

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

In the matter of the petition of

The Boeing Company

for an exemption from § 25.785(h)(2) of
Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2013-0965

DENIAL OF EXEMPTION

By letter RA-13-04792, dated November 6, 2013, Mr. Brady J. Mitchell, 777 Production Program Manager, The Boeing Company, P.O. Box 3707, Seattle, WA, 980124-2207, petitioned the Federal Aviation Administration (FAA) for an exemption from Title 14, Code of Federal Regulations (14 CFR) 25.785(h)(2). This exemption, requested for Boeing Model 777-200, -200LR, -300, and -300LR airplanes equipped with mini-suites and used for air transportation under 14 CFR part 121, seeks relief from the requirement for flight-attendant direct view of the passenger cabin.

The petitioner requests relief from the following regulation:

Section 25.785(h)(2), Amendment 25-72 and 25-88 - (h) Each seat located in the passenger compartment and designated for use during takeoff and landing by a flight attendant required by the operating rules of this chapter must be: (2) To the extent possible, without compromising proximity to a required floor level emergency exit, located to provide a direct view of the cabin area for which the flight attendant is responsible.

The petitioner supports their request with the following information:

This section quotes, in pertinent part, the relevant information from the petitioner's request, with minor edits for clarity. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at <http://regulations.gov>, in docket no. FAA-2013-0965.

The Extent of Relief Being Sought

Operators are requesting Boeing to install premium mini-suite systems in a cabin of Boeing 777, similar to those installed by other manufacturers and certified by other government agencies, without means to provide a direct view of the seated occupants from a flight attendant seated and belted position.

A typical mini-suite consists of a seat, an ottoman, and personal stowage units. To provide additional comfort, convenience and care for the passenger, every seat is surrounded by partial height partitions and doors.

Seat surrounds, being of great value to the occupants of such seat systems by providing the impression of privacy, are integral to this configuration.

The proposed configurations will therefore not comply with guidance material provided for 14 CFR 25.785(h)(2) (contained in AC 25.785-1B, various issue papers, and letters) which requires a direct view of a specific percentage of seated occupants of these mini-suites.

Boeing respectfully requests that the FAA grant an exemption for direct view in zones where mini-suites are installed.

Note: Zone A may be configured with mini-suites but is not included in this petition for the exemption since the certification basis already excludes direct view from Zone A.

Description of the Issue

14 CFR 25.785(h)(2) first and foremost considers the placement of flight attendant seats in proximity to floor level exits of prime importance. The placement of flight attendant seats to provide a direct view of the cabin area for which the flight attendant is responsible is considered of secondary importance. Of the comments submitted to the FAA during the NPRM comment period for 14 CFR 25.785(h)(2), two stated that, if galley service doors were used as emergency exits, the placement of a flight attendant seat near the exit precluded compliance with the requirement that the flight attendant be provided with direct view of the cabin area. To cover this situation, it was suggested that the requirement be conditioned to apply in so far as practicable and without compromising the proximity to required floor level exits. The FAA concurred and further stated in the preamble to the final rules that “location of the flight attendant seats near the floor level exits in this case is more important than the requirement to have a direct view of the cabin.” The final rule was revised from the NPRM proposal to address this important comment.

AC 25.785-1B (Flight attendant seat and torso restraint system installations) states the following definition of direct view:

“direct view” means direct (line of sight) visual contact with cabin area/main aisle(s), which enables the flight attendant to be made aware of passenger needs

relative to safety when the flight attendant is seated with torso restraint (safety belt and shoulder harness) fastened. Mirrors or other such devices are not acceptable equivalents to direct view, except in those cases where flight attendant proximity to the floor level emergency exit takes precedence over direct view. Video systems may be an acceptable means of direct view, if the level of conspicuity is equivalent to that provided by line of sight visibility.

Based on the FAA disposition of comments to draft AC 25.785-1B, Boeing understands that the primary intent of 14 CFR 25.785 (h)(2) is: “to make the flight attendant aware of issues in the cabin.”

Boeing asserts that the guidance associated with 14 CFR 25.785(h)(2) is prescriptive in nature requiring visibility of specific percentages of seated occupants without giving adequate consideration to inherent capabilities of newer designed aircraft and airline operational procedures. For example:

- Premium cabins that reduce the number of occupants in a zone and airplane.
- A reduced passenger concentration further reduces the probability and risk associated with those safety related events intended to be covered by the direct view regulation.
- To the extent practical, flight attendant seats are placed at floor level exits and facing the cabin thus maintaining the ability to see the exits, main aisles, and cabin areas.
- Flight attendants performing cabin inspection, in preparation for taxi, takeoff and landing, to ensure passengers’ needs relative to safety are met.
- Flight attendants ease of access to handsets for communication from the flight attendant seated/belted positions.

Boeing submits that replacing conventional seats with mini-suites in a cabin will considerably reduce the number of occupants, which inherently improves the overall safety of the airplane. This has been acknowledged by the FAA in 777 ELOS PS05-0272-C-1, as “Installation of mini-suites ... reduces the occupancy in a given area by a factor of 6. All other things being equal, the reduction in the total number of occupants in a given part of the cabin is an enhancement to safety.”

It is envisioned that a 777 premium cabin configuration with mini-suites will provide accommodation for a maximum of 18 passengers in a cabin zone where typical occupancy, based on standard configuration rules, is 49 passengers. This represents a 63% reduction in the passenger count in that area. Historical methods of compliance for direct view establish acceptable criteria to view only 50% of seats in a cabin zone. For the typical occupancy of these cabin zones, that criterion accepts that 25 seated occupants may not be in direct view. Thus providing a cabin with maximum of 18 not in direct

view, as defined by the guidance material, does not change the inherent safety of the airplane nor its occupants.

In recent years, Boeing has increasingly received requests for premium cabin configurations that create the lower density, comfort and service levels of executive airplanes. As such, Boeing has done in-depth research of the associated regulatory material. The FAA, in granting exemption 9863 for an executive aircraft noted, "Flight attendant seats should be located so that a direct view is provided for the cabin area whenever practical. For example, flight-attendant seats should not face away from the cabin. In those areas of the airplane where traditional seating arrangements are used, the FAA believes that a direct view should be provided." 777 Premium cabins are trending toward areas typical of executive aircrafts with limited number of occupants in a zone. Following the FAA considerations; 777 interior arrangements have the majority of flight attendant seats facing into the cabin which allows flight attendants to monitor the cabin as well as the exits. In a typical 777 premium cabin layout, at least one flight attendant seat is facing into the premium cabin area discussed herein. These typical arrangements provide a sufficient view into these premium cabin areas including a view of the majority of the aisles as well as the exits. Subsequent to the flight attendants cabin preparation for taxi, takeoff and landing, if a passenger leaves a mini-suite, they will be viewed in the aisle and told to return to their seat. The remainder of the interior has flight attendant seats positioned to meet the existing method of compliance for direct view of the more traditional passenger seating arrangement.

Mini-suites currently in-service on 777s have partial height partitions and doors. These designs incorporate systems and procedures, as outlined in an equivalent safety finding related to doors in the mini-suites, which will ensure that the occupants' safety is maintained. Flight attendants are also able to recognize and observe the mini-suites when performing their duties. Passengers needs relative to safety include but are not limited to: seats are in the upright position, tray tables/loose items/video monitors are stowed, and passengers are seated, belted, not smoking, and not using cell phones. Operational requirements exist [in a footnote, Boeing cites 14 CFR 121. 311(b)(e); 121.317(b)(c)(d)(f); 121.417(c)(1)(iii); 121.571(a)(1)(i)(iii); 121.577(b)(d); 121.589(c)] for these passenger safety needs.

Those operational requirements are typically met by the flight attendants performing cabin inspections in preparation for taxi, takeoff and landing, to ensure these safety needs are met. Other passenger needs relative to safety, such as preparation for evacuation and donning of oxygen masks, are managed by flight attendants through use of verbal commands regardless of ability to see the passengers as well as relying on other passengers and crowd awareness. 14 CFR 25.1423(g) requires: "For each required floor-level passenger emergency exit which has an adjacent flight attendant seat, have a microphone which is readily accessible to the seated flight attendant, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated flight attendants." As such, these handsets are available to flight attendants to address passengers when the flight attendants must remain seated and belted.

Conditions, related to direct view, as pre-requisite for installing mini-suites

The mini-suites features related to direct view include the following:

1. Each mini-suite provides accommodation for one single occupant for taxi, takeoff and landing.
2. Mini-suite door(s) will be open during taxi, takeoff and landing.
3. The hold-open retention mechanism for the mini-suite doors will hold the doors open under 14 CFR 25.561(b) emergency landing conditions.
4. There will be a secondary, backup hold-open retention mechanism for the mini-suite doors that can be used to “lock” the doors in the open position if there is an electrical or mechanical failure of the primary retention mechanism. The secondary retention mechanism will hold the doors open under 14 CFR 25.561(b) emergency landing conditions.
5. Each mini-suite will have appropriate placards, or other equivalent means provided to ensure the mini-suite doors are in the open position for taxi, takeoff and landing
6. No mechanism will be provided to latch the doors together in closed position.
7. Mini-suite doors will be openable from inside or outside with 25 lbs of force or less regardless of power failure conditions.
8. If mini-suite doors are electrically powered, the doors will remain “locked” in the open position after power loss to the mini-suite.
9. Each mini-suite door will have a discrete hold-open mechanism that cannot be easily misused by a seated, belted occupant of the mini-suite. These hold-open mechanisms will be engaged for taxi, takeoff and landing.
 - a. For an electrically powered door, this could be a deactivation switch for the door’s closing mechanism.
 - b. For mechanical doors, this could be a latching mechanism that cannot be easily activated by a seated, belted occupant of the mini-suite.

The cabin configuration related to the mini-suites and direct view shall meet the following conditions:

1. A maximum of 18 mini-suites in a 777 cabin interior arrangement.
2. At least one flight attendant seat will face into the mini-suite cabin zone, with more as necessary, to provide a view of the main aisles adjacent to the mini-suites. Aisle viewing will use the following criteria:

- a. The aisle is considered to extend from the forward edge of the first mini-suite entrance to the aft edge of the last mini-suite entrance.
 - b. An aisle is considered to be viewed if 50% (or greater) of the provided aisle width is within view using a 5 foot pole or 5th percentile female.
 - c. A 2.5th percentile female flight attendant is used for the assessment.
 - d. Head movement of the flight attendant is limited to remain on the headrest with peripheral vision of 180 degrees as per SAE standard J985.
3. Alternatively, if the aisle view cannot be met using the criteria above, it is considered equivalent if 80% of the mini-suite module entrance areas are visible. An entrance area is considered visible, if a person standing in the main aisle, directly at the seat module entrance is observable. A body depth of 12 inches is assumed from the mini-suite door/entrance into the aisle.
 4. The flight attendant seat(s) used to provide the necessary views into the mini-suite zone will be placarded to be occupied during taxi, takeoff and landing.
 5. Flight attendant handsets will be installed in accordance with 14 CFR 25.1423(g) and primarily located at the seats placarded to be occupied for taxi, takeoff and landing. In some cases, handset may be at an adjacent flight attendant seat if proximity allows unassisted verbal communication between seated flight attendants.

The procedures related to mini-suites and direct view:

The operator will assign a duty to the additional attendant on each deck where mini-suites are installed (above the minimum required by the applicable operating rules as required by 777 ELOS PS05-0272-C-1 for mini-suite installations) to perform a cabin inspection in the mini-suite zone(s) in preparation for taxi, takeoff and landing, to ensure the mini-suite occupants' needs relative to safety are met. This duty will be captured as an AFM limitation for each airplane with mini-suites installed.

Statement of Public Interest

Sale of Boeing commercial airplanes greatly contribute to the balance-of-trade, the gross domestic product and economic health of the United States. From launch of the 777 until July, 31, 2013, the 777 has captured 65% of this market.

As with most other wide-body aircraft, the 777 is to be used primarily on long-haul routes. On flights lasting upwards of 14 hours, operators desire to provide the traveling public with a very high level of comfort, care, and the impression of privacy. The ability to install mini-suites without means to view the seated occupants is an integral part of that goal.

At this time approximately 78% of 777 passenger airplanes are sold to foreign operators, of which at least 12% are operators offering premium cabins. In some countries there are privacy laws that do not allow photographs or videos of people without their knowledge and consent. The ability to install and certify mini-suites, without means to view the seated occupants, in 777 premium cabins significantly improves its marketability, thus leading to increased sales supporting a positive balance-of-trade and gross domestic product.

The petition for exemption is in essence an alternative method of achieving an appropriate level of safety, while at the same time providing features attractive to the operators. Mini-suites installed on commercial aircraft are being requested by an increasing number of aircraft operators. Many 777 operators who are requesting mini-suites also operate fleets of other airplane models, certified by other government agencies, with premium cabins configured with mini-suites without means to view the seated occupants of the mini-suites. These customers want a consistent cabin operation and passenger experience across their fleet, and will continue to require that new aircraft to their fleet include consistent designs. If they cannot obtain mini-suites with consistent designs on 777 they will order aircraft from foreign manufacturers. This results in:

- lost opportunity to sell Boeing aircraft thus reducing the balance-of-trade, the gross domestic product and economic health of the United States.
- creating an unfair competitive advantage to foreign aircraft manufacturers in this market.

Further, the public will benefit from the lower cost of travel when the operators increase their revenue and reduce their operating costs.

A majority of the flying public will see benefit from lower ticket prices. Very often, premium class passengers will pay for a very high level of comfort, care, and the impression of privacy on long-haul flights. Accordingly, aircraft operators strongly prefer to configure their cabins in such a way that the special needs of these premium class passengers can be met. One of the most popular configurations requested by a wide array of operators is mini-suites. The ability to offer mini-suites, without means to view the seated occupants, as part of the passenger experience allows the operators to generate additional revenue beyond that which would be available with more conventional seat solutions, allowing the opportunity to further reduce the cost of economy class travel. (Premium cabin seats account for 40-60% of an operator's revenue compared with 15-27% of total number of seats per flight. Source: NY Times 11/20/2011.)

The airlines will be able to keep operating costs down by having common training and operating procedures within their fleet. Many 777 operators that are requesting mini-suites also operate fleets of other airplane models which included mini-suites. The most cost effective manner of operating these aircraft is to have consistent mini-suites designs and flight attendant training with respect to mini-suite direct view. Enabling common operating procedures across a fleet not only keeps operating cost down as noted above, but avoids the potential for human error that may be introduced when procedures vary

substantially for similar products. For the reasons noted above, it is the petitioner's opinion that the overall level of safety is improved which is in the public's best interest.

Further, operating costs are kept down when weight is reduced and designs are simplified. Compliance with direct view in the mini-suites would require design changes such as the installation of camera(s) and monitor(s), or providing viewing windows into the mini-suites. Cameras/monitors and viewing windows add weight, complexity, cost and violate the occupants perception of privacy. Added weight results in increased fuel burn and thus additional cost. Complexity of design increases the initial cost of the airplane as well as operation and maintenance cost. Cost increases are typically passed on to the flying public which is not in the public interest. It is, however, in the public interest to have the flight attendant focused on each passenger in the mini-suite during the cabin preparation for taxi, take-off and landing, rather than changing the position of viewing windows or ensuring cameras and monitors are functioning properly.

The most cost effective way to ensure safety of the passenger, as it relates to direct view, is to ensure the cabin preparation for taxi, takeoff and landing is sufficiently performed. Duplicate requirements as set forth in 14 CFR 25.785(h)(2) and guidance AC 25.785-1B forcing complex designs to facilitate viewing specific percentages of seated occupants, when already viewed during the typical cabin preparation for taxi, take-off and landing, is not in the public interest.

In summary, allowing mini-suites to be installed in 777s without means to view the seated occupants will level the competitive field, and open a larger and more profitable market to the Boeing Company and its customers. Granting the Exemption expands Boeing's sales, which benefits balance-of-trade, the gross domestic product and economic health of the United States. This serves the public interest by serving economic interests of the United States in general and welfare of residents, employment and improved tax revenues of Washington State in particular. In addition, 777s with mini-suites without means to view the seated occupants improves operators' economic health, which ultimately benefits the flying public, with no compromise to their safety.

Statement of No Adverse Effect on Safety

Boeing strives to provide acceptable safety conditions so that its 777 operators can safely operate their airplane with interior configurations, cabin preparation and evacuation procedures consistent with their current fleets.

A grant of Exemption will allow consistent procedures across an operator's fleet thus maintaining safety. Many 777 operators that are requesting mini-suites also operate fleets of other airplane models, certified by other government agencies, with premium cabins configured with mini-suites without means to view the seated occupants of the mini-suites from the attendant seated and belted positions. By maintaining consistent cabin configuration approaches, flight attendant training and procedures across their fleet, each operator ensures safety of all occupants.

Further, additional systems, procedures, and personnel employed for mini-suite configurations described in the “Description of the Issue” section above will ensure the occupants’ safety. These systems ensure that the mini-suites and their installation in the airplane facilitate the flight attendants cabin preparation for taxi, takeoff, and landing where the passenger needs relative to safety are primarily addressed. The additional flight attendant on each deck where mini-suites are installed, above the minimums required by the applicable operating rules, will each have the additional (AFM limitation) responsibility to perform a cabin inspection in the mini-suite zone in preparation for taxi, takeoff and landing, to ensure the mini-suite occupants’ needs relative to safety are met. The additional flight attendant(s) can continue to monitor the mini-suite zone(s) during standard duties throughout the flight. These additional systems, procedures and personnel will maintain the level of safety.

Providing a direct view of seated occupants in the mini-suites from a flight attendant seated and belted position does not inherently increase safety as the flight attendant in most cases cannot get up to help the passenger. Relying on the cabin procedures and handsets for communication if, for example, a passenger has moved from their mini-suite to the aisle, maintains the level of safety. A review of the worldwide Commercial Transport Airplane History from 1968-1993 (up to the time frame when the ARAC direct view criteria was developed), shows that there were no reported claims in fatal accidents where the lack of direct cabin viewing was a factor contributing to accident survival rate, and no reasonable expectation that direct view would have increased the number of survivors.

The number of passengers occupying mini-suites is 5%, or less, of a typical 777 passenger capacity. Therefore providing a direct view of the seated occupants in the mini-suites does not affect safety since the premium cabin areas are a relatively small area with a low number of passengers. The flight attendant seats at the exits are typically located within about 20 to 30 feet of the passengers in the mini-suites. For these relatively small areas, if there is a passenger safety need subsequent to the cabin preparation for taxi, takeoff and landing, it could be communicated by voice due to the close proximity. Since the petition for exemption is requested to apply to the mini-suite zones only, there is no difference in the level of safety when comparing the entire product and the entire product excluding the mini-suites when consideration is given to the existing methods of compliance that do not require 100% visibility of seated occupants.

An acceptable level of safety is provided for the airplane considering familiarity of the flight attendants with the specific airplane and its interior configuration, and the wording of 14 CFR 25.785(h)(2) that places the emphasis for safety on the proximity of the flight attendant seat to the exit over the ability of the flight attendant to view the cabin area. The flight attendants will have a view of the majority of the aisles adjacent to the mini-suites and direct view compliance is shown for the remainder of the traditional seating arrangement. As such, there is no degradation in the passenger safety as a result of this requested exemption.

Conclusion

In response to customer requests, Boeing Commercial Airplanes requests exemption from 14 CFR 25.785(h)(2) Amendment 25-72 and 25-88 direct view in zones where mini-suites are installed. This request supports the installation of mini-suite seating systems, without means to view the seated occupants, in premium cabin zone of 777 airplanes.

The design and configuration of the mini-suites and the installation in the airplane will be governed such that the safety of each occupant shall not be compromised in any way.

Privileges of this Exemption Outside the United States

Per § 11.81 (h), Boeing requests that the privileges of this Exemption be extended outside of the United States. This extension of privileges is necessary for operations based within foreign countries having bilateral agreements with the United States accepting FAA 14 CFR Part 25 as their airworthiness standards for transport category aircraft. The 777 is intended for the global market place.

Federal Register publication

A summary of the petition was published in the Federal Register on February 5, 2014 [79 FR 6986]. No comments were received.

The FAA's analysis

The petitioner contends that it is in the public interest to not meet the established direct-view criteria for the 777 airplane for those areas in the airplane where mini-suites are installed. The FAA does not agree that this is in the public interest. The FAA and petitioner have developed the criteria for another Boeing airplane model for the installation of a camera system to provide the direct view within the mini-suites. Again, the petitioner contends that it is in the public interest not to install this type of video system on the 777 airplanes with mini-suites. The FAA does not agree.

The FAA has granted exemption from the flight-attendant direct-view requirements for 777 airplanes that are operated for private use only, not for hire, not for common carriage. The FAA has not granted exemption from the direct-view requirements for airplanes operated for hire and for common carriage. We do not agree that the public has a general expectation of total privacy when flying a commercially operated airplane, even in first class. The mini-suites provide more privacy than a typical seat; however, security and safety concerns preclude total privacy in these types of operation.

The petitioner's statement of no adverse effect on safety states:

Providing a direct view of seated occupants in the mini-suites from a flight attendant seated and belted position does not inherently increase safety as the flight attendant in most cases cannot get up to help the passenger.

In the Air Accidents Investigation Branch (AAIB) accident report on the 1985 accident at Manchester International Airport, in which fire engulfed the left side of a Boeing 737 airplane upon landing, the AAIB found that:

The forward cabin crew seats were on the left side of the aircraft in the forward entrance vestibule, from where the view into the cabin was restricted by a galley bulkhead. This made it difficult to see what was happening in the cabin particularly on the left side, although the purser did become aware that passengers were becoming agitated. Although in this particular case the restricted vision probably did not affect the outcome of the accident, the inability of the forward crew members to monitor conditions in the cabin from their take-off and landing position was unsatisfactory and could, in other circumstances, have been more serious.

The direct-view requirement is intended to address unforeseen or unplanned situations, where the flight attendant needs to take some action based on what they see in the cabin. The FAA finds that preventing flight attendants from having any view into the mini-suites would not provide an adequate level of safety should a hazardous event occur involving one or more mini-suites.

The petitioner does not propose any mitigating measures for the reduction in safety from eliminating direct view. The petitioner cites additional systems, procedures, and personnel employed for mini-suite configurations. However, these were accepted by the FAA as compensating features for other part 25 standards the petitioner was exempted from, thus allowing mini-suites installation. The proposed systems, procedures, and personnel do not offset loss of direct view.

The petitioner states that other airplane models that have been certified by foreign government agencies, which contain premium cabins configured with mini-suites, are not required to comply with the direct-view requirements in the certification basis of these airplanes. The FAA concedes that this may be true for non-US registered airplanes. However, airplane models with US registration are required to comply with the direct-view requirements in the certification basis of such airplanes. This FAA requirement results in a level playing field for US-registered airplanes regarding the direct-view requirements in the certification basis of these airplanes. For non-US-registered 777 airplanes, a level playing field can be achieved if the importing country accepts a deviation from the requirement for direct view of the mini-suites prior to the airplanes being exported from the US, in accordance with 14 CFR 21.329(b).

The petitioner includes a discussion of equivalent safety finding PS05-0272-C-1 for mini-suite door installations installed on the 777 airplanes. The basis of that equivalent safety finding was full compliance with all of the other requirements included in the certification basis of the 777 airplane, including the direct-view requirements of § 25.785(h)(2). Because this petition does not include any compensating features other than the limitations issued in that finding, a grant of exemption, based upon this petition, would undermine the level of safety approved by the FAA as specified in equivalent safety finding PS05-0272-C-1.

The FAA's decision

In consideration of the foregoing, I find that a grant of exemption is not in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, I deny the petition of The Boeing Company for an exemption from § 25.785(h)(2) to the extent necessary to allow installation of mini-suites with no flight-attendant direct view on Boeing Model 777 airplanes operating under part 121.

Issued in Renton, Washington, on May 27, 2014.

/s/ Michael Kaszycki

Michael Kaszycki
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Aircraft Certification Service