

Exemption No. 6698

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

In the matter of the petition of

**Triad International Maintenance Corporation
(TIMCO)**

Regulatory Docket No. 28824

for exemption from 14 CFR §§ 25.807(c)(1) and
25.857(e)

PARTIAL GRANT OF EXEMPTION

By letters dated February 21, May 13, August 12, and October 1, 1997, Misters David Steinmetz, Rick Salanitri, and Mark Peterman, TIMCO, 623 Radar Road, Greensboro, NC 27410, petitioned the FAA for exemption from §§ 25.807(c)(1) and 25.857(e), to allow the accommodation of up to four supernumerary occupants forward of the main deck Class E cargo compartment on Boeing 767-200 aircraft converted by TIMCO from a passenger to an all-freighter configuration, and to deactivate the existing R1 passenger emergency escape exit.

Affected Sections of the FAR:

Section 25.807(c)(1), as amended by Amendment 25-39, requires in pertinent part that a minimum of one Type IV emergency exit be installed in each side of the fuselage for passenger seating configurations of one through nine. (This section further requires, in paragraph (a)(4), that a Type IV exit must be not less than 19 inches wide by 26 inches high, be located over a wing, and with a step-up inside the airplane of not more than 29 inches and a step-down outside the airplane of not more than 36 inches.)

ANM-97-024-E

Section 25.857(e), as amended by Amendment 25-32, defines the attributes of a Class E cargo compartment, and requires that a Class E cargo compartment may not be on any aircraft other than one utilized exclusively for the carriage of cargo (i.e., occupants other than flightcrew not permitted).

Related Sections of the FAR:

14 CFR § 25.805(a) and (b), as adopted in part 25, requires in pertinent part that unless the proximity of passenger emergency exits offers a convenient and readily accessible means of evacuation for the flightcrew, there must be an exit of prescribed characteristics on each side of the airplane in the flightcrew area.

14 CFR § 25.807(a)(7), as adopted by Amendment 25-39, defines the several required characteristics of a Type A exit, among them, in paragraph (a)(7)(i), the dimensional requirements.

14 CFR § 25.809(f)(1), as amended by Amendment 25-34, requires in pertinent part a self-supporting escape slide, or equivalent, at each passenger emergency exit.

14 CFR § 25.809(f)(2), as amended by Amendment 25-34, requires in pertinent part that the emergency egress assist means for flightcrew emergency exits may be a rope or any other means demonstrated to be suitable for the purpose.

14 CFR § 25.855(a) requires that cargo compartments must meet one of the class requirements of § 25.857.

14 CFR § 121.583 provides, in pertinent part, that when authorized, certain persons other than passengers may be carried aboard an airplane not in compliance with certain passenger-carrying requirements including those described in §§ 121.310 and 121.317.

The petitioner's supportive information is as follows:

TIMCO petitions for exemption from § 25.807(c)(1) and § 25.857(e) to permit Supplemental Type Certification of the TIMCO 767-200 freighter airplane for carriage of up to four persons in addition to two flight crewmembers in the flight compartment of the airplane

“Flight Compartment Configuration

“The flight compartment of the TIMCO 767-200 freighter airplane will be configured for the carriage of four persons in addition to two flight crewmembers. The captain's, first officer's, first

observer's, and second observer's seat locations are unchanged and identical to the Boeing 767-200 passenger airplane flight deck configuration. The TIMCO 767-200 freighter airplane shall include two additional supernumerary seat positions located forward of the cable bulkhead. The TIMCO 767-200 freighter airplane will be configured with three emergency escape exits. A description of emergency exits, assist means, and supernumerary limitations is as follows:

“Emergency Exits

“Justification for the petition for exemption from §§ 25.807(c)(1) and 25.857(e) is that there are three emergency exits, all capable of safe egress. Section 25.807(c)(1) requires a minimum of one Type IV exit on each side of the aircraft.

“The TIMCO 767-200 freighter airplane is equipped with an entry door (L1) on the left side of the airplane which can [also] be opened from the outside. This floor-level exit is 42 inches wide and 74 inches high (size of a Type A exit.). This exit is unchanged from the Boeing 767-200 passenger airplane, and exceeds all of the requirements for a Type IV exit. Access from the flight deck to the L1 door is through the flight deck entry door, and is unchanged and identical to the Boeing 767-200 passenger airplane. The cargo barrier net and partial bulkhead restrains the cargo under emergency landing conditions, and provides adequate access to the emergency exit.

“In addition, the left-hand and the right-hand flight deck windows comply with flightcrew emergency exit requirements established in § 25.805(a) and (b). The right-hand flight deck window shall be modified to allow it to be opened from the outside, matching the Boeing 767-300 configuration.

“With the exception of the addition of external controls for opening the right-hand window from the outside, the three emergency exits are unchanged from the B767-200 passenger airplane.

“Assist Means

“The TIMCO 767-200 freighter airplane is configured with two escape ropes. One each rope is located above the captain’s and first officer’s seats for use at the two flight deck windows, in compliance with § 25.809(f)(2) for flightcrew emergency exits. These ropes and their locations are unchanged and identical to the Boeing 767-200 passenger configuration.

“The emergency egress assist means at the L1 door emergency exit is a self-supporting slide that is automatically deployed upon opening the exit door. The self-supporting slide, its location, and means of deployment are unchanged and identical to the Boeing 767-200 passenger configuration.

“Supernumerary Limitations

“The carriage of the supernumeraries, or non-flight crewmembers, will be limited by the Airplane Flight Manual (AFM) to persons as defined in § 121.583(a)(1) through (7). Further limitations will state that the operator must; (a) instruct the occupants in the use of, and (b) determine that the occupants are physically able to use, the escape means provided.

“The superior ratio of two flight crewmembers to four supernumeraries on the TIMCO 767-200 freighter airplane, as compared to the respective two-to-five ratio on the Boeing 767-300F, provides a more than adequate level of management during an emergency evacuation. Thus, the supernumeraries will possess knowledge, training, and abilities beyond that expected of passengers.

“Comparable Configuration

“The TIMCO 767-200 freighter airplane is identical to the Boeing 767-300F with respect to the number of emergency exits. The three emergency exits in each configuration, i.e., the left-hand and the right-hand flight deck windows and the L1 entry door, are identical in size and location. Flight compartment occupants in the TIMCO 767-200 freighter airplane must pass through the flight compartment door in order to reach the L1 door emergency exit, which is unchanged and identical to the Boeing 767-200 passenger airplane.

“The escape provisions at the L1 door emergency exit on the TIMCO 767-200 freighter airplane are superior to that on the Boeing 767-300F, which was only provided with inertial reels to support egress. The TIMCO 767-200 freighter is equipped with a self-supporting slide which is automatically deployed upon opening the exit door. This feature is unchanged and identical to the Boeing 767-200 passenger airplane.

“The TIMCO 767-200 freighter airplane is configured for the carriage of two flight crewmembers and four supernumeraries, while the Boeing 767-300F is certified for the carriage of two flight crewmembers and five supernumeraries. The TIMCO configuration provides an obviously superior ratio, ensuring safe evacuation of all persons from the aircraft.

“The proposed AFM limitations affecting the supernumeraries for the TIMCO 767-200 freighter airplane are identical to the limitations governing the Boeing 767-300F, and are adequate for this configuration.

“Substantiation of Evacuation Capability

“Adequate emergency evacuation substantiation for the TIMCO 767-200 freighter configuration can be linked directly to the substantiation approach used to gain FAA certification for the Boeing 767-300F, and is provided as further justification in this petition for exemption.

“In their certification process, Boeing made a direct correlation between the evacuation capability of the 767-300F and the previously tested and FAA-approved Boeing 757-200PF.

“The demonstration was conducted on a passenger model 757-200 airplane modified to represent the 757-200PF in the applicable areas. The evacuation demonstration involved five males and two females ranging in age from 29 to 52 and varying in physical stature. The right-hand flight compartment window was chosen for demonstration because it was the most critical evacuation route from the flight compartment, which is also true for the TIMCO 767-200 freighter. For this test, the first officer and the captain had their seats in the forward position, seat belts fastened, and the right-hand flight compartment window latched. At the signal for evacuation, the first officer unfastened his seat belt, moved the seat aft, opened the right-hand flight compartment window, and deployed the escape rope. After the escape rope was deployed, the first officer evacuated from the airplane. After the first officer reached the ground, the five supernumeraries and the captain evacuated the airplane. The evacuation was completed in approximately 73 seconds.

“The similarities between the most critical evacuation route for the TIMCO 767-200 freighter, the Boeing 767-300F, and the Boeing 757-200PF are evident. The fact that the TIMCO 767-200 freighter has one less person to evacuate leads to the obvious conclusion that equivalent levels of safety exist for the TIMCO 767-200 freighter.

“The Boeing 767-300F incorporated inertial reels to assist evacuation from the L1 door position. Subsequent testing was accomplished by Boeing for that configuration, because it was an unproved method of evacuation from the L1 location. The right-hand flight compartment window, however, is still considered the most critical evacuation route. No similarity will be drawn to the L1 configuration on the Boeing 767-300F, for certification of the TIMCO 767-200 Freighter. The TIMCO 767-200 freighter shall retain the self-supporting slide at the L1 position. The superior capability of the retained self-supporting slide is obvious, due to the larger number of passengers the slide must support during evacuation of the Boeing 767-200 in a passenger configuration.

“In the final analysis, equivalent levels of safety exist for all possible evacuation routes for the TIMCO 767-200 freighter as compared to the previously FAA-approved Boeing 767-300F and 757-200PF airplanes.

“Conclusion

Section 25.807(c)(1) requires one Type IV exit for each side of the fuselage. This requirement provides sufficient evacuation capacity for passengers. The TIMCO 767-200 freighter airplane has three emergency exits and a proposed occupancy limit of six people. The flight compartment will be limited to a ratio of two flight crewmembers to four supernumeraries. The category of supernumeraries to be carried aboard the TIMCO 767-200 freighter conversion airplane will be limited and controlled by the AFM.

“A self-supporting slide, in compliance with § 25.809(f)(1), will be retained at the left-hand forward entry door for egress assist means. In compliance with § 25.809(f)(2), the assist means provided at the flight compartment windows will be a rope. The assist means that is provided at all three emergency exits is identical to the assist means that is provided for the Boeing 767-200 passenger airplane. The proposed AFM limitation that the operator instruct the occupants in the use of the escape means provided, and that the occupants are physically able to use those escape means, provides an equivalent level of safety.

“In view of the following facts, there will be a level of safety equal to that provided by the rules from which the exemption is sought.

“(a) There are three emergency exits for the proposed six occupants.

“(b) The evacuation capability for these six occupants will far exceed that of the Boeing 767-300F in that there will be one less occupant and a self-supporting slide at the L1 door.

“(c) The restriction that these occupants must meet the proposed AFM limitations.

“Section 25.857(e) requires that a Class E cargo compartment is one on airplanes used only for the carriage of cargo. Relief from § 25.857(e) is also sought, since compliance with that section would negate the relief sought from § 25.807(c)(1). This is consistent with the exemption granted to Boeing for the certification of the 767-300F. The preceding discussion has established that, and an equivalent level of safety shall be maintained to that provided by the rules from which exemption is sought.

“Cargo operators have a need for a variety of mission-support personnel. The safety and efficiency of these cargo missions are dependent upon these support personnel. Such personnel may be needed during flight or at the cargo airplane’s destination. The surest and most cost-effective way to transport such persons is aboard the particular cargo flight they are to support.

“Therefore, the petition, if granted, will be beneficial in improving the utility of cargo airplanes, and increasing the efficiency and safety of their operations, all of which are in the public interest.”

Additional supporting information relative to:

“1. Deactivation of Door R1.

“2. Presentation of TIMCO position without reference to similar airplane configurations.”

Deactivation of door R1

“The TIMCO 767-200 freighter modification includes the deactivation of the R1 right-hand forward service door opposite the L1 main entry door. In the passenger airplane, this door is used for servicing the G-1 galley complex, and for emergency evacuation. However, in the TIMCO freighter, the R1 door is not required for emergency egress, and must be deactivated in order to meet the aircraft payload requirements.”

“Specifically, addressing the impact on of deactivating R1, TIMCO offers the following factual information:

“• The R1 door is not required as emergency exit, since the aircraft will be equipped with three emergency exits for a crew and supernumerary count of six:

“a. Door L1 (equipped with self-supporting slide and openable from outside the aircraft).

b. Left-hand flight deck sliding window (equipped with escape rope).

c. Right-hand flight deck sliding window (equipped with escape rope and openable from outside the aircraft).

“The L1 and R1 doors, as they exist, meet the [dimensional] requirements of a Type A exit per § 25.807(a)(7). However, the Type A requirements defined in this section of the FAR are related to passenger load, and therefore do not apply to the TIMCO configuration. The L1 door with the flight deck sliding window are more than adequate for the evacuation of the six occupants.

“• Because of its location relative to the flight deck, the R1 door is the least likely exit to be used in the event of an emergency. To reach this exit, a flightcrew member or supernumerary would have to ignore a sliding window directly forward of their seated position, ignore a perfectly acceptable L1 door with self-deploying slide; and maneuver across the entire aircraft cross-section just to reach the R1 door.

“Obviously, this scenario is extremely unlikely. More predictably, an evacuating crewmember or supernumerary will egress out the flight deck sliding windows or through the Type A-sized L1 door with self-deploying slide.

“• The R1 door would be blocked in emergency landing conditions by cargo distending the cargo net. The distention of the cargo net in the various emergency landing conditions would thus render the exit useless, by blocking the exit and/or contacting the door internal tracking mechanism, thus making it impossible to open the door. This scenario may be avoided if the RT [?] forward freight container position was eliminated, however.

“The TIMCO 767-200 freighter airplane provides a level of safety which exceeds the requirements for the ratio of occupants to exits (6:3). Retention of the R1 door as a viable exit would not, in any case, enhance safety for the reasons articulated above. In terms of public interest, it should be noted that if the R1 exit is retained, cargo carrying capability must be restricted in order to maintain the exit as a viable exit, and would thus increase the operational costs of the airline operator (not in public interest). Deactivation of the R1 door per the TIMCO modification enhances the interest of the general public through increased efficiency and utility of the aircraft.”

“The forward-most cargo container is located approximately 22 inches to the right of centerline, to provide the required egress path to the L1 door when the cargo net is extended under 9g load condition. This location of the cargo container, however, presents the following difficulties in preserving the function of the R1 door.

“1. Due to the proximity of the cargo net, the R1 door bustle will impact the cargo net when opening the door. Even though there is adequate space for personnel to operate the door, it may not fully open to due the net interference.

“2. As currently designed, the cargo net has a horizontal split at the ceiling-to-net interface, allowing the operator to remove the lower portion of the net for cargo loading/unloading operations. The lower end of the upper portion of the net is attached to the ceiling for ease of use, and to ensure the net does not create a hazard to cargo loaders. Many of these net-to-ceiling attachments are in the proximity of the R1 door where the folding ceiling panel currently exists. This ceiling panel must fold up into the ceiling to allow the door to open and rotate into the overhead area. Being required to preserve the R1 door would require a redesign of the net split, and may require a combination of horizontal and vertical net splitting. This would create an added burden to the operator when loading and unloading cargo which again directly relates to the viability of the 767-200PC [?] for ABX [?] cargo operations.

“In addition to the operational difficulties discussed above, deactivation of the R1 door saves over 300 lb. in weight. The 767-200PC aircraft is weight-critical, not volume-critical. Therefore, the additional weight necessary to maintain the R1 door is directly related to viability of the 767-200PC as a cargo aircraft for ABX.

“Also, there are two crew members and no more than four supernumeraries on the flight deck. With three potential egress paths (two flight deck windows and the L1 door with self-deploying slide), there is virtually no chance that the R1 door would ever be used in an emergency situation. Public interest would be greatly compromised if the R1 door is retained.”

“Merits of the TIMCO petition for exemption

“Although acknowledging that it is the petitioner's burden to present arguments for exemption from regulatory requirements that will stand on their own merits, it is still relevant to note that the TIMCO petition for exemption is an identical exemption to that granted to Boeing for the 767-300F, except that the Boeing aircraft holds seven personnel in lieu of the six as TIMCO proposes.

“With consideration for this identical configuration, the TIMCO 767-200 freighter modification can easily stand on its own merits as demonstrated below:

“• Personnel: The ratio of two crew to four supernumeraries provides a more than adequate level of management during an emergency evacuation. As acknowledged, supernumeraries are treated as passengers to the maximum extent possible, even though supernumeraries will be personnel with “special training and abilities” as related to § 121.583. TIMCO concurs with this position, and intends to comply with the passenger safety requirements to the maximum extent possible.

“• Exits: The TIMCO 767-200 freighter is equipped with three emergency exits, all capable of safe egress. The LI entry door on the left side of the airplane can be opened from outside the aircraft. This floor-level exit is 42 inches wide and 74 inches high (the size of a Type A exit). This exit is unchanged from the Boeing 767-200 passenger airplane, and exceeds all of the requirements for a Type IV exit. In addition, the LH & RH flight deck sliding windows comply with flightcrew emergency exit requirements established in § 25.805(a)&(b). The RH flight deck sliding window shall be modified to allow it to be opened from outside the aircraft. With the exception of the addition of external controls for the RH sliding window, the three emergency exits are unchanged from the Boeing 767-200 passenger airplane, and exceed the requirements for occupant egress.

“The ratio of six occupants to three exits is more than adequate, and is optimized in terms of the exit location to the location of the occupants.

“• Assist Means: The TIMCO 767-200 freighter airplane is configured with two escape ropes (one above the captain's seat and one above the first officer's seat) for use at the flight deck sliding windows, in compliance with § 25.809(f)(2) for flightcrew emergency exits. The ropes and locations are unchanged and identical to the Boeing 767-200 passenger airplane configuration, and are adequate for the modified TIMCO configuration.

“The emergency egress assist means at the L1 door is a self-supporting slide that is automatically deployed upon opening the exit door. The slide, its location, and means of deployment is unchanged and identical to the Boeing 767-200 passenger airplane configuration, and exceeds the requirements for the TIMCO configuration.”

The petitioner's supportive information provided immediately below was initially submitted in a form that was inappropriate for review and acceptance into the public docket. After considerable delay, this information was subsequently resubmitted to the docket, but during a timeframe concurrent with the FAA's final signature processing of its response to the petition. As an accommodation to the petitioner, this final processing was interrupted and delayed to incorporate the late information into the petition. Although this information was found to not materially affect the FAA's findings, it is nevertheless included here to provide a complete record of the petitioner's position. The FAA's limited responding remarks to this final submittal may be found in the concluding comments of the FAA's analysis/summary section.

“BACKGROUND

When evaluating alternatives for widebody aircraft, ABX Air used criteria such as technical support, spares availability, and cargo carrying capability to render a decision. The B767-200 was selected over the A300-B4 and DC10-10 not for its payload capability, but for the support package that was supplied with the airplane.

“Boeing, who facilitated this transaction, was motivated to place these airplanes with ABX Air so they could sell B777's to the former 767 operator. At the time of this decision, Boeing's B767-300F was in the type certification process, and it appeared to ABX that the conversion of the B767-200 aircraft would be reasonable, given recent freighter conversion scrutiny.

“To make the B767-200 financially viable, ABX determined that one hundred and two C-Type containers (each with 1,100 lb. capability) must be carried a distance of 2,000 nm. With one hundred and two containers, blended with Boeing's spares and product support package, the B767-200 won out over the higher payload A300-B4.

“DEACTIVATION OF THE RI DOOR

“Note for the financial analysis below, the following variables are given:

Revenue per pound of cargo = \$1.82

Flights per year 720

Operational life 20 years

These data is based upon 1996 numbers and are directly supplied by ABX Air, Inc.

“Deactivation of the RI door increases the utility of the B767-200 through several means:

“a) INCREASED CARGO CAPABILITY

“Due to the proximity of the first row of cargo containers to the RI door, it would be impossible to retain a fully active RI door and one hundred and two C-type containers. The first container row starts four inches aft of the door escape slide bustle. Due to the proximity of the cargo to the door, in a 9g emergency event, the cargo will impact the RI door, rendering this alternative useless for egress. To avoid this situation, TIMCO has petitioned for exemption to § 25.807(c)(1) with the intention of deactivating the RI door. “The exemption allows for all one hundred and two containers without compromising safety.

“b) WEIGHT PENALTY (RETENTION OF R1 DOOR)

“Deactivation of the RI door removes 360 pounds from the aircraft (140 lb. for the escape slide and 220 pounds for door mechanisms). This 360 lbs. translates into the following revenue:

The expected revenue gain over the operational life of the airplane:

Gain (\$) = (15% fully loaded)(360 lb/flight)(720 flights/yr)(\$1.82/lb)(20 yr)

Gain (\$) = \$1.42 million/airplane

Since ABX Air is acquiring a minimum of twenty five airplanes for its fleet, the total expected revenue gain realized by deactivation of the RI door is \$35.4 million.

“c) EXPECTED REVENUE FOR 102nd CONTAINER

“The design payload for the B767-200 conversion is 95,100 pounds (MZFW-OEW).

Therefore, the expected revenue gain for the 102nd container over the operational life of the airplane is:

Gain (\$) = (15%)(95,100 pounds)(1/102 containers)(720 flts/yr)(\$1.82 /lb)(20 yr)

Gain(\$)= \$3.7 million/airplane

This number is not conservative, as there are times when all one hundred and two containers are used due to other operational considerations but the aircraft is not carrying the full design payload weight.

“d) DECREASED MAINTENANCE COST

“Deactivation of the RI door allows ABX to reduce maintenance costs associated with operating the B767-200. Maintenance costs are decreased as the door mechanisms no longer would require routine checks and overhaul. The costly slide maintenance program for the RI door is also eliminated.

“CURRENT NET SPLIT DESIGN

“By far the most difficult engineering challenge in this program, the 9g net is currently a 2-piece design with an upper and lower portion. The two portions are held together with a hook that is attached to the ceiling. The net split allows the cargo handlers to easily unhook the lower portion of the net and move it out of the way for easy loading/unloading of cargo. Without this split, cargo handlers would be required to maneuver a large and bulky net during ground operations, thus requiring additional personnel and raising operating costs. The net split is located as far forward as possible to keep the cargo handlers from having to slide through the net and crawl on top of the cargo to unhook the lower portion. Much of this net split is in the area of the RI door where the folding ceiling panel is located.

“RI DOOR INTERFERENCE WITH THE NET

“During the original design and FEM [?] analysis of the 9g net, it was found that the net deflections were too large to allow a 20-inch egress path to the L1 door. Also, the L1 door tracks aft into the overhead, and the net was interfering with the door fully opening for egress. To overcome these problems, the first cargo container that is turned transversely was moved right approximately 22 inches. With this revision to the container location, the net now clears the L1 door for egress and door operation, however, the container is now much closer to the RI door. Combined with the currently designed forward net split, the RI door now interferes with the net during door operation.

“The net split may be pulled further aft on the right side to clear the bi-fold ceiling panel, thus allowing the door to operate. However, the door will still interfere with the net as it translates up into the overhead ceiling, limiting the door opening for egress. Modifying the net split in this manner will require the cargo handlers to work their way around the right side of the forward-most container to unhook the net. This is a tight and restrictive area in which to maneuver. This additional burden on the cargo handlers causes delays in loading/unloading of cargo, which ABX Air cannot afford.

“NET REDESIGN FOR FULL EGRESS USING RI DOOR

“To redesign the net to ensure that the RI door is preserved for egress will require:

- Partial barrier on right side similar to that on the left side.
 - New shear ceiling design.
 - New net design, FEM, and certification.
 - New floor attachment structure.
 - Loss of at least two and potentially five containers.
 - Redesign of cargo handling system in forward fuselage area.
- As discussed, a major redesign of this nature will take several months at best.

“CONCLUSION

“Safety is maintained by making the right side cockpit window operable from outside the aircraft, and by retaining the LI door self-deploying escape slide in lieu of using an inertia reel system. Unless the net is completely redesigned, the RI door will be blocked in a 9g event. It is undetermined whether this redesign could even be accomplished, given the difficulties and the time and resources already expended.

“It is acknowledged by TIMCO that there are other emergency conditions in which the RI door may be used for egress, but only after bypassing three other potential egress routes. Also, it is unlikely that an occupant would enter the main deck cargo compartment under certain emergency conditions. Given the small occupant load (6), it is easy to see that deactivation of the RI door has little if any detrimental effect on safe egress.

“The above weight analysis shows the expected revenue loss ABX Air can expect from retaining the RI door. There will also be undetermined losses from operational complications caused by a redesign of the net and net split. It is believed by TIMCO that these losses, as well as the delay in the overall program caused by a redesign, are not in the public interest, as this makes the B767-200PC not a viable alternative for cargo operations. These airplanes are coming to a point in their life when passenger operators are looking to add new airplanes to their fleets. The ability to modify and use B767-200 aircraft as a cargo airplane benefits the entire aircraft industry as can be seen from the ABX Air example.

“It also should be noted that many of the decisions that have occurred to date were predicated upon the B767-300F and the exemption granted to Boeing. It is firmly believed by TIMCO that deactivation of the RI door will not decrease the safety of the 767-200PC, and the loss of cargo and the weight penalties of retaining the RI door are not in the public interest.”

A summary of TIMCO's petition was published in the Federal Register on July 2, 1997 (62 FR 35878). No comments were received.

The FAA's analysis/summary is as follows:

Part 121 of the FAR, e.g., § 121.583, recognizes a "person" category of occupant, as distinct from "passenger" or "crew" occupants addressed in part 25, and allows non-compliance, for operational purposes only, with certain part 121 requirements normally pertinent to passenger-carrying airplanes, passenger-carrying operations, and passenger requirements. These "persons" are commonly referred to as supernumeraries. Supernumeraries are a special class of occupant, by virtue of certain knowledge and abilities attributed to them through selection and mandatory training, who have enhanced capabilities over those which can be expected of passengers.

Regardless of any part 121 provisions allowing operations, however, part 25 type design requirements must be observed in modifying transport category aircraft for the accommodation of supernumerary or any other occupants. But part 25 contains no provisions for "persons" or "supernumeraries." As indicated above, part 25 addresses only "passenger" or "crew" occupants. In order to address this anomaly, the FAA has determined that for the purposes of applying appropriate type design requirements for supernumerary accommodations, supernumeraries are to be considered by default as passengers. Accordingly, in proposed configurations which include supernumerary accommodations which are inconsistent with part 25 passenger safety requirements, the FAA would otherwise consider those to be unacceptable. The FAA acknowledges the noted enhanced capabilities of supernumeraries, however, and is willing to entertain petitions for exemption from those requirements

Section 11.25 contains the provisions and requirements associated with the submittal and review of petitions for exemption. Among other requirements, a petitioner must address the potential adverse impact on safety that the proposed non-compliant configuration may represent, or what other means are provided which result in an equivalent level of safety to that ensured by the regulations from which exemption is sought. Additionally, the petitioner has the burden to argue to the satisfaction of the FAA that the proposed non-compliant configuration, with any attendant potential for a reduced level of safety, is compensated for by being in the public interest. In all cases, the FAA expects and shall require as conditions of any grant of exemption the retention of all passenger safety features to the maximum extent practicable.

To date, the FAA has processed, generally favorably, a number of petitions for exemption associated with the installation of accommodations for supernumerary occupants on Class E cargo compartment airplanes. In the majority of those cases, those accommodations have been in the forward portion of airplanes converted from the carriage of passengers to the carriage of

cargo only. In all of those cases, all adjacent emergency exits, with associated passenger escape means, have been retained from the original passenger configuration. Two notable exceptions are Boeing cargo airplane models 757-200PF and 767-300F, both of which are factory-built as cargo airplanes rather than being retroactively converted from passenger configurations. Among the original features of these freighter airplanes is the lack of a passenger emergency exit where the R1 passenger emergency exit is normally located on the comparable passenger version of these airplanes. The interior space on those airplanes that would otherwise have been dedicated to accommodating an R1 door, and the required access to that door, was instead utilized to accommodate additional cargo, baggage, or other features. Boeing was able to satisfactorily substantiate to the FAA that the increased utility and/or cargo-carrying capability of these airplanes, which was made feasible only by the elimination of the R1 exit, was in the public interest.

In the extant petition, TIMCO proposes in part to deactivate an existing R1 passenger emergency exit, with its included escape slide, in support of its intended conversion of 767-300 passenger aircraft. In reviewing TIMCO's petition as it has evolved over time, and from discussions with its representatives, it is clear to the FAA that TIMCO had the expectation that it would be permitted to eliminate the existing R1 exit as proposed, largely, if not solely, because the noted two Boeing cargo airplane configurations were approved without the R1 exit as an essential part of their initial design. The interior configuration of the TIMCO conversion, however, does not include any essential feature which would necessitate deactivating the R1 exit--except that TIMCO's premature cargo retention net design, developed under the misapprehension that deactivating the R1 exit would be acceptable to the FAA, is estimated to interfere to some degree with exit operation. The FAA believes that TIMCO did not fully appreciate the necessity and importance of independently providing the technical, safety, and public interest justifications required by § 11.25 for eliminating the R1 emergency exit.

Basically, TIMCO proposes to eliminate the R1 emergency exit in order to eliminate what is represented to be approximately 300 pounds of weight, and because the cargo retention net, in its current design iteration, would likely interfere with operation of the R1 door. The adverse safety impact of eliminating an otherwise available floor-level emergency exit equipped with escape slide is addressed by TIMCO by asserting essentially that the cockpit windows, with ropes, would be the preferable means of egress in an emergency, and that utilization of the R1 exit would be extremely unlikely.

In response, the FAA considers TIMCO's comparisons to the approved Boeing configurations to be inappropriate, because, as opposed to the Boeing design, there is nothing basic to nor inherent in the TIMCO conversion which would preclude retention of the R1 door; because the relatively minor weight savings claimed with deactivating the door is insufficient rationale for eliminating a required emergency exit; because no reason has been submitted to the docket

explaining why the cargo retention means can not be redesigned to permit access to a fully operable R1 emergency exit; because assertions presented in the petition which address safety implications of the proposal are considered to be wholly insupportable; and because, in view of the above, the FAA is unable to accept that TIMCO's proposal in this regard is in the public interest.

On the other hand, the FAA favorably considers TIMCO's arguments presented in their petition for exemption from the requirements of § 25.857(e), which prohibit a Class E cargo compartment in an airplane configured for anything other than the carriage of cargo. In granting this portion of the petition, the FAA notes that exemption is not sought from any other passenger safety requirements of part 25. Assuming then that automatically presented oxygen masks commonly provided for passengers are intended to be installed for the two supernumerary accommodations being added, in accordance with the requirements of § 25.1447(c)(1), the FAA advises that a particular concern unique to the carriage of supernumeraries onboard aircraft with Class E cargo compartments, and described in the following paragraph, must be satisfied as a condition of this grant:

The design of Class E cargo compartments is predicated upon implementation of the cabin decompression procedures required by § 25.857(e)(3) to control a fire until a landing can be effected. Accordingly, initially approved AFM procedures for the Boeing 767, which require raising the cabin altitude in a specified manner, shall be retained. Additionally, in order to provide for the supplemental oxygen needs of supernumerary occupants for the duration of any such event, the supplemental oxygen supply available for supernumerary occupants shall be sized for the potentially worst case duration flight operations anticipated. In order to assure that sufficient oxygen supply is available when multiple bottles may be utilized in succession to comply with this condition, each bottle shall be equipped with a gage indicating its fill status.

Additional FAA comments which respond solely to the petitioner's late submittal to the docket, as noted above in the final portion of the section devoted to the petitioners supportive information:

As discussed previously, the FAA considers it not unreasonable to expect that a cargo restraint system can be designed, configured, installed, or otherwise utilized in a manner to permit full egress capability at the required existing R1 emergency exit, and still permit conveyance of the petitioner's entire intended cargo load. With regard to the petitioner's estimation that the escape slide bustle on the R1 door will interfere with the relocated transversely installed cargo container, irrespective of any cargo restraint system design, the FAA considers that some relief from the escape slide requirements of § 25.809(f)(1) is warranted. Consistent with previously issued exemptions, the FAA considers that for applications of this nature, inertial reels may be acceptable alternatives to escape slides, provided those inertial reel installations have been

successfully demonstrated to the FAA to be suitable for the purpose in accordance with an FAA-approved test plan. An inertia reel installation at the R1 door, in lieu of the currently installed escape slide, is anticipated to facilitate any adaptation of the currently designed cargo restraint system that may be necessary to allow both full utilization of the R1 exit and the accommodation of the full cargo load desired. The petitioner's arguments of increased costs associated with major redesigns or cargo reductions, even though they may not be accepted as the sole basis for granting exemption from passenger safety requirements, therefore become moot. The FAA believes the public interest is served by this compromise, in that the petitioner's originally intended cargo carrying capability is maintained, while at the same time, all required emergency exits, with acceptable means of escape, are also maintained.

In consideration of the foregoing, I find that a partial grant of exemption is in the public interest, and is determined to not have a significantly adverse effect on the level of safety provided by the regulations. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), the portion of TIMCO's petition for exemption from the requirements of § 25.857(e) to allow modifications for the accommodation of up to two supernumeraries (in addition to two existing observer seat accommodations which may be utilized for supernumerary seating) in the aft portion of the cockpit of 767-200 aircraft modified by TIMCO from passenger to all-freighter configurations with main deck Class E cargo compartments, is granted subject to the condition described above. Additionally, exemption is granted from the escape slide requirements of § 25.809(f)(1) at the R1 door only, to permit an inertia reel installation, as discussed immediately above.

With regard to the portion of TIMCO's petition for exemption which would allow the deactivation of the existing R1 passenger emergency exit, I find that a grant of exemption is not in the public interest. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), the petition of TIMCO for an exemption from the requirements of § 25.807(c)(1) in this regard is hereby denied.

Issued in Renton, Washington, on

James V. Devany
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service