, requires that floor proximity emergency escape path markings must provide emergency evacuation guidance for passengers when all sources of illumination more than 4 feet above the cabin aisle floor are totally obscured. In the dark of the night, the floor proximity emergency escape path marking must enable each passenger to -

- After leaving the passenger seat, visually identify the emergency escape path along the cabin aisle floor to the first exits or pair of exits forward and aft of the seat; and

- Readily identify each exit from the emergency escape path by reference only to markings and visual features not more than 4 feet above the cabin floor.

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

Section 25.1447(c)(2)(i) at Amendment 25-116, requires that each flight crewmember on flight deck duty must be provided with a quick-donning type oxygen dispensing unit connected to an oxygen supply terminal. This dispensing unit must be immediately available to the flight crewmember when seated at his station, and installed so that it can be placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand, with one hand, within five seconds and without disturbing eyeglasses or causing delay in proceeding with emergency duties.

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.

The petitioner supports its request with the following information:

This section quotes the relevant information from the petitioner's request, with minor edits for clarity. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at <http://regulations.gov>, in Docket No. FAA-2015-1731.

The main objectives of this request for exemption are to permit the carriage of two off-duty crewmembers on an all-freighter airplane and permit entry of qualified supernumeraries into the CRM inside the cargo compartment during flight for the purpose of resting.

By present letter, FedEx Express revises the previous petition for exemption (Docket No. FAA-2014-0101). This revised petition is necessary to include language detailing the requirement of the installation of a smoke barrier to create a separation between the area of the Class E cargo compartment and the area of the proposed portable CRM installation in order to further substantiate the exemption request.

Requested Regulatory Relief:

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

Section 25.812(e): Relief is necessary for floor lighting in the cargo compartment area. The door in the CRM and the rigid cargo barrier (RCB) access door are in such close proximity that floor lighting is not needed because the existing aircraft emergency

lighting and the proposed CRM lighting will be sufficient. In addition, flight crews inside the CRM are required to carry flashlights.

Section 25.857(e): Relief is sought to permit carriage of up to two persons in the CRM on all freighter airplanes which have a CRM in position 1 of the Class E cargo compartment beyond the flight crew of two. The CRM will be occupied only in flight, not to be occupied during taxi, takeoff, and landing.

Section 25.1447(c)(2)(i): Relief is sought to permit the use of portable oxygen bottles with full-face mask instead of automatic dispensing units.

Description of Aircraft:

The 767-300F was manufactured under Type Certificate Data Sheet (TCDS) A1NM. The 767-300BDSF (BeDek Special Freighter) was as well manufactured under TCDS A1NM as a passenger 767-300ER series model but later modified to a special freighter by Israel Aerospace Industries BeDek Aviation Group Supplemental Type Certificate (STC) ST02040SE. Boeing applied for an amended Type Certificate (TC) A1NM to derivate the 767-300ER passenger model into a freighter, the 767-300BCF (Boeing Converted Freighter). All three of these models include a Class E compartment in the main deck and a flight deck consisting of a supernumerary area, forward of the 9-g barrier RCB/smoke curtain. The flight deck area can provide a maximum of six (6) seats, of which four (4) are for the supernumeraries and two (2) are for the captain and the first officer.

The following previously granted exemptions are still applicable and are taken in consideration in this request:

- Exemption 5993A for the 767-300F
- Exemption 9853 for the 767-300BDSF.
- Exemption 9696A for the 767-300BCF.

The flight deck of the Model 767 Freighters (-300F/-300BCF/-300BDSF) is equipped with No. 2 left and right flight deck windows that can be open from inside, previously certified as flight crew emergency exits under TC A1NM. The right hand window has the capability to be opened from the outside of the airplane, and its means of opening is marked on the exterior airplane fuselage.

Supernumeraries are trained persons and are briefed for the duty on board the aircraft. The airplane flight manual contains the definition of, and the conditions under which, the supernumerary persons may be carried, and provides specific instruction for preflight briefing. FedEx Express believes that an equivalent level of safety with the parts of the requirements from which relief is sought will be achieved by the design features of the CRM installation on the 767 Freighters (-300F/-300BCF/-300BDSF).

Crew Rest Module Configuration:

The initial type certificate configuration addresses the access, during flight, to the cargo compartment as described per the 767-300F flight manual for only one person. The 767-300BCF and 767-300BDSF are allowed to have four persons per respective exemptions and flight manual supplements. (See Exemption 9696A for the 767-300BCF and Exemption 9853 for the 767-300BDSF.)

FedEx wishes to install a CRM inside the Class E compartment in position 1D/1C for the purpose of providing a compartment for no more than two off-duty crew members to rest during cruising steady flights, not to be occupied during taxi, takeoff, and landing.

The CRM will be equipped as follows:

- A smoke detector system with individual aural warning to alert the CRM occupants will be installed. The smoke detector will be connected to the Engine Indicating & Crew Alerting System (EICAS) of the aircraft so the crew on duty in the flight deck will be alerted as well. The CRM will be located inside the Class E compartment and § 25.857(e) requires smoke detection to protect the CRM occupants and the aircraft. The equipment will be similar to the 777F system currently installed on FedEx Express aircraft.
- Installation of an aural alert to alert the CRM occupants in the event of a rapid decompression or at the discretion of the flight crew on duty.
- Installation of two 4.25 cubic feet portable oxygen bottles with full-face masks for the occupants to be able to walk back to their flight deck seats. This will support occupants during a decompression and/or a smoke event in the Class E compartment which will meet §§ 25.1439(a) and (b). The portable oxygen bottles meet the performance requirements of § 25.1443(a) or § 25.1443(b).
- Installation of a fire extinguisher in the event of a fire will be installed in the CRM. No additional portable breathing equipment (PBE) will be required since there will be two 4.25 cubic feet portable oxygen bottles with full-face masks installed in the CRM. The flight deck does have fire extinguishers and PBE previously certified under the TC or STC; however, they are too far to reach from the CRM. This addition will meet the requirements of § 25.851.
- Installation of emergency lighting in the event of a complete loss of power. The lighting will be inside the CRM only so occupants could find a flashlight and/or don oxygen if required inside the CRM. The CRM occupants will be required to carry their own flashlights to walk from the CRM to their seats in the flight deck. There is no emergency lighting in the Class E compartment. However, similar to the 777F and MD11F, there are two dome lights inside their respective CRM, one of the lights will be strategically placed inside the CRM so that when the 767 CRM door is open there is enough lighting at the floor level (8 to 10 foot candle power per SAE ARP 1283A) of the Class E compartment just between the CRM

and the RCB door. The area between the CRM and RCB door would be slightly less than 22-inches long and approximately 30-inches wide. Once the RCB door is open, additional lighting will be available since there is a dome light just next to the crew entry door way.

- Installation of two-way communication (interphone) system. The system will have a chime (aural alert) to alert the occupants and a resettable call light. The system will have a push-to-talk handset similar to the one installed on the 777F which is resettable once the system is in use. In addition, a public address (PA) will be available as a back up to the interphone system.
- The CRM will also have means to control the airflow and temperature. The CRM general design requirements will meet Class 1 Rest Facility per Advisory Circular (AC) 121-31 and SAE ARP 4101/3 Crew Rest Facilities not including the requirement to obtain Operational Specification approval A117 which is based on 14 CFR 117 that is not applicable to FedEx Cargo Operations.

FedEx Express proposes several means and limitations to address the safety of the occupants in the Class E compartment during flight:

1. Flight crewmembers will be trained as a part of the standard 767 crew training on the proper use and emergency procedures associated with the CRM.
2. Supernumeraries are prohibited from accessing the cargo areas during taxi, takeoff, and landing. A pre-flight briefing must inform the supernumeraries of this requirement.
3. Prior to each flight, a flight crew member will 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.
4. Prior to each flight, a flight crew member will brief each supernumerary on the opening and closing procedure of the RCB door.
5. A maximum of two (2) occupants will be allowed to enter the CRM during cruising flight.
6. Supernumerary Portable Oxygen
 - a. There must be at least two portable oxygen units with a full-face mask connected to it provided for each supernumerary allowed to enter the main deck Class E cargo department during flight. The units must provide an indication to the user that oxygen is flowing.
 - b. The portable oxygen units 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.

- c. The portable units must be located inside the CRM, readily available to the CRM occupants within arm's reach from the bunk beds.
 - d. 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.
 - e. The oxygen units must be sized adequately for continuous and uninterrupted use during worst-case flight duration following smoke/decompression event, or must be of sufficient duration to allow the supernumeraries to return to their seats where additional oxygen is readily accessible for the remainder of the smoke/decompression event.
7. A placard located in the supernumerary area, in a conspicuous location either on or adjacent to the RCB smoke barrier, should indicate the following for access to the E-class cargo compartment. The pre-flight briefing should inform supernumeraries that access to the CRM is limited to two off-duty flight crew.
 8. The CRM will have a fire extinguisher that meets the requirement of § 25.851.
 9. In the event of a rapid decompression, an aural alert will be activated to alert the CRM occupants.
 10. No protective breathing equipment (PBE) will be provided since the CRM will have two portable oxygen bottles will full-face mask.
 11. There will be an aircraft public address system capable of providing announcements from the cockpit to the courier area in addition to an interphone system.
 12. Installation of emergency lighting in the event of a complete loss of power.
 13. A smoke barrier will be installed to create a separation between the area of the Class E cargo compartment and the area of the portable CRM installation. The design of the smoke barrier and its installation will be such that hazardous amounts of smoke originating in the Class E cargo compartment is prevented from entering into the area of the portable CRM installation.

Supporting Arguments:

Cargo operators need an augmented flight crew onboard the aircraft for flights longer than 8 hours. Although the aircraft have three supernumerary seats, the seats are not ideal for crew rest. The installation of the CRM in the Class E compartment provides a Class 1 crew rest facility which will allow FedEx to support the flight crew rest

requirements. The proposed CRM, as described, will provide an adequate level of safety and comply with all the Federal Aviation Regulations except for the sections from which FedEx seeks exemption.

Section 25.785(j):

The CRM is inside the Class E compartment and the proximity of the CRM to the RCB wall/door is slightly less than 22 inches. This distance is less than the average arm reach of the 5th percentile 40-year old Japanese female which is 25.7 inches per NASA-STD-3000 Human Factors. FedEx believes that a firm handhold is not required to transition from the CRM to the RCB door. To transition from the CRM to the flight deck, the supernumeraries inside the CRM must open the RCB access door which requires the occupants to hold and turn the door latching mechanism thus providing a firm hold.

Section 25.812(e):

The CRM and the RCB access door are in such close proximity that floor lighting is not needed. Once the CRM door is open, the proposed CRM emergency lighting will be sufficient to illuminate the area as described. Once the RCB door is open, additional illumination will be available from the existing aircraft emergency lighting. In addition, flight crews inside the CRM will be required to carry flashlights.

The categories of the occupants for which the exemption is sought are qualified off-duty flight crew for the type of aircraft, in this case the 767, which meet all the requirements of § 121.583 as well. Furthermore, they are instructed in the autonomous use of emergency equipment and emergency exit operation.

FedEx Express will optimize their missions if they are permitted to have the CRM installed in the Class E compartment and allow personnel aboard the CRM during cargo flights, thus ensuring availability of rested flight crew in flight.

Public Interest

FedEx Express presents the argument that the granting of this exemption will be in the public interest by allowing FedEx Express to provide a Class 1 rest facility per AC 121-31 for extended flights, thus reducing the flight crew fatigue and improving flight safety. The granting of this exemption will allow FedEx Express to compete with international freighter operators with similar configurations. If allowed to carry supernumerary persons aboard their cargo flights, FedEx Express will be able to operate under optimal safety conditions. The reasons for these benefits are developed in the arguments above.

Federal Register publication

As noted by the petitioner, this request is a minor revision of a previously submitted petition and a summary of the petition was published for public comment on June 6, 2014 (79 FR 32806). Since the public was already allowed an opportunity to comment on the petition, and no comments were received, the FAA has determined that good cause exists for waiving the

requirement for *Federal Register* publication for public comment in this case. The exemption would not set a precedent and any delay in acting on this petition would be detrimental to FedEx Express.

The FAA's analysis

The petitioner previously petitioned for relief from the above-mentioned regulations and was issued Denial of Exemption No. 11041 (Docket No. FAA-2014-0101). The FAA determined that the original proposed configuration of the crew rest module (CRM) would introduce unnecessary hazards to the occupants in the CRM from a fire inside the Class E cargo compartment.

The petitioner has proposed to alter the previous configuration by adding a smoke barrier curtain aft of the CRM. We find it to be acceptable as the CRM is now located forward of the Class E cargo compartment smoke barrier. We also agree with the proposed limitations and conditions and have listed them under our decision below.

As proposed by the petitioner, previously granted exemptions for the Boeing 767 cargo airplanes are applicable and will remain in effect; No. 5993A for the 767-300F, No. 9853 for 767-300 passenger airplanes converted to freighter airplanes, and No. 9696A for 767-300 passenger airplanes converted to freighter airplanes. The conditions and limitations of this exemption are in addition to those found in the previously granted exemptions noted above. Those exemptions allow for the carriage of supernumeraries, allow access to the Class E cargo compartment during flight under specific circumstances, and contain emergency equipment requirements. This exemption will allow for the crew and supernumeraries to use the CRM during flight but not during taxi, takeoff, and landing.

The handhold requirement of § 25.785(j) ensures 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 (a condition and limitation of the other exemptions noted above). 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 of the CRM and indicate, during turbulence, that persons must return to their seats and secure the rigid cargo barrier door.

The intent of § 25.812(e) is to provide floor-proximity, emergency escape path markings in the passenger areas of the airplane. Because of the close proximity between the rigid cargo barrier door and the CRM door, the lack of the floor-proximity, emergency escape path markings will not adversely impact the safety of the supernumeraries.

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. Since the occupants of the CRM are not acting as active crewmembers on the flight deck, § 25.1447(c)(2)(i) does not apply to the module; therefore, no relief should be required and none will be granted from this requirement.

Configurations may be approved for carrying cargo and 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 means of alerting the supernumeraries while in the cargo compartment, the FAA has the following comments:

- **Aural alert intensity** -- The petitioner must account for operational conditions. The 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.

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 FedEx Express an exemption from 14 CFR 25.785(j), 25.812(e), and 25.857(e). The exemption is granted to the extent necessary to allow type certification of Boeing Model 767 series freighter airplanes with provisions for the carriage of not more than two supernumeraries in a crew rest module forward of the smoke barrier during flight for the purpose of resting. The petitioner is not granted an exemption from § 25.1447(c)(2)(i) because it is not applicable in the crew rest module, as explained above.

This exemption is subject to the conditions and limitations below.

1. Flight crewmembers must be trained as a part of the standard Model 767 crew training on the proper use and emergency procedures associated with the crew rest module.
2. Access to, or occupancy of, the crew rest module and cargo areas is prohibited during taxi, takeoff, and landing.
3. The following must be documented as operating limitations in the AFM:
 - a. A maximum of two (2) occupants will be allowed to enter the crew rest module during cruising flight.
 - b. Each occupant entering the crew rest module is required to carry a flashlight.
 - 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 opening and closing procedure of the rigid cargo barrier door.

- iii. That access to the crew rest module and cargo areas is prohibited during taxi, take-off, and landing.
 - iv. That access to the crew rest module is limited to two off-duty occupants.
 - v. The meaning of all alerts required by this exemption.
4. Supernumerary Portable Oxygen
- a. There must be at least two portable oxygen units, each with a full-face mask connected to it, provided for the supernumeraries allowed to enter the crew rest module during flight.
 - b. The portable oxygen units 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.
 - c. The portable units must be located inside the crew rest module and readily available to the crew rest module occupants within easy reach from the bunk beds.
 - d. 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.
 - e. The oxygen units must be sized adequately for continuous and uninterrupted use during worst-case flight duration following a smoke or decompression event, or must be of sufficient duration to allow the supernumeraries to return to their seats where additional oxygen is readily accessible for the remainder of the smoke or decompression event.
5. A placard located in the supernumerary area, in a conspicuous location either on or adjacent to the rigid cargo barrier door, must indicate the following, or equivalent, for access to the Class E cargo compartment.

Access to the crew rest module is limited to two off-duty occupants.

Flashlight must be carried by each occupant when using the crew rest module.

6. The crew rest module must have a fire extinguisher that meets the requirements of § 25.851.
7. In the event of a rapid decompression, the existing automatically activated aural alert must activate to alert the crew rest module occupants to activate and don their oxygen system.
8. In the event of turbulence, smoke, or fire, the flight crew must activate the existing aural/visual alert system to alert crew rest module occupants to return to their seats.
9. There must be an aircraft public address system capable of providing announcements from the cockpit to the crew rest module in addition to an interphone system.
10. Installation of emergency lighting in case of a complete loss of power is required. Two flashlights must be installed forward of the 9g barrier for use when occupants enter the crew rest area.
11. A smoke barrier must be installed to create a separation between the area of the Class E cargo compartment and the area of the portable crew rest module installation. The design of the smoke barrier and its installation must be such that a hazardous amount of smoke originating in the Class E cargo compartment is prevented from entering into the area of the portable crew rest module installation.
12. Alerting Requirements
 - a. Must be distinctive and effective. Alerts must distinguish between 1) decompression and 2) turbulence, smoke, or 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.
 - 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.

Issued in Renton, Washington, on September 9, 2015.

/s/

Michael Kaszycki
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service