

Exemption No. 4725

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
SEATTLE, WASHINGTON, 98168

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In the matter of the petition of *
*
BOEING COMMERCIAL AIRPLANE COMPANY * Regulatory Docket
* No. 011NM
for an exemption from Section *
25.785(h) of the Federal Aviation *
Regulations *
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* * * * *

GRANT OF EXEMPTION

By letter dated September 2, 1986, Mr. Reginald Utting, Manager, Airworthiness, Everett Division, Boeing Commercial Airplane Company (Boeing) P.O. Box 3707, Seattle, Washington 98124, petitioned for exemption from Section 25.785(h) of the Federal Aviation Regulations (FAR) to permit type certification of the Boeing Model 767 with one flight attendant seat for a required flight attendant located at the mid-cabin of the airplane, next to an overwing exit, away from required floor level exit.

The Boeing Model 767 is pressurized, low wing, transport category airplane powered by two turbofan engines. United States Type Certificate No. A1NM was issued July 30, 1982. The type certification basis includes Part 25, as amended by Amendments 25-1 through 25-37, Amendments 25-38 through 25-45 with some exceptions, and other provisions of the FAR that are not relevant to this petition.

Section of the FAR affected:

Section 25.785(a)(7)(vi) requires that "cabin attendant seats must be in the passenger compartment near approved floor level emergency exits."

Related sections of the FAR:

Section 25.807(a)(7)(vi) requires in pertinent part, that at least one flight attendant must be adjacent to each Type A exit.

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Section 121.311(f) requires, in pertinent part, for airplanes used in air carrier service, each flight attendant must have a seat for takeoff and landing in the passenger compartment that meets the seat

requirements of Section 25.785(h).

Section 121.391(d) requires, in pertinent part, for airplanes used in air carrier service, that during takeoff landing flight attendants required by Sections 121.391(a) and (b) shall be located as near as practicable to required floor level exits and shall be uniformly distributed throughout the airplane in order to provide the most effective egress of passengers in event of an emergency evacuation.

The petitioner's supportive information is as follows:

1. With only one of five or six seats (depending on the seating configuration) for required flight attendants located away from the floor level exits, there are still four or five seats for flight attendants remaining near the four required floor level exits.
2. Location of one flight attendant seat at the mid-cabin will improve the division of passengers during an emergency evacuation and would assure that the overwing exits would be opened promptly.
3. The FAA has granted at least four exemption (Exemption Nos. 3605, 3652, 3242A and 4298A) from Sections 121.311(f) and 121.391(d) in the past to various petitioner which allowed them to seat required flight attendants net to non-floor level exits in DC-8, B-727 and B-767 airplanes.
4. The FAA has proposed via Notice of Proposed Rulemaking (NPRM) 84-21, that Section 25.785(h) be revised to allow flight attendant seats to be installed in locations other than "near required floor level exits."
5. The petitioner believes that an equivalent level of safety is provided by locating one required flight attendant seat at the mid-cabin and considers that this is in the general public safety interest.
6. The petitioner submitted a separate letter on October 15, 1986, as a follow-up to its original petition. The letter included data on an emergency evacuation demonstration the petitioner conducted September 13, 1986, on a Model 767-346 airplane. For this demonstration, there were 285 passengers and six flight attendants, two at the forward Type A exits, two at the overwing Type III exits and two at the aft Type A exits.

Data submitted by the petitioner indicated that door opening and "first passenger out the exit" times for the Type III exits were comparable to the times from a previous demonstration run on a Model 767-200 series airplane which did not have any flight attendants seated near the overwing Type III exits.

Additionally, in the same letter, the petitioner stated that the scope of the petition was to cover all Model 767 airplanes and not just the 767-300 series airplanes.

A summary of the petitioner's September 2, 1986, request for exemption was published in the Federal Register on September 17, 1986 (51 FR 32993). No comments were received.

The FAA's analysis/summary is as follows:

At the outset, we note that the petition was dated September 2, 1986, and requested that action was necessary to support a airplane delivery date of October 28, 1986. Section 11.25(b) of the FAR requires that petitions for exemption be submitted at least 120 days before proposed effective date of the exemption unless good cause is shown. The petition contains no such showing of good cause. Nevertheless, the FAA has proceeded to expeditiously in its consideration of the petition in an effort to accommodate the petitioner.

The exit configuration of the Model 767 currently consists of one pair of Type A exits at the forward end of the passenger cabin, one or two pairs of Type III exits at the mid-cabin area of the passenger cabin. Type A exits are floor level exits and Type III exits are non-floor level exits.

Five or six flight attendants generally are the required complement for the Model 767 under the operating rules of Part 121. The petitioner's proposal would allow at least one flight attendant seat to be located adjacent to each Type A exit as required by Section 25.807(a)(7)(vi).

The flight attendant seat requirements specified in Section 25.785(h) are used to provide seats for the flight attendants required by Sections 121.391(a) and (b) of the operating rules. The exemptions to Part 121 referenced by the petitioner were granted to the respective petitioners, from Sections 121.311(f) and 121.391(d). In general, the exemptions allowed one, and in some instances, two, required flight attendants to be located near approved non-floor level exits. The number of required flight attendants discussed in the petitions varied from four to six. The airplanes involved included the Boeing Models 727 and 767 and the Douglas Model DC-8.

The data submitted from the September 13, 1986, demonstration can be compared to data obtained from a previous demonstration run by the petitioner on May 9, 1982. The earlier demonstration was run on a 767-200 series airplane with one pair of Type III exits and the later demonstration was run on a 767-300 series airplane with two pairs of Type III exits. There were 255 passengers, two flight crewmembers, and six flight attendants (three seated near the forward Type A exits

and three seated near the aft Type A exits) on the 767-200 series airplane, and 285 passengers, two flight crewmembers, and six flight attendants (two seated near the forward Type A exits, two seated near the mid-cabin Type III exits, and two seated near the aft Type A exits) on the 767-300 series airplane. Despite the noted differences, a time comparison between the two demonstrations can be reasonably done for two events. The events are the "first door/hatch motion" and the "first passenger out the exit" for the various exits.

Despite the fact that there was one less flight attendant seated near each pair of Type A exits, the data from the two tests indicates that there was no degradation of performance at the Type A exits. The forward exit in the first test had initial door motion at 3.07 seconds with the first passenger out the exit at 10.89. At the aft exit the times were 3.58 and 11.85 seconds, respectively. During the second demonstration the times for the forward exit were 2.2 and 10.3 seconds, respectively, and for the aft exit 1.7 and 5.9 seconds, respectively.

At the mid-cabin, seating of flight attendants near the Type III exits appears to have enhanced the performance of these exits slightly. During the first test, without a flight attendant located near the single pair of overwing exits, the "first door/hatch motion" and "first passenger out the exit" times were 7.9 seconds and 14.36 seconds, respectively. During the second test with two flight attendants located near the two pairs of overwing Type III exits, the times were 2.0 and 5.9 seconds for first door motion and 5.5 and 11.6 seconds for "first passenger out the exit." Additionally, a comparison of the number of evacuees through the Type III exits can be made. During the first test, 38 evacuees, 14.45% of the total, went out the single open Type III exit. During the second test, 47 evacuees, 16.04% of the total, went out the forward open Type III exit and 43 evacuees, 14.68% of the total went out the aft open Type III exit. It can be seen by inspection that the performance of the mid-cabin overwing exits was slightly improved, with flight attendants located near them, in this small sample of two tests.

Finally, there was a slight improvement in the difference between the high and low time exits, referring to the time for the last evacuee on the ground from the exit, from the first to the second demonstration. The first demonstration had a low time exit of 76.22 seconds and a high time exit of 86.02 seconds for a 13.02% spread. In the second demonstration, the low time exit was 69.9 seconds and the high time exit was 78.3 seconds, a 12.0% spread. Generally, this decrease in the spread between the high and low time exits indicates that a better job of passenger distribution between exits has been done by the flight attendants. Again, based on a small sample of two tests, the location of flight attendants in the

mid-cabin appears to have enhanced the flight attendants abilities to distribute passengers to the exits evenly.

The FAA considers that the petitioner has presented a persuasive argument in light of the previously granted exemptions to the sections of Part 121 which relate closely to Section 25.785(h) and the data provided from the two emergency evacuation demonstrations. Additionally, as the petitioner pointed out, the FAA has proposed a revision to Section 25.785(h) which would allow a flight attendant seat to be located at a location other than near a required floor level emergency exit if the emergency egress of passengers would be enhanced with that location.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in Sections 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), Boeing Commercial Airplane Company is hereby granted an exemption from Section 25.785(h) of the Federal Aviation Regulations to the extent required to permit type certification of the Boeing Model 767-200 and 767-300 series airplanes with one seat for a required flight attendant located near the mid-cabin overwing Type III exits. This grant of exemption is subject to the following conditions and limitations:

1. There must be at least one seat for a required flight attendant located adjacent to each Type A exit.
2. This exemption is applicable only to Boeing 767-200 and 767-300 series airplanes which have an exit configuration specifically consisting of one forward pair and one aft pair of Type A exits and one or two pairs of overwing Type III exits.

This exemption will remain in effect unless superseded or rescinded.

Issued in Seattle, Washington on November 3, 1986.

/s/ Frederick M. Isaac
Acting Director
Northwest Mountain Region

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