Exemption No. 8536A

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

In the matter of the petition of **Evergreen International Airlines, Inc.** for an exemption from § 25.809(f)(1) of Title 14, Code of Federal Regulations	**Regulatory Docket No. FAA-2004-19956**

GRANT OF EXEMPTION

By letter dated September 16, 2005, Mr. Kirk Carrillo, Systems Engineer, Evergreen International Airlines, Inc., 3850 Three Mile Lane, McMinnville, Oregon 97128, petitioned for an amendment to Exemption No. 8536, previously issued on April 1, 2005. That exemption granted Evergreen International Airlines, Inc., certain relief from the requirements of § 25.809(f)(1) of Title 14, Code of Federal Regulations (14 CFR) permitting the removal of the crew escape slides without reducing the upper deck occupancy on Boeing Model 747-100, -200, -200C and -200F series airplanes. The petitioner now requests an amendment to Exemption No. 8536 to add Boeing Model 747-200B, -300, -400 and -400F series airplanes.

The petitioner requires relief from the following regulations:

> **Section 25.809(f)(1)**, as amended by Amendment 25-34, requires a self-supporting slide, or equivalent, of certain specified characteristics at each passenger emergency exit to assist occupants in descending to the ground.

Related sections of the regulations:

> **Section 25.809(f)(2),** as amended by Amendment 25-34, requires a rope or other equivalent means of certain characteristics demonstrated to be suitable for the purpose at flightcrew emergency exits, to assist occupants in descending to the ground.
>
> [Note: The above 747 certification requirements of § 25.809(f)(1) and (2) are currently found in § 25.810(a)(1) and (2), respectively.]

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

The petitioner's supportive information is as follows:

"The purpose of the requested amendment is to expand the effectivity of Exemption 8536 to include the following aircraft groups:

1. 747-400F airplanes (delivered freighters).
2. 747-200 airplanes, originally delivered with two upper deck [doors] which are dimensionally equivalent to Type I emergency exits, and incorporating an FAA-approved modification from a passenger configuration to an all-cargo main deck configuration.
3. 747-200 (stretched upper deck (SUD))/-300/-400 airplanes, originally delivered with two upper deck Type A emergency exits, and incorporating an FAA-approved modification from a passenger configuration to an all-cargo main deck configuration.

"GENERAL DISCUSSION
"In an effort to reduce possible confusion over the three effectivity groups mentioned above, EIA [Evergreen International Airlines, Inc.] will separate the general discussion along these group lines.

"<u>747-400F AIRCRAFT</u>

"As stated earlier, Exemption 8536 was granted for 747-100, 747–200, 747-200C, and 747-200F airplanes in the all-cargo configuration (either delivered or converted to cargo by any FAA-approved modification). This effectivity is the same as Exemption 1870D, previously granted to the Boeing Company.

"EIA is now requesting expansion of the Exemption 8536 effectivity to include 747-400F aircraft, just as Boeing was granted Exemption 1870E. The only pertinent issue is the "mix" of flight crew versus "persons" (also referred to as supernumeraries). All of the aircraft included in Exemption 8536 and Exemption 1870D were configured with 3 flight crew and up to 5 "persons" for a total maximum upper deck occupancy of 8 "persons". While the 747-400F has all the same egress means (overhead hatch with inertia reels and one Type I door with a slide) as these other "classic" 747 aircraft, the 747-400F utilizes a two-man flight crew. Therefore, Exemption 1870E was granted to allow the -400F to operate with 2 flight crew and up to 6 "persons" for a total maximum upper deck occupancy of 8 "persons". EIA requests to include the 747-400F into our exemption with this same "mix" of 2 flight crew and up to 6 "persons" for a total maximum upper deck occupancy of 8 "persons".

"In summary, our request for the 747-400F is relief from section 25.809(f)(1) as already granted in Exemption 8536, and our rationale for including the -400F is identical to the request granted by Exemption 1870E.

"<u>747-200 AIRCRAFT WITH TWO UPPER DECK TYPE I DOORS</u>

"When Exemption 8536 was requested and granted, it only included 747 classic aircraft that have one RH side crew escape door that meets the dimensional requirements of a Type I door. This limited effectivity was to keep the request consistent with Exemption 1870D, thereby reducing possible points of confusion. There are, however, many 747-200 aircraft that were delivered with the standard RH side crew escape door, plus a mirror image crew escape door on the LH side.

"The 747 type certificate (A20WE) shows that, when equipped with emergency descent reels and harnesses, 2 doors and 25 knot slides, a 747-200 freighter can carry up to 19 "persons" in addition to the flight crew. This would then result in 3 flight crew, 2 flight crew observers, and 19 "persons" for a maximum upper deck occupancy of 24 total. This is as currently certified in the 747 type certificate.

"EIA requests relief from section 25.809(f)(1) for 747-200 freighter aircraft equipped with two Type I doors. This will allow the deletion of the two installed slides, rather than the single installed slide on the aircraft already covered by Exemption 8536, while maintaining the maximum upper deck occupancy limit of 24 total. In support of this deletion, EIA quotes the FAA analysis from Exemption 8536 in which the FAA states:

> ***The FAA recognizes that supernumerary occupants, as opposed to passengers, may be selected and trained appropriately in the use of inertia reels and harnesses. For such occupants, both ambulatory and incapacitated, the FAA considers that inertia reels and harnesses offer an acceptable escape means of emergency egress. The FAA concludes, provided certain conditions defined below are observed, that inertia reels and harnesses for a limited application of this nature can provide an equivalent level of safety to that provided by escape slides.***

"The 747 type certificate already covers the 19 "persons" freighter configuration with descent (inertia) reels and harnesses, proving the evacuation demonstration has previously been found to be acceptable to the FAA. Therefore, no new demonstration should be required after the deletion of the slides.

"<u>747-200 SUD/ -300/ -400 AIRCRAFT WITH TWO UPPER DECK TYPE A DOORS</u>

"This group of aircraft is very similar to the last group discussed, except that they have a stretched upper deck with two Type A doors installed farther aft, in lieu of the two Type I doors installed on the previous group. None of these aircraft were delivered as freighters

(there were some combis), but many have been and are still being converted to freighters by Boeing and other parties.

"Because of the aft location of the Type A doors, the upper deck slides on these aircraft still reach the ground even in a tail-down tip, therefore these aircraft do not normally have inertia reels installed for use at the Type A doors in the freighter configuration. There are still inertia reels installed on the flight deck for use out the overhead hatch, but none are provided to upper deck 'persons'.

"For this group of aircraft, EIA requests relief from section 25.809(f)(1) to allow use of inertia reels for emergency egress of "persons" in lieu of the upper deck escape slides. The chief difference, when compared to the other groups of aircraft discussed earlier is that these aircraft would require concurrent installation of inertia reels in adequate numbers to allow for egress of all upper deck occupants. The other aircraft already have the inertia reels installed.

"In light of the fact that the 747 type certificate does not currently address this egress configuration, nor provide a corresponding occupancy limit, EIA proposes the following:

"Since existing certification exists for 5 flight crew/observers and 19 "persons" in a two Type I door configuration, and since the Type A doors are easier to egress out of due to their being taller and wider, an upper deck occupancy limit of 24 on these aircraft is justified without new evacuation demonstrations. Ease of egress is based on the section 25.807 description of allowable passenger counts of 45 passengers for a pair of Type I doors versus 110 passengers for a pair of Type A doors. In addition, egress out of these specific 747 upper deck Type A doors, when compared to the 747 upper deck Type I doors, is made even easier by the fact that the Type A doors are powered outward-opening doors instead of the manually operated inward-opening (and sliding) Type I doors.

"Should an upper deck limit in excess of 24 occupants be desired, then a new evacuation demonstration/analysis to validate egress times would be required.

"SPECIFIC EXEMPTION REQUESTED

"EIA requests exemption from section 25.809 (f)(1), Amendment 25-15 (except 747-400) and Amendment 25-45 (747–400 only), to permit removal of any upper deck escape door slide(s) on all 747-100/ -200/ -300/ -400 airplanes incorporating an FAA-approved modification from a passenger configuration to an all-cargo main deck configuration, and all 747-200C, 747-200F and 747-400F airplanes incorporating an all-cargo main deck configuration. Inertia reels will be used for all emergency egress from the overhead hatch, single or double Type I doors, or double Type A doors as applicable.

“REASONS RELIEF IS REQUESTED

“In addition to the rationale provided in our original petition for exemption, EIA submits the following:

“Removal of the upper deck slide(s) on the newly petitioned group of aircraft reduces aircraft weight and thereby fuel consumption.

“Removal of the upper deck slide(s) on the newly petitioned group of aircraft reduces on-going maintenance costs associated with the slides.

“Removal of the upper deck slide(s) on the newly petitioned group of aircraft allows operators with a mixed 747 freighter fleet to standardize all their aircraft by deleting slides. This reduces training costs and possible confusion in an emergency evacuation.

“Replacement of the upper deck slide(s) with inertia reels as an egress means on the newly petitioned group of aircraft may actually enhance egress safety from a reliability standpoint. The inertia reels are simple mechanical devices with limited failure modes when compared to the complex nature of escape slides. Recent Airworthiness Directives (AD 2005-16-06) and NPRMs [notice of proposed rulemaking] (2001-NM-213-AD) have focused on in-service reports of 747 escape slides (both upper and main deck styles) which have not inflated properly when tested.

“EXEMPTION IS IN THE PUBLIC INTEREST

“EIA contends that the requested exemption is in the public interest for the following reasons:

“Avoiding the on-going maintenance costs associated with the escape slide will assist EIA in offering the lowest possible rates to our customers, both commercial and military.

“EIA crewmembers and any “persons” being carried on our aircraft will have a less confusing, and therefore safer, egress scheme. There will be no possibility of a slide being deployed when it should not be deployed. There will also be no possibility of an inadvertent slide deployment. Inadvertent slide deployments in the past have caused damage to aircraft and injuries to personnel.

“EXEMPTION WILL NOT ADVERSELY AFFECT SAFETY

“As discussed earlier, EIA quotes the FAA analysis from Exemption 8536 in which the FAA states:

> ***The FAA recognizes that supernumerary occupants, as opposed to passengers, may be selected and trained appropriately in the use of inertia reels and harnesses. For such occupants, both ambulatory and incapacitated, the FAA***

considers that inertia reels and harnesses offer an acceptable escape means of emergency egress. The FAA concludes, provided certain conditions defined below are observed, that inertia reels and harnesses for a limited application of this nature can provide an equivalent level of safety to that provided by escape slides.

"<u>OPERATION OUTSIDE OF THE UNITED STATES</u>

"EIA is an U.S. Flag carrier with international routes to, or over, many countries on all continents. We therefore request that our exemption be approved for use outside of the United States per 14 CFR 11.83.

"<u>REQUEST TO WAIVE PUBLICATION IN THE FEDERAL REGISTER</u>

"In accordance with 14 CFR 11.87, EIA requests that a finding of good cause be made for waiving publication in the Federal Register. Our rationale is:

"Granting the exemption request will not set a precedent. Any pertinent precedent has already been previously set by original certification and Exemptions 8536 and 1870D for the 747 freighter.

"The relief sought is identical in scope to that granted in Exemption 8536 for other versions of the 747 freighter.

"The inherent delaying action caused by publication in the Federal Register may cause EIA delays in standardizing our fleet of 747 freighters. At the time Exemption 8536 was granted, the EIA fleet was fully covered by the exemption. However, EIA has recently acquired two 747-200 aircraft, modified to all-cargo by an FAA-approved modification, that have two Type I doors installed as previously discussed. Delay in standardizing these aircraft, because they were not included in Exemption 8536, results in dual training expenses for crew and possible confusion in an emergency.

"EIA has filed this petition in a timely manner since acquiring the recent aircraft."

The FAA's analysis/summary is as follows:

The FAA is convinced that the petitioner has satisfactorily substantiated replacement of the evacuation slides with inertial reels and harnesses. The proposal for an inertial reel and harness as a means of emergency egress has been reviewed and found acceptable on previous exemptions, as described by the petitioner. The FAA recognizes that supernumerary occupants, as opposed to passengers, may be selected and trained appropriately in the use of inertia reels and harnesses. For such occupants, both ambulatory and incapacitated, the FAA considers that inertia reels and harnesses offer an acceptable escape means of emergency egress. The FAA concludes, provided the conditions listed in Exemption No. 8536 are observed, that inertial reels and harnesses for a limited application of this nature can provide an equivalent level of safety to that

provided by escape slides. The applicant confirms that it intends to use the inertia reels currently installed for the overhead hatch for egress out of the main door as indicated in the Boeing Model 747 Maintenance Manual.

The FAA is satisfied that there is 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 FAA's decision

In consideration of the foregoing, I find that an amendment to Exemption No. 8536 is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, Evergreen International Airlines Inc. is hereby granted an amendment to Exemption No. 8536 from 14 CFR 25.809(f)(1). The amendment is granted to the extent necessary to permit removal of the crew escape slides without reducing the upper deck occupancy on Boeing Model 747-100, -200, -200B, -200C, -200F, -300, -400 and -400F series freighter airplanes with provisions for the carriage of persons other than flight crewmembers.

Because this exemption addresses only airworthiness standards, for which the FAA is responsible as the State of Design and the State of Registry for the affected aircraft, it is unnecessary to address the petitioner's request that the exemption be approved for use outside of the United States in accordance with 14 CFR 11.83.

The Boeing Model 747-200B, -300, -400 and -400F series airplanes added to this amended exemption required an increase in the maximum occupancy, not to exceed 24 occupants. This increase is included in Type Certificate Date Sheet A20WE. Because of the increased maximum occupancy, Conditions 1 and 5 of Exemption No. 8536 are revised as follows:

> 1. In lieu of an escape slide, the emergency evacuation assist means at the entry door must be an inertia reel descent device and harness provided for each occupant. The installation of the inertia reel descent device and harness must be done by a method approved by the FAA. One acceptable method is described in Boeing Service Bulletin 747-25-2329, "Addition of Descent Devices – Freighter Upper Deck," Revision 1, dated May 14, 1976.

5. The airplane flight manual must contain a limitation that the maximum occupancy is restricted as follows:

(a) For Boeing Model 747-100, -200, -200C and -200F airplanes, the maximum number of occupants is not to exceed 8, consisting of 3 crew and 5 supernumeraries.

(b) For Boeing Model 747-200B and -300 airplanes, the maximum number of occupants is not to exceed 24, consisting of 3 crew and 21 supernumeraries.

(c) For Boeing Model 747-400 airplanes, the maximum number of occupants is not to exceed 24, consisting of 2 crew and 22 supernumeraries.

(d) For Boeing Model 747-400F airplanes, the maximum number of occupants is not to exceed 8, consisting of 2 crew and 6 supernumeraries.

All other provisions of Exemption No. 8536, together with its conditions and limitations, remain the same and are applicable to this amendment. This amendment is part of, and will remain attached to, Exemption No. 8536.

Issued in Renton, Washington, on March 17, 2006.

signed by Ali Bahrami
Ali Bahrami
Manager, Transport Airplane Directorate
Aircraft Certification Service