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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM465; Special Conditions No. 25-446-SC]

#### Special Conditions: The Boeing Company, Model 747-8; Upper Deck Occupancy

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Boeing Model 747-8 airplane. These airplanes will have novel or unusual design features associated with upper deck occupancy. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** The effective date of these special conditions is September 28, 2011. We must receive your comments by November 25, 2011.

**ADDRESSES:** You must mail two copies of your comments to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM-113), Docket No. NM465, 1601 Lind Avenue, SW., Renton, Washington, 98057-3356. You may deliver two copies to the Transport Airplane Directorate at the above address. You must mark your comments: Docket No. NM465. You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4:00 p.m.

**FOR FURTHER INFORMATION CONTACT:** Jayson Claar, FAA, Airframe and Cabin

Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 227-2194 facsimile (425) 227-1232.

**SUPPLEMENTARY INFORMATION:** The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions are impracticable because these procedures would significantly delay issuance of the design approval and thus delivery of the affected aircraft. In addition, the substance of these special conditions has been subject to the public comment process in several prior instances with no substantive comments received. The FAA therefore finds that good cause exists for making these special conditions effective upon issuance.

#### Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel about these special conditions. You can inspect the docket before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 7:30 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

If you want us to acknowledge receipt of your comments on these special conditions, include with your comments a self-addressed, stamped postcard on which you have written the docket number. We will stamp the date on the postcard and mail it back to you.

#### Background

On November 4, 2005, The Boeing Company applied for an amendment to Type Certificate Number A20WE to include the new Model 747-8 passenger

airplane. The Model 747-8 is a derivative of the 747-400. The Model 747-8 is a four-engine jet transport airplane that will have a maximum takeoff weight of 975,000 pounds, new General Electric GENx-2B67 engines, and the capacity to carry 605 passengers.

The Model 747-8 design offers seating capacity on two separate decks: The main deck with a maximum passenger capacity of 495 and the upper deck with a maximum passenger capacity of 110. Occupants can move between decks via a staircase located near door 2 on the main deck of the airplane in the forward part of the cabin. The staircase is located in the aft end of the upper deck passenger compartment. The regulations do not adequately address a passenger airplane with separate decks for passenger occupancy, thus the FAA considers this to be a novel design, and special conditions are required.

#### Type Certification Basis

Under the provisions of Title 14 Code of Federal Regulations (14 CFR) 21.101, Boeing must show that the Model 747-8 (hereafter referred to as the 747-8) meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-117, except for earlier amendments as agreed upon by the FAA. These regulations will be incorporated into Type Certificate No. A20WE after type certification approval of the 747-8.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 25) do not contain adequate or appropriate safety standards for the 747-8 because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design features, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design features, these special conditions would also apply to the other model.

In addition to the applicable airworthiness regulations and special conditions, the 747-8 must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the

noise certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in § 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.101.

#### Novel or Unusual Design Features

The Boeing Model 747-8 will incorporate the following novel or unusual design features: seating capacity on two separate decks, a main deck with a maximum passenger capacity of 495 and an upper deck with a maximum passenger capacity of 110, and a staircase to facilitate occupant movement between the decks.

#### Discussion

The regulations governing the certification of the 747-8 do not adequately address the certification requirements for a two-deck passenger airplane. The Airbus A380-800 and all of the earlier Boeing 747 passenger airplane models were certified with seating capacity on two separate decks. When the seating capacity of the upper deck of the Boeing 747 exceeded 24 passengers, the FAA issued Special Condition No. 25-61-NW-1 for a maximum seating capacity of 32 passengers on the upper deck for take-off and landing. A second set of special conditions, Special Condition No. 25-71-NW-3, was issued to include airplanes up to a maximum seating capacity of 45 passengers on the upper deck for take-off and landing. The second set of special conditions was modified to address airplanes with a maximum seating capacity of 110 passengers on the upper deck for take-off and landing. Special Conditions No. 25-326-SC for the Airbus A380-800 allowed a seating capacity on two separate decks: The main deck with a maximum passenger capacity of 542 and the upper deck with a maximum passenger capacity of 308. Although these previously issued special conditions provided a starting point for developing the 747-8 special conditions, the 747-8 special conditions are specific to the unique aspects of this airplane's design.

The upper deck of the 747-8 has one pair of exits at station 690, which is located approximately in the forward one-third of the upper deck passenger cabin. The stairway between the main deck and the upper deck is located in the aft end of the upper deck passenger compartment. Depending on the interior arrangement of the upper deck, access to the pair of exits on the upper deck can be reduced. This pair of exits could be rated as Type A, Type C, or Type I exits. These exit configurations and stairway

evacuation route are not addressed in the regulations.

Current regulations do not address the design of the emergency lighting system(s) for two-deck airplanes including the separation of the systems between the two decks and the operational requirements of the systems when considering a single transverse vertical separation of the fuselage during a crash landing.

Additionally, with a two-deck airplane, there are concerns with communications between the two decks and between each deck and the flight deck.

The FAA issued a set of special conditions for the 747-8, Special Conditions No. 25-430-SC, specifying the design requirements of the stairway connecting the main and upper decks, including structural design, placement within the airplane, lighting, and signage.

The following special conditions address additional elements to support evacuation between decks of the 747-8 airplane in an in-flight emergency.

#### Applicability

As discussed above, these special conditions are applicable to the Model 747-8. Should Boeing apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design features, the special conditions would apply to that model as well.

#### Conclusion

This action affects only certain novel or unusual design features on Model 747-8 airplanes. It is not a rule of general applicability.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, because a delay would significantly affect the certification of the airplane, which is imminent, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon issuance. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

#### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

#### The Special Conditions

■ Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Boeing Model 747-8 airplanes.

##### 1. Passenger Emergency Exits

(a) The upper deck passenger occupancy is limited to 110 with one pair of Type A exits. If, due to the interior arrangement, the upper deck exits are rated as Type I, the upper deck passenger occupancy is limited to 45. If, due to the interior arrangement, the upper deck exits are rated as Type C, the upper deck passenger occupancy is limited to 55. The centerline of these exits is located at station 690 on the upper deck.

##### 2. Emergency Lighting System

(a) The upper deck emergency lighting system power supplies must be independent of the main deck emergency lighting system power supplies.

(b) The upper deck emergency lighting system must be designed so that, after any single transverse vertical separation of the fuselage during a crash landing, not more than 25 percent of all required electrically illuminated emergency lights in the upper deck are rendered inoperative, in addition to the upper deck emergency lights that are directly damaged by separation.

##### 3. Inter-deck Communication

(a) An intercom and a two-way alerting means between passenger decks and between each passenger deck and the flightdeck must be provided that meet the following requirements:

(1) They must remain operable in the event of the loss of the main power supply.

(2) They must be capable of providing crewmembers on all decks an immediate indication of emergency situation on any deck.

Issued in Renton, Washington, on September 28, 2011.

**Ali Bahrami,**

*Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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