

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

Kitty Hawk Aircargo, Inc.

for an exemption from §§ 25.783(h),
25.807(g)(1), 25.810(a)(1), 25.813(b),
25.857(e) and 25.1447(c)(1) of Title 14,
Code of Federal Regulations

Regulatory Docket No. FAA-2005-21606

GRANT OF EXEMPTION

By letter dated June 15, 2005, Mr. Danny K. Clifton, Vice President of Flight Operations, Kitty Hawk Aircargo, Inc., 1535 W. 20th St., P.O. Box 612787, DFW International Airport, TX 75261, petitioned for an exemption from the cargo-only provisions of § 25.857(e), and the passenger requirements of §§ 25.807(g)(1), 25.810(a)(1) and 25.813(b)(3) for Boeing Model 727-200 airplanes. The proposed exemption, if granted, would allow carriage of two non-crewmembers (commonly referred to as supernumeraries) in an area just aft and outside of the flightdeck.

The petitioner requests relief from the following regulations:

Section 25.783(h), at Amendment 25-88, requires, in pertinent part, that each passenger entry door shall meet the requirements of §§ 25.807 through 25.813.

Section 25.807(g)(1), at Amendment 25-94, requires, in pertinent part, that for aircraft with 1 to 9 passengers without overwing exits, at least one Type III emergency exit shall be provided on each side of the fuselage.

Section 25.810(a)(1), at Amendment 25-88, requires, in pertinent part, an approved self supporting slide or equivalent means to assist the occupants to the ground.

Section 25.813(b), at Amendment 25-88, requires, in pertinent part, that each passenger emergency floor level exit equipped with an assist means have an assist space next to it.

Section 25.857(e), at Amendment 25-60 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), at Amendment 25-87, 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.

Related sections of the regulations:

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

The petitioner's supportive information is as follows:

“Introduction

“Kitty Hawk Aircargo is requesting exemptions from certain requirements related to the carriage of two non-crewmembers (Supernumeraries) on the flightdeck and to emergency exit design. The exemption is requested for all B727 aircraft flown by the Company that have been modified to the freighter configuration. This request is similar to exemptions provided in the following STCs [supplementary type certificates]: Pemco Aeroplex, SA 1509SO & SA1543SO; Aeronautical Engineers, Inc, SA 1797SO; Kitty Hawk Aircargo, ST00015AT.

“The Affected Sections of 14 CFR 25 are listed below.

“14 CFR 25.783 Amdt 88 - Doors (h) requires that each passenger entry door shall meet the requirements of 25.807 through 813 (be an emergency exit).

“14 CFR 25.807 Amdt 94 - Emergency Exits (g)(1) requires that, for aircraft with 1 to 9 passengers without over-wing exits, at least one Type III emergency exit (“rectangular opening of not less than 20 inches wide and 36 inches high with comer radii not greater than 7 inches) shall be provided on each side of the aircraft.

“14 CFR 25.810 Amdt 88 - Emergency Egress Assists Means (a)(1) requires a slide for passenger exits.

“14 CFR 25.813 Amdt 88 - Emergency Exit Access (b)(3) requires adequate space at one side of any other emergency exit to assist passengers in descending from the exit.

“14 CFR 25.857 Amdt 93 - Cargo Compartment Classification (e) requires that when a class E Cargo Compartment is installed on an airplane the airplane is used for transport of cargo only.

“14 CFR 25.1447 Amdt 87 - Equipment Standards for Oxygen Dispensing Units (c)(1) 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.

“Kitty Hawk Configuration

“(1) Flightdeck and Cargo Compartment Occupancy and Seating Arrangement

“The original flightdeck of the B727 has been designed and certified for an occupancy of five people, three crewmembers and two non-crewmembers. With the airplane converted to all freighter, the same seating configuration and arrangement remains on the flightdeck but there are two supernumerary seats outside the cockpit between the 9G bulkhead and the exterior cockpit wall.

“(2) Emergency Exits Arrangement and Accessibility

“The B727-200 in the passenger configuration is originally fitted and certified with emergency exits for the flightcrew: The window # 2R is open-able from inside and from outside and window # 2L is open-able from the inside only. The window opening measures 21 inches wide at the lower edge, 22 inches high at the aft edge, 16 inches wide at the upper edge and 17 inches high at the forward edge. The flight compartment is originally fitted with two egress ropes attached to the flight compartment ceiling. The service door on the right hand side of the cabin (1R) is blocked and is not suitable for use as an emergency exit. The left hand forward entry door (1L) is used for both normal entry and emergency evacuation. The 9G bulkhead is rigid and is designed to prevent freight from blocking this exit and protect the courier compartment in the event of rapid deceleration. Additionally, an egress rope is secured to the aircraft directly above the supernumerary seats for evacuation purposes.

“(3) Requested Exemptions

“An exemption is requested from meeting 14 CFR 25.807(g)(1) by not providing the non-crewmembers on the flightdeck an emergency exit door Type IV or Type III on each side of the fuselage, and providing instead an emergency exit through door 1L (Type C) on one side and additional exit through the flightdeck existing emergency exit windows 2L and 2R.

“An exemption is requested from meeting 14 CFR 25.810(a)(1) by allowing the usage of rope instead of a slide when exiting through the windows and door 1L.

“An exemption is requested from meeting 14 CFR 25.813(b)(3) by not having space for assistance near the flightdeck window exits.

“An exemption is requested from meeting 14 CFR 25.857(e) to permit the flight of two non-crew passengers on a cargo aircraft with a class E cargo compartment.

“(4) Supporting Arguments

“In order to optimize the usage of the B727-200 as a cargo airplane, operators need to be able to accompany their cargo by people whose function is to take care of sensitive cargo and of loading and unloading tasks at any port of arrival. Their presence on the aircraft ensures they will be immediately available on arrival to take care of the cargo. This is very important, for example, in the case of transport of perishable goods, items of value, etc. It will also shorten the turnaround time at the airport gates and relieve some of the airport congestion.

“Some of the cargo items being transported may include hazardous materials, whereas the presence of personnel trained and qualified in their handling will enhance safety.

“Some locations serviced by the cargo carriers may not have ground maintenance centers capable of performing necessary tasks for the operator aircraft nor passenger flights to carry maintenance personnel to the location. The ability to transport Company personnel on the Company flights increases the flexibility of the operation.

“The design of the B727 cabin, i.e. the location of the cargo door, requires the 9G bulkhead to be positioned forward of the 1R door. This results in that door being unusable as an emergency exit.

“The requested exemptions do not reduce cabin safety, as discussed in paragraph 5.

“(5) Cabin Safety Discussion

“The original flightdeck of the B727 has been designed and certified for an occupancy of five people - three crewmembers and two non-crewmembers. With the airplane converted to all freighter, the same seating configuration remains on the flightdeck; but because door 1R is blocked by the 9G bulkhead, it is not possible to keep it as an emergency exit. In the passenger configuration, the two non-crewmembers use door 1L or door 1R for emergency egress; but, they have to use them together with some additional twenty to fifty passengers coming in the opposite direction from the cabin. In the freighter configuration, they have door 1L for themselves, or they can use the flightdeck windows with the three crewmembers. It is considered that the emergency exits provided for the flightdeck occupants provide a level of safety that is equivalent to the requirements. The non-crewmembers will be limited to people in the categories of section 121.583 (a)(1) through (7). The non-crewmembers shall be trained in the necessary emergency egress procedures. These people shall be physically capable of using the rope descent means and will not need assistance by a crewmember. In addition, the non-crewmembers shall be briefed prior to flight about the emergency procedures by the crew. The necessary instructions shall be incorporated in the flight manual.

“(6) Public Interest

“The granting of the requested exemptions will be in the public interest, as by allowing the carriage of the supernumerary persons aboard the cargo flights the operators will be able to optimize the safety conditions of the cargo operation, to make the operation more efficient, and to improve the utility of the airplanes and the airports.”

Federal Register publication

A summary of the petitioner's request for exemption was published in the Federal Register on August 17, 2005 (70 FR 48464). No comments were received.

The FAA's analysis/summary is as follows:

The FAA considers the petitioner's proposal to be in the public interest for the following reasons:

The FAA has granted several exemptions for the carriage of supernumeraries on cargo airplanes;

These supernumeraries are seen as a benefit to airplane safety and efficient operations of air cargo; and

A significant disruption of air commerce could occur if the petition were not granted.

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 differ for passengers and crewmembers.

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

The petitioner has requested relief primarily from the requirements of § 25.857(e), which permit carriage of cargo only 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.

An exit must be available on each side of the airplane for an acceptable level of safety to be provided for supernumeraries, since it is a real possibility that an exit on one side of the airplane may not be useable during an accident due to fire, extensive crash damage, or some obstruction outside of the airplane. The petitioner has proposed that supernumeraries be allowed to occupy an area forward of the Class E cargo compartment and aft of the flightdeck. The petitioner’s Boeing Model 727-200 airplanes have only one exit aft of the flightdeck, which is on the left side of the fuselage in this area. The flightdeck has a window exit on each side of the fuselage, but the flightdeck can be separated from the supernumerary seating area by a closed flightdeck door. An acceptable level of safety would be provided in terms of the exit requirements of part 25, if the flightdeck door were latched open during taxi, takeoff and landing so that supernumeraries would have access to the flightdeck window exits.

The intent of § 25.783(h) is to ensure that the door used to enter an airplane can also be used as an emergency exit and that the door meets the requirements of

§ 25.807 through § 25.813. The left door 1 passenger exit meets the criteria, as it is a Type I exit. The emergency exit provided on the right side of the airplane—the right flightdeck window—does not meet the minimum size for a Type III exit as required by § 25.807(g)(1). The FAA has previously granted exemptions for using the right side flightdeck window on the Boeing Model 727-200 and other cargo airplanes. Also, the supernumeraries will have a higher level of training and be physically more capable of evacuating the airplane by using the smaller exit opening provided on the right side of the airplane than would typical passengers.

In addition to not meeting the requirements of a Type III exit above, the right flightdeck window also does not meet the minimum size for a Type IV exit as required by § 25.807(i)(1) for a ditching exit. As discussed above, the utility of the right flightdeck window and its usability with the evacuation means provided have been granted in other exemptions for the Boeing Model 727-200 cargo airplane. Furthermore, the supernumeraries will have a higher level of training and be physically more capable of evacuating the airplane by using the reduced exit opening on the right side of the airplane than would typical passengers. It should be noted that, if life rafts must be installed for flights over water, they must be designed so they can be launched out the right flightdeck window.

As stated above, because of their training and physical capabilities as well as other factors, flight crewmembers are different than typical passengers, and, as such, the means required by part 25 to enable flight crewmembers to reach the ground are different from those required for passengers. As an example, ropes are allowed as the sole means of escape for flight crewmembers, but slides or equivalent means are required for passengers.

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

The FAA recognizes that supernumeraries, as opposed to passengers, may be selected and trained appropriately in the use of escape ropes and inertia reels and harnesses. In this case, the FAA considers that the petitioner's proposed installation of escape ropes (one at the entry door and two for the flightdeck windows) provides an adequate level of safety for the two supernumeraries in the petitioner's airplane configuration seated in the area just aft of the flightdeck. The following factors were considered in the FAA's decision to allow escape ropes only:

Maximum of two supernumeraries seated in the area just aft of the flightdeck;

The Boeing Model 727-200 door/window sill height;

Inertia reels are not required on other Boeing Model 727-200 cargo airplanes;

The limited number of affected airplanes; and

The expected service life of the affected airplanes.

It is acceptable to the FAA if the petitioner chooses to install inertia reels and harnesses. Such installations would require separate FAA design approval.

With respect to the lack of an assist space adjacent to the right flightdeck window, the FAA has determined that the supernumeraries will have a higher level of training than a typical passenger, and will therefore have less need for crew assistance. Additionally, in the relatively small confines of the flightdeck, the flightcrew can easily provide instructions and some physical assistance, if needed. The FAA considers that an assist space is not necessary in this case due to the size of this exit relative to the number of occupants and to the higher level of training and awareness of the occupants.

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

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. Although the petitioner has listed § 25.1447 as one of the regulations from which relief is requested, it does not request this regulation in the requested exemption section. The FAA views this omission as an oversight and, based on a review of the figures and other similar freighter configurations, we have determined that the petitioner has proposed that supplemental oxygen be provided to each supernumerary in a portable oxygen bottle. It is acceptable that supplemental oxygen be provided in portable bottles. In addition, § 25.1447(c)(1) requires that the oxygen be “immediately available” to each seated occupant. Hence, the oxygen bottles must be mounted on or immediately next to the seats, and each supernumerary must be able to don a mask and activate oxygen flow while seated.

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. Supernumeraries on the petitioner's Boeing Model 727 airplanes will not have this indication. In order 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 on the location and use of the oxygen equipment and the signals for its use. Additionally, the supplemental oxygen equipment must be sized adequately for continuous and uninterrupted use, in accordance with § 25.1441, during worst-case flight duration.

Section 25.1447(c)(1) requires that there be ten percent more oxygen masks than occupants and two masks in each lavatory. The FAA concurs that the rationale behind these requirements does not apply in this case, and therefore an exemption is warranted.

In conclusion, the FAA has determined that the existing regulations for type certification do not address occupants that are neither crew nor passengers, and an exemption from certain part 25 requirements is warranted to permit carriage of supernumerary individuals.

The FAA's decision

In consideration of the foregoing, I find that a 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, Kitty Hawk Aircargo, Inc. is hereby granted a partial exemption from 14 CFR 25.807(g)(1), 25.807(i), 25.810(a)(1), 25.813(b), 25.857(e) and 25.1447(c)(1) to the extent necessary to allow type certification of Boeing Model 727-200 series airplanes with provisions for the carriage of supernumeraries. The following limitations apply and must be documented in the limitations section of the airplane flight manual:

1. The limitations section of the airplane flight manual must contain a limitation that a maximum of two supernumeraries may occupy the area just aft of the flightdeck.
2. The supernumeraries are limited to the categories specified in §§ 121.583(a)(1) through (7).
3. The flightdeck door must be latched open during taxi, takeoff and landing when supernumeraries are on board the airplane. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure, listed in § 25.561(b). Appropriate procedures/limitations must be established to ensure

that taxi, takeoff and landing is prohibited when the flightdeck door is not latched open.

4. Supernumeraries are prohibited from being in the cargo area during flight. The pre-flight briefing must inform supernumeraries of this requirement.
5. Each supernumerary must be briefed by a flight crewmember on the use of the exits, including instruction to inspect the ground to determine whether a safe landing can be achieved before using an assist means, and emergency equipment prior to each flight.
6. The operator must determine that each supernumerary is physically able and trained to accomplish the necessary emergency procedures (e.g., climbing down the rope).
7. A supplemental oxygen bottle with a mask connected to it must be mounted on or immediately next to each supernumerary seat and be located so that each supernumerary can don the mask and activate oxygen flow while seated. The supernumeraries must be trained in the use of these oxygen units.
8. An automatically activated aural and visual decompression signal immediately recognizable throughout the supernumerary seating area must be provided to notify supernumeraries when to don oxygen masks. This signal and the accompanying procedures for donning a mask and activating oxygen flow must be included in the pre-flight briefing.
9. A flightcrew operated aural or visual annunciation that would be recognized in the supernumerary seating area must be installed to indicate, during turbulence, that persons must return to their seats. Appropriate procedures/limitations must be established to ensure that the flightcrew signals the supernumeraries to return to their seats at the onset of turbulence and for landing.

10. If life rafts must be installed for flights over water, they must be designed so they can be launched out the right flightdeck window.

Issued in Renton, Washington, on November 4, 2005.

signed by Ali Bahrami

Ali Bahrami

Manager, Transport Airplane Directorate

Aircraft Certification Service