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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 25**

**[Docket No. FAA-2019-0330; Notice No. 25-19-05-SC]**

**Special Conditions: The Boeing Company Model 777-9 Series Airplane; Overhead Flight Attendant Rest Compartment.**

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

**ACTION:** Notice of proposed special conditions.

**SUMMARY:** This action proposes special conditions for The Boeing Company (Boeing) Model 777-9 series airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This design feature is associated with the installation of an overhead flight attendant rest (OFAR) compartment. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed 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:** Send comments on or before [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Send comments identified by Docket No. FAA-2019-0330 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, S.E., Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

*Privacy:* The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the *Federal Register* published on April 11, 2000 (65 FR 19477-19478).

*Docket:* Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Shannon Lennon, Airframe and Cabin Safety Section, AIR-675, Transport Standards Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration,

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## **SUPPLEMENTARY INFORMATION:**

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

### **Background**

On April 24, 2018, The Boeing Company applied for an amendment to Type Certificate No. T00001SE to include the new Model 777-9 series airplane. The Boeing Model 777-9 series airplane, which is a derivative of the 777-300ER currently approved under Type Certificate No. T00001SE, is a twin-engine, transport category airplane with seating for up to 495 passengers depending upon airplane configuration, and a maximum takeoff weight of approximately 775,000 lbs.

### **Type Certification Basis**

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.101, Boeing must show that the Model 777-9 series airplane continues to meet the applicable provisions of part 25, as amended by amendments 25-1 through 25-139, and parts 26, 34, and 36, and the regulations listed in Type Certificate No. T00001SE or the applicable

regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Boeing Model 777-9 series airplane 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 feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Boeing Model 777-9 series airplane 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 14 CFR 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 777-9 series airplane will incorporate the following novel or unusual design features:

This airplane will have an installation of an OFAR compartment. The OFAR compartment of the Boeing Model 777-9 series airplane is unique to part 25 due to its design, location, and use on the airplane. This compartment is particularly unique in that

it is located in the overhead area of the passenger compartment and crewmembers may occupy this compartment for crew rest purposes during flight.

## **Discussion**

Boeing has previously installed certified OFAR compartments on Boeing Model 777 series airplanes in varied locations, such as the main passenger seating area, the overhead space above the main passenger cabin seating area, and below the passenger cabin seating area within the cargo compartment. In each case, the Administrator determined that the applicable regulations did not provide all of the necessary requirements because each installation had unique features by virtue of its design, location, and use on the airplane.

When the Administrator finds that the applicable airworthiness regulations do not contain adequate or appropriate safety standards because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16. The special conditions contain safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

For the Boeing Model 777-9 series airplane, the OFAR compartment is located in the overhead space, above the main passenger cabin seating area, adjacent to Door 5. The OFAR compartment will contain six, eight, or ten private berths depending upon customer configuration. Additionally, only trained crewmembers will occupy the OFAR compartment in flight, not during taxi, takeoff, or landing. Crewmembers will access the OFAR compartment from the main deck by stairs through a vestibule. In addition, a secondary evacuation route, which opens directly into the main passenger seating area,

will be available as an alternate route for evacuating occupants of the compartment. The compartment will provide a smoke detection system, an oxygen system, and occupant amenities.

This Boeing Model 777-9 series airplane OFAR compartment is unique to part § 25.853 (a), (e), and (h) due to its design, location, and use on the airplane. This compartment is particularly unique in that it is located in the overhead area of the passenger compartment and crewmembers may occupy this compartment for crew rest purposes during flight. Due to the novel or unusual features associated with the installation of this compartment, the FAA considers special conditions necessary to provide a level of safety equal to that established by the airworthiness regulations incorporated by reference in the G-1 Issue Paper for the Boeing Model 777-9 series airplane.

Boeing originally requested that Special Conditions No. 25-230-SC (68 FR 17513, April 9, 2003) for the OFAR compartment be made applicable to the Boeing Model 777-9 series airplane via collector issue paper. Subsequent to the issuance of Special Conditions No. 25-230-SC, the FAA issued Special Conditions No. 25-419-SC (76 FR 10482, February 25, 2011), for OFAR compartments allowed to be occupied during flight on Boeing Model 787 series airplanes. In consideration of these special conditions, which reflect the current methodology for addressing remote OFAR compartments, new special conditions are proposed for the Boeing Model 777-9 series airplanes.

The proposed 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.

### **Applicability**

As discussed above, these special conditions are applicable to the Boeing Model 777-9 series airplane. 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 feature, these special conditions would apply to that model as well.

### **Conclusion**

This action affects only certain novel or unusual design features on one model series airplane. It is not a rule of general applicability.

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

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

### **Authority Citation**

The authority citation for these special conditions is as follows:

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

### **The Proposed Special Conditions**

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Boeing Model 777-9 series airplane.

#### **Overhead Flight Attendant Rest (OFAR) Special Conditions**

1. **OFAR Compartment Occupancy.** Occupancy of the OFAR compartment is limited to the total number of installed bunks and seats in each compartment. An

approved seat or berth—able to withstand the maximum flight loads when occupied for each occupant permitted in the OFAR compartment—must be available. Maximum occupancy in the OFAR compartment is six, eight, or ten crewmembers during flight depending upon customer configuration.

- a. Appropriate placards must be located inside and outside each entrance to the OFAR compartment to indicate:
  - (1) The maximum number of occupants allowed during flight.
  - (2) Occupancy is restricted to crewmembers who are trained in the evacuation procedures for the OFAR compartment.
  - (3) Occupancy is prohibited during taxi, take-off, and landing.
  - (4) Smoking is prohibited in the OFAR compartment.
  - (5) That stowage in the OFAR compartment must be limited to emergency equipment, airplane-supplied equipment (e.g., bedding), and crew personal luggage; the stowage of cargo and passenger baggage is not allowed.
- b. At least one ashtray must be located on both the inside and the outside of any entrance to the OFAR compartment.
- c. A limitation in the airplane flight manual, or other means, must be established to restrict occupancy to crewmembers, which the pilot in command has determined to be trained in the emergency procedures for the OFAR compartment.

- d. A limitation in the airplane flight manual, or other means, must be established to restrict occupancy to crewmembers that have received training to be able to rapidly use the evacuation routes of the OFAR compartment.
- e. A means must be in place for any door installed between the OFAR compartment and the passenger cabin to be quickly opened from inside the compartment, even when crowding occurs at each side of the door.
- f. For all doors installed in the OFAR compartment, a means must be in place that precludes anyone from being trapped inside the OFAR compartment. If a manufacturer or operator installs a locking mechanism on a door, it must be capable of being unlocked from the outside without the aid of special tools. The lock must not prevent opening from the inside of the OFAR compartment at any time.
- g. The means of opening doors and hatches to the OFAR compartment must be simple and obvious. Crewmembers must be able to close OFAR compartment doors and hatches from the main passenger cabin. Doors or hatches that separate the OFAR compartment from the main deck must not adversely affect evacuation of occupants on the main deck, for example, by slowing evacuation by encroaching into aisles, or causing injury to those occupants during opening of doors, or while doors are opened.

2. **Emergency Evacuation Routes.** At least two emergency evacuation routes must be available for occupants of the OFAR compartment to evacuate rapidly to the main cabin. OFAR compartment doors must be able to close these evacuation routes from the main passenger cabin after evacuation. In addition—
- a. These routes must be located with sufficient separation within the OFAR compartment to minimize the possibility of an event either inside or outside of the OFAR compartment rendering both routes inoperative.
  - b. The routes must be designed to minimize the possibility of blockage, which might result from fire, mechanical or structural failure, or persons standing below or against the OFAR compartment outlets.
  - c. One of the two OFAR evacuation routes should not be located where egress from the OFAR compartment may be impeded, during times when normal movement or occupancy is allowed, or evacuation by passengers occurs (for example, the main aisle, cross aisle, or galley complex). If an evacuation route is in an area where normal movement of passengers occurs, it must be demonstrated that passengers would not impede egress to the main deck.
  - d. If low headroom is at or near the evacuation route, provisions must be made to prevent or to protect occupants of the OFAR compartment from head injury.
  - e. Use of evacuation routes must not depend on any powered device.
  - f. If an OFAR compartment outlet is over an area of passenger seats, a maximum of five passengers may be displaced from their seats temporarily during the process of evacuating an incapacitated person(s).

- g. If an evacuation procedure involves the evacuee stepping on seats, the seats must not be damaged to the extent that they would not be acceptable for occupancy during an emergency landing.
  - h. OFAR compartment emergency evacuation procedures—including procedures for emergency evacuation of an incapacitated occupant from the OFAR compartment—must be established. The applicant must transmit all of these procedures to each operator for incorporation into its training programs and appropriate operational manuals
  - i. A limitation must be included in the airplane flight manual, or other suitable means, to require that crewmembers are trained in the use of the OFAR compartment evacuation routes.
3. **Evacuation of Incapacitated Person.** A means must be available for evacuating an incapacitated person (representative of a 95th percentile male) from the OFAR compartment to the passenger cabin floor.

**Exit Signs and Placards.** The applicant must provide the following exit signs and placards in the OFAR compartment, which meet the following criteria:

- a. At least one exit sign, located near each OFAR compartment outlet, meeting the emergency lighting requirements of § 25.812(b)(1)(i).
- a. One allowable exception is an exit sign having a reduced background area of no less than 5.3 square inches (excluding the letters) that is installed where the material surrounding the exit sign is light in color (such as white, cream, or light beige).

- b. If the material surrounding the exit sign is not light in color, a sign with a minimum of a one-inch-wide background border around the letters is acceptable. Another allowable exception in an OFAR compartment is a sign with a symbol that the FAA has determined to be equivalent for use as an exit sign that meets § 25.811(d).
  - c. An appropriate placard for general access located conspicuously on or near each OFAR compartment door or hatch that defines the location and the operating instructions for access to and operation of the outlet door or hatch.
  - d. Placards must be readable from a distance of 30 inches under emergency lighting conditions.
  - e. The door handles, hatch handles, and operating-instruction placards required by Special Condition 4(d) of these special conditions must be illuminated to at least 160 micro lamberts under emergency lighting conditions.
5. **Emergency Illumination.** A means must be available, in the event of failure of the aircraft's main power system, and of the normal OFAR compartment lighting system, for emergency illumination to be automatically provided for the OFAR compartment.
- a. This emergency illumination must be powered independent of the main lighting system.
  - b. The sources of general cabin illumination may be common to both the emergency and the main lighting systems, if the power supply to the emergency lighting system is independent of the power supply to the main lighting system.

- c. The emergency illumination level must be sufficient to allow occupants of the OFAR compartment to locate and move to the main passenger cabin floor by means of each evacuation route.
  - d. The emergency illumination level must be sufficient, with the privacy curtains in the closed position, for each occupant of the OFAR compartment to locate a deployed oxygen mask required by Special Condition 13 of these special conditions.
6. **Two-Way Voice Communications.** A means must be available for two-way voice communications between crewmembers on the flight deck and occupants of the OFAR compartment.
- a. Two-way communications must also be available between occupants of the OFAR compartment and each flight attendant station in the passenger cabin that is required per § 25.1423(g) to have a microphone for the public address system.
  - b. The public address system must be able to communicate the relevant safety information to the crewmembers in the OFAR compartment (for example, fire in flight, aircraft depressurization, and preparation of the compartment for landing).
7. **Emergency Alarm System.** A means must be available for manual activation of an aural emergency alarm system, audible during normal and emergency conditions that enable crewmembers on the flight deck and at each pair of the required floor-level emergency exits to alert occupants of the OFAR compartment of an emergency. The use of a public address or crew interphone system is

acceptable, provided an adequate means of differentiating between normal and emergency communications is incorporated. The system must be powered in flight and after the shutdown or failure of all engines and auxiliary power units for a period of at least ten minutes.

8. **Seatbelt Fasten Signal.** A signal, readily detectable by seated or standing occupants of the OFAR compartment, must be in place to indicate when seat belts should be fastened.
  - a. If the OFAR compartment has no seats, at least one means must be provided to cover anticipated turbulence (e.g., sufficient handholds).
  - b. Seatbelt-type restraints must be provided for berths and must be compatible for the sleeping position during cruise conditions.
  - c. A placard on each berth must require that these restraints be fastened when occupied.
  - d. If compliance with any of the other requirements of these special conditions predicates a specific head position, a placard must identify that head position.
9. **Protective Breathing Equipment (PBE).** In lieu of the requirements specified in § 25.1439(a) pertaining to PBE in isolated compartments, and to provide a level of safety equivalent that is provided to occupants of an isolated galley, the following equipment must be provided in the OFAR compartment:
  - a. Two PBE devices suitable for firefighting, or one PBE for each hand-held fire extinguisher, whichever is greater. All PBE devices must be approved to Technical Standard Order (TSO)-C116 or equivalent.

- b. At least one approved, hand-held fire extinguisher appropriate for the kinds of fires likely to occur.
- c. One flashlight.

**NOTE:** Additional PBE devices and fire extinguishers in specific locations, beyond the minimum numbers prescribed in Special Condition 9, may be required as a result of the egress analysis accomplished to satisfy Special Condition 2(a) of these special conditions.

**10. Smoke and fire detection system.** Smoke and fire detection system(s) must be provided that monitor each occupiable area within the OFAR compartment, including those areas partitioned by curtains or doors. The applicant must conduct flight tests to show compliance with this requirement. Each smoke or fire detection system(s) must provide:

- a. A visual indication to the flight deck within one minute after the start of a fire.
- b. An aural warning in the OFAR compartment.
- c. An aural or visual warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, taking into consideration the locations of flight attendants throughout the main passenger compartment during various phases of flight.

**11. Built-in fire suppression system.** The OFAR compartment must be designed such that fires within the compartment can be controlled without a crewmember having to enter the compartment (i.e., built-in fire suppression system), or the design of the access provisions must allow crewmembers equipped for firefighting to have unrestricted access to the compartment. The time for a crewmember on the main deck to react to the fire alarm, to don the firefighting

equipment, and to gain access must not exceed the time for the compartment to become smoke-filled, making it difficult to locate the fire source. The acceptable duration that a built-in fire suppression system can be maintained must be verified by certification flight-testing.

12. **Hazardous Smoke and Extinguishing Agent.** The applicant must provide a means to prevent hazardous quantities of smoke or extinguishing agent originating in the OFAR compartment from entering the flight deck, passenger cabin, or any other occupiable compartment.
- a. Small quantities of smoke may penetrate from the OFAR compartment into other occupied areas during the one-minute smoke detection time.
  - b. Firefighting procedures must ensure that crewmembers close all doors and hatches at the OFAR compartment outlets after evacuation of the compartment and during firefighting to minimize smoke and extinguishing agent entering other occupiable compartments.
  - c. Hazardous quantities of smoke may not enter any occupied compartment while a crewmember accesses an OFAR compartment to manually fight a fire there. The amount of smoke entrained by a crewmember exiting the OFAR compartment is not considered a hazardous amount.
  - d. Smoke entering any occupiable compartment, when access to the OFAR compartment is open for evacuation, must dissipate within five minutes after the access to the OFAR compartment is closed.
  - e. The applicant must conduct flight tests to show compliance with this requirement.

**13. Supplemental Oxygen System.** A supplemental oxygen system within the OFAR compartment that supplies oxygen in the event of decompression must provide the following:

- a. At least one oxygen mask for each seat and berth in the OFAR compartment.
- b. If a destination area, such as a changing area, is provided in the OFAR compartment, an oxygen mask must be readily available for each occupant who can reasonably be expected to be in the destination area. The maximum number of required oxygen masks within the destination area is limited to the placarded maximum occupancy of the OFAR compartment.
- c. An oxygen mask must be readily accessible to each occupant who can reasonably be expected to be moving from the main cabin into the OFAR compartment, moving around within the OFAR compartment, or moving from the OFAR compartment to the main cabin.
- d. The supplemental oxygen system must provide an aural and visual alert to warn occupants of the OFAR compartment to don oxygen masks in the event of decompression.
  - (1) The aural and visual alerts must activate concurrently with deployment of the oxygen masks in the passenger cabin.
  - (2) To compensate for sleeping occupants, the aural alert must be heard in each section of the OFAR compartment and must sound continuously for a minimum of five minutes or until a reset switch within the OFAR compartment is activated.

- (3) A visual alert that informs occupants that they must don an oxygen mask must be visible in each section.
- e. A means must be in place by which oxygen masks in the OFAR compartment can be manually deployed from the flight deck.
- f. The applicant must establish approved procedures for OFAR occupants in the event of decompression. The applicant must transmit these procedures must be transmitted to the operator for incorporation into its training programs and appropriate operational manuals.
- g. The supplemental oxygen system for the OFAR compartment must meet the same 14 CFR part 25 regulations for the supplemental oxygen system for the passenger cabin occupants, except for the 10 percent additional masks requirement of 14 CFR 25.1447(c)(1).
- h. The illumination level of the normal OFAR compartment lighting system must automatically be sufficient for each occupant of the compartment to locate a deployed oxygen mask.

14. **Divided OFAR Compartments.** The following requirements apply to OFAR compartments that are divided into several sections by the installation of curtains or partitions:

- a. A placard is required adjacent to each curtain that visually divides or separates, for example, for privacy purposes, the OFAR compartment into smaller sections. The placard must require that the curtain(s) remains open when that section is unoccupied. The vestibule section adjacent to the stairway is not considered a private section and, therefore, does not require a placard.

- b. For each section of the OFAR compartment created by the installation of a curtain, the following requirements of these special conditions must be met with the curtain open or closed:
  - (1) No-smoking placard (Special Condition 1),
  - (2) Emergency illumination (Special Condition 5),
  - (3) Aural emergency alarm system (Special Condition 7),
  - (4) Seatbelt-fasten signal or return-to-seat signal as applicable (Special Condition 8),
  - (5) Smoke or fire detection system requirement (Special Condition 10), and
  - (6) Oxygen system (Special Condition 13).
- c. OFAR compartments that are divided by curtains to the extent that evacuation could be adversely affected must have exit signs directing occupants to the primary stairway outlet. The exit signs must be provided in each separated section of the OFAR compartment, except for curtained bunks, and must meet requirements of § 25.812(b)(1)(i). An exit sign with reduced background area or a symbolic exit sign, as described in Special Condition 4(a), may be used to meet this requirement.
- d. For OFAR compartments that are divided using an installation of a rigid partition with a door separating the sections, the following requirements of these special conditions must be met with the door open or closed:
  - (1) A secondary evacuation route from each section to the main deck is required, or alternatively, the applicant must show that any door between the sections precludes anyone from being trapped inside a section of the

compartment. The applicant must consider removal of an incapacitated occupant from within this area. A secondary evacuation route from a small room designed for only one occupant for a short time duration, such as a changing area or lavatory, is not required, but the applicant must consider removal of an incapacitated occupant from within such a small room.

- (2) Any door between the sections must be shown to be openable when crowded against, even when crowding occurs at each side of the door.
- (3) No more than one door may be located between any seat or berth and the primary stairway door.
- (4) In each section, exit signs meeting requirements of § 25.812(b)(1)(i), or shown to have an equivalent level of safety, must direct occupants to the primary stairway outlet. An exit sign with reduced background area or a symbolic exit sign, as described in Special Condition 4(a), may be used to meet this requirement.
- (5) Special Conditions 1 (no-smoking placards), 5 (emergency illumination), 7 (emergency alarm system), 8 (fasten-seatbelt signal or return to seat signal as applicable), 10 (smoke or fire detections system), and 13 (oxygen system) must be met with the door open or closed.
- (6) Special Condition 6 (two-way voice communication) and 9 (Emergency firefighting and protective equipment) must be met independently for each separate section except for lavatories or other small areas that are not intended to be occupied for extended periods of time.

15. **Waste Disposal Receptacle.** If a waste-disposal receptacle is fitted in the OFAR compartment, it must be equipped with an automatic fire extinguisher that meets the performance requirements of § 25.854(b).
16. **OFAR Compartment Materials.** Materials (including finishes or decorative surfaces applied to the materials) of OFAR compartments must comply with flammability requirements of § 25.853(a) as amended by Amendment 25-116. Seat cushions and mattresses must comply with the flammability requirements of § 25.853(c) as amended by Amendment 25-116 and the test requirements of part 25, appendix F, part II, or other equivalent methods.
17. **OFAR Compartment Lavatory.** An addition of a lavatory within the OFAR compartment requires the lavatory to meet the same requirements as a lavatory installed on the main deck except with regard to Special Condition 10 for smoke detection.
18. **OFAR Compartment Stowage.** Each stowage compartment in the OFAR compartment, except for under seat compartments for occupant convenience, must be completely enclosed. All enclosed stowage compartments within the OFAR compartment that are not limited to stowage of emergency equipment or airplane-supplied equipment (e.g., bedding) must meet the design criteria described in table 1 of these special conditions. Enclosed stowage compartments greater than 200 ft<sup>3</sup> in interior volume are not addressed by this special condition. The in-flight accessibility of very large, enclosed, stowage compartments and the subsequent impact on the crewmembers' ability to effectively reach any part of the compartment with the contents of a hand-held fire-extinguishing system will

require additional fire-protection considerations similar to those required for inaccessible compartments such as Class C cargo compartments.

**Table 1. Design Criteria for Enclosed Stowage Compartments not Limited to Stowage of Emergency or Airplane-Supplied Equipment**

Fire protection features	Applicability of fire protection requirements by interior volume		
	Less than 25 Cubic Feet	25 Cubic Feet to Less than 57 Cubic Feet	57 Cubic Feet to 200 Cubic Feet
Compliant Materials of Construction <sup>a</sup>	Yes	Yes	Yes
Smoke or Fire Detectors <sup>b</sup>	No	Yes	Yes
Liner <sup>c</sup>	No	Conditional	Yes
Fire Location Detector <sup>d</sup>	No	Yes	Yes

- a. **Materials of Construction:** The material used in constructing each enclosed stowage compartment must at least be fire resistant and must meet the flammability standards established for interior components (i.e., 14 CFR part 25 Appendix F, Parts I, IV, and V) per the requirements of § 25.853. For compartments less than 25 ft.<sup>3</sup> in interior volume, the design must ensure the ability to contain a fire likely to occur within the compartment under normal use.
- b. **Smoke or Fire Detectors:** Enclosed stowage compartments equal to or exceeding 25 ft.<sup>3</sup> in interior volume must be provided with a smoke or fire detection system to ensure that a fire can be detected within a one-minute detection time. The applicant must conduct flight tests to show compliance with this requirement. Each smoke or fire detection system(s) must provide:

- (1) A visual indication to the flight deck within one minute after the start of a fire.
- (2) An aural warning in the OFAR compartment.
- (3) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, taking into consideration the locations of flight attendants throughout the main passenger compartment during various phases of flight.

**c. Stowage compartment liner.**

- (1) If the material used in constructing the stowage compartment meets the flammability requirements of a liner for a Class B cargo compartment (§ 25.855 at Amendment 25–116, and Appendix F, part I, paragraph (a)(2)(ii)), then no liner is required for enclosed stowage compartments equal to or greater than 25 ft.<sup>3</sup>, but less than 57 ft.<sup>3</sup> in interior volume.
- (2) For all enclosed stowage compartments equal to or greater than 57 ft.<sup>3</sup> in interior volume, but less than or equal to 200 ft.<sup>3</sup>, a liner must be provided that meets the requirements of § 25.855 for a Class B cargo compartment.

- d. **Fire Location Detector:** If an OFAR compartment has enclosed stowage compartments exceeding 25 ft.<sup>3</sup> interior volume that are located separately from the other stowage compartments central location, such as the entry to the OFAR compartment or other common area, that OFAR compartment requires additional fire protection features and devices to assist a firefighter in determining the location of that fire.

Issued in Des Moines, Washington, on August 13, 2019.

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Acting Manager, Transport Standards Branch,  
Policy and Innovation Division,  
Aircraft Certification Service.  
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