

certification requirements of 14 CFR part 36.

Special conditions, as defined in § 11.19, are issued in accordance with § 11.38 and become part of the type certification basis in accordance with § 21.101(b)(2) Amendment 21-69, effective September 16, 1991.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, the special conditions would also apply to the other model under the provisions of § 21.101(a)(1).

Novel or Unusual Design Features

The Boeing Model 747SP airplane will incorporate a novel or unusual design feature; specifically, the aft lower lobe compartment will be used as a combined service compartment and Class C cargo compartment.

Discussion

The requirements for lower deck service compartments (in § 25.819) are incompatible with the requirements for cargo compartments (in §§ 25.855, 25.857, and 25.858). For example, to use the fire control system of a Class C cargo compartment, the compartment must be unoccupied, because the means of fire control is to flood the compartment with fire suppressant. The fire control system of a service compartment, however, would not normally utilize a flood-type fire suppressant, since the compartment might be occupied.

The requirements in these special conditions allow the aft lower lobe to be used as a combined service compartment and Class C cargo compartment during flight. To make this concept work, the special conditions require certain visible and audible warnings, placards and limitations, evacuation routes, equipment, and training; the special conditions also establish requirements for use of ladders between the main deck and the aft lower lobe service/cargo compartment.

The applicant has not proposed a means of satisfying regulatory requirements governing occupancy of the aft lower lobe service/cargo compartment during taxi, takeoff, and landing. Therefore, the FAA will specify appropriate limitations for such occupancy.

Special Condition 1—Visible and Audible Warnings

Currently, § 25.819 specifies that a service compartment may be occupied and does not need to be evacuated

under certain normal conditions or under certain unsafe conditions (e.g., in the case of fire, the occupant could function as a firefighter). Sections 25.855 and 25.857, however, specify that a Class C cargo compartment must not be occupied, that fire detection must be automatic, and that fire suppression must rely on a total flood system. To maintain the advantages of both a service compartment and a Class C cargo compartment, certain warnings need to be provided.

Special Condition 1a. requires a visible advisory in the cockpit to notify the flightcrew when the aft lower lobe service/cargo compartment is occupied. The potential exists that the aft lower lobe service/cargo compartment may inadvertently be occupied when it should not be, such as during taxi, takeoff or landing or during certain emergencies. Special Condition 1(a) ensures that the flightcrew is aware that the aft lower lobe service/cargo compartment is occupied and that the flightcrew takes appropriate action to evacuate the compartment before flooding it with fire suppressant. There must be a placard or sign nearby which indicates that the light means that the compartment is occupied.

Special Condition 1b. requires an “on/off” visible warning stating “Do Not Enter” (or similar words) to be located outside and on or near the door from the main deck to the aft lower lobe service/cargo compartment. The warning is to be controlled from the flight deck to prevent someone from entering the aft lower lobe service/cargo compartment when it should not be occupied, such as during taxi, takeoff or landing or when smoke or fire has been detected. Opening the door during a fire would degrade the effectiveness of the fire suppressant and allow smoke, flame, and/or fire suppressant into the cabin.

Special Condition 1c. requires a visible and audible warning in the aft lower lobe service/cargo compartment to notify an occupant that he or she must evacuate the compartment. This warning must be one which can be seen and heard from any part of the compartment. The visible and audible warning is to be controlled from the flight deck. Because the aft lower lobe service/cargo compartment may be occupied on the ground or in the air, a warning must be provided to notify an occupant to leave the compartment prior to taxi, takeoff or landing or during certain emergencies (other than fire, which is dealt with under Special Condition 1(e)). A visible warning is required, in case the audible warning becomes masked or distorted by engine, equipment, or ground noises.

Special condition 1d. requires a visible and audible warning in the aft lower lobe service/cargo compartment to notify an occupant of the need to use a portable oxygen bottle in the event of decompression. This warning must be one which can be seen and heard from any part of the compartment and must be distinct from other warnings in the compartment to prevent confusion and to elicit correct action. The decompression warning must be automatic (i.e., not require separate crew action) to ensure that an occupant of the aft lower lobe service/cargo compartment does not delay putting on the mask attached to the portable oxygen bottle. This section of the special conditions is partially in lieu of the visible effect provided by the automatic presentation feature required by § 25.1447.

Special Condition 1e. requires a visible and audible warning in the aft lower lobe service/cargo compartment when a fire is detected to notify an occupant that he or she must evacuate the compartment. The warning must be one which can be seen and heard from any part of the compartment and must be distinct from other warnings in the compartment in order to prevent confusion and to elicit the correct actions. The fire or smoke detection warning must be automatic (i.e., not require or depend on separate crew action) to ensure that an occupant of the aft lower lobe service/cargo compartment leaves before the flightdeck crew releases fire suppressant in the compartment.

Special Condition 2—Placards and Limitations

The aft lower lobe service/cargo compartment must be evacuated if a fire occurs. In addition, there must be a way to prevent access into the compartment during taxi, takeoff or landing or in the event of a fire. Placards and limitations are specified for these situations.

Special Condition 2a. requires a placard to be located outside the hatch to the aft lower lobe service/cargo compartment doors, indicating that access is limited to one crewmember trained in evacuation procedures. The accommodations and the availability of only one oxygen bottle necessitate limiting access.

Special Condition 2b. requires placards to be located inside and outside the hatches of the aft lower lobe service/cargo compartment, indicating that the compartment hatch must remain closed, except when someone is entering, occupying, or leaving the compartment. The smoke and fire detection and suppression systems are