Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM412 Special Conditions No. 25–09–08–SC]

Special Conditions: Boeing Model 787–8 Airplane; Overhead Crew Rest Compartment

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Boeing Model 787–8 airplane. This airplane will have novel or unusual design features associated with installation of an overhead crew rest 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. Additional special conditions will be issued for other novel or unusual design features of the Boeing Model 787–8 airplanes.

DATES: We must receive your comments by February 18, 2010.

ADDRESSES: You must mail two copies of your comments to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM–113), Docket No. NM412, 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. NM412. You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

FOR FURTHER INFORMATION CONTACT: Jeff Gardlin, FAA, Airframe/Cabin Safety Branch, ANM–115, Transport Standards Staff, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (425) 227–2136; facsimile (425) 227–1320.

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 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 concerning 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 on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

If you want us to acknowledge receipt of your comments on this proposal, 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 March 28, 2003, The Boeing Commercial Airplane Group (hereafter referred to as ''Boeing'') applied for an FAA type certificate for its new Boeing Model 787–8 passenger airplane. The company applied for an extension of time for the type certificate on March 9, 2009, and was granted that extension on March 13, 2009. The Boeing Model 787–8 airplane will be an all-new, two-engine jet transport airplane with a two-aisle cabin. The maximum takeoff weight will be 476,000 pounds, with a maximum passenger count of 381 passengers.

Type Certification Basis

Under provisions of Title 14 Code of Federal Regulations (14 CFR) 21.17, Boeing must show that the Boeing Model 787–8 airplane (hereafter referred to as ''the 787'') meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25–1 through 25–117, 25–120, 25–124, 25–125 and 25–128, except that § 25.1309 remains at Amendment 25–117 for cargo fire protection systems. 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 787 because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to complying with the applicable airworthiness regulations and special conditions, the 787 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. In addition, the FAA must issue a finding of regulatory adequacy pursuant to section 611 of Public Law 92–574, the ''Noise Control Act of 1972.''

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 § 21.17(a)(2).

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, the special conditions would also apply to the other model under provisions of § 21.101.

Novel or Unusual Design Features

Crew rest compartments have been installed and certificated on several Boeing airplane models in locations as varied 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 has determined that the applicable regulations (*i.e.,* 14 CFR part 25) 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.

Most recently, for the Boeing Model 777 series airplanes, the FAA has issued Special Conditions No. 25–230–SC, dated April 9, 2003, for overhead crew rest (OCR) compartments allowed to be occupied during flight, and Special Conditions No. 25–260–SC, dated April 14, 2004, for overhead flight crew rest (OFCR) compartments allowed to be occupied during taxi, takeoff, and landing (TT&L), as well as during flight.

The OCR compartment on the 787 identified by Boeing as an overhead flight attendant rest is located above the main passenger cabin, adjacent to Door 4, and will be accessed from the main deck by stairs through a vestibule. This OCR compartment will contain six private berths, an emergency hatch that opens directly into the main passenger cabin area, a smoke detection system, an oxygen system, and various occupant amenities. This OCR compartment will only be occupied by trained crew members in flight. It will not be occupied during taxi, takeoff, or landing.

This 787 OCR compartment is unique to part 25 because of its design, location, and use on the airplane. Because of the novel or unusual features associated with installation of this compartment, special conditions are considered necessary to provide a level of safety equal to that established by the airworthiness regulations.

Certification engineers evaluate such an installation with respect to the interior and assess it in accordance with the certification basis of the airplane. However, part 25 does not provide all of the requirements for crew rest compartments within the overhead area of the passenger compartment. These proposed special conditions do not negate the need to address other applicable part 25 regulations.

Operational Evaluations and Approval

These proposed special conditions outline requirements for OCR compartment design approvals administered by the FAA's Aircraft Certification Service. Prior to operational use of an OCR compartment, the FAA's Flight Standards Service must evaluate and approve the ''basic suitability'' of the compartment for crew occupation. Additionally, if an operator wishes to use an OCR compartment as ''sleeping quarters,'' the compartment must undergo an additional evaluation and approval (reference 14 CFR 121.485(a), 121.523(b), and 135.269(b)(5)). Compliance with these proposed special conditions does not ensure that the applicant has demonstrated compliance with the requirements of parts 121 or 135.

To obtain an operational evaluation, the type certificate holder must contact the appropriate aircraft evaluation group (AEG) in the Flight Standards Service and request a ''basic suitability'' evaluation or a ''sleeping quarters'' evaluation of its OCR compartment. The results of these evaluations should be documented in a 787 flight standardization board (FSB) report appendix. Individual operators may reference these standardized evaluations in discussions with their FAA principal operating inspector (POI) as the basis for an operational approval, in lieu of an on-site operational evaluation.

Any changes to the approved OCR compartment configuration that affect crewmember emergency egress or any other procedures affecting safety of the occupying crewmembers or related emergency training will require re-evaluation and approval. The applicant for an OCR compartment design change that affects egress, safety procedures, or training is responsible for notifying the FAA's AEG that a new compartment evaluation is required. The results of a re-evaluation should also be documented in a 787 FSB report appendix.

Procedures must be developed to ensure that a crewmember entering the OCR compartment through the stairway/vestibule to fight a fire will examine the stairway/vestibule and the adjacent galley or lavatory areas (if installed) for the source of the fire before entering the remaining areas of the compartment. This is intended to ensure that the source of the fire is not between the crewmember and the entrance to the OCR compartment. If a fire source is not immediately evident to the firefighter, the firefighter should check for potential fire sources at areas closest to the OCR compartment entrance first, then proceed to check areas in such a manner that the fire source, when found, will not be between the firefighter and his or her way to get out of the compartment. Procedures describing methods for searching the OCR compartment for fire source(s) must be transmitted to operators for incorporation into their training programs and appropriate operational manuals.

Discussion of Proposed Special Conditions

These proposed special conditions would initially apply to an OCR compartment installed adjacent to the Door 4 exits on the 787. These proposed special conditions would supplement 14 CFR part 25. Except as noted below, these proposed special conditions for the 787 closely resemble Boeing 777 Special Conditions No. 25–230–SC.

Proposed Special Conditions No. 4 and 14 contain requirements for the exit signs that must be provided in the OCR compartment. Symbols that satisfy the equivalent level of safety finding established for the 787 may be used in lieu of the text required by § 25.812(b)(1)(i). The FAA expects that crewmembers will learn the meaning of any symbolic exit sign as a part of their training in evacuation procedures.

Proposed Special Condition No. 13 contains requirements for supplemental oxygen systems. Special Conditions No. 25–260–SC, for the overhead flightcrew rest compartments, required that each berth be provided with two oxygen masks. This was intended to address the case where a person not in a berth was moving around in the crew rest compartment and needed quick access to the oxygen. For the designs used in the model 777, this requirement was sufficient. However, for the 787, the requirement to have two masks per berth may not always meet the objective of having masks available to persons who are in transition within the compartment. Therefore, the wording of this proposed special condition has been modified to better state the objective rather than specify that two masks be provided per berth. In addition, the requirement to have adequate illumination to retrieve the mask, while implied previously, is made explicit in this proposal.

Proposed Special Condition No. 17 contains the requirement for materials used in the construction of the OCR compartment and states that § 25.853 as amended by Amendment 25–116 is the appropriate regulation. Amendment 25–116 is the latest amendment level for § 25.853.

Compliance with these proposed special conditions does not relieve the applicant from the existing airplane certification basis requirements. One particular area of concern is that the installation of OCR compartments leaves a smaller compartment volume within the overhead area of the airplane. The applicant must comply with the pressurized compartment loads requirements of § 25.365(e), (f), and (g) for the OCR compartment, as well as for

any other airplane compartments whose decompression characteristics are affected by the installation of an OCR compartment. Compliance with § 25.813 emergency exit access requirements must be demonstrated for all phases of flight during which occupants will be present.

Section 25.813(e) prohibits installation of interior doors between passenger compartments, but the FAA has historically found crew rest doors to be acceptable, because crew rests are not passenger compartments. Proposed Special Conditions No. 1 and 14 provide requirements for crew rest doors which are considered to provide an appropriate level of safety to OCR compartment occupants.

Sections 25.1443, 25.1445, and 25.1447 contain oxygen requirements for flight crew, passengers, and cabin attendants. Crewmembers occupying the OCR compartment are not on duty, and therefore are considered passengers in determining compliance with these oxygen regulations.

Applicability

As discussed above, these proposed special conditions are applicable to the 787. 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, these proposed special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features of the 787. It is not a rule of general applicability.

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 Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for the Boeing Model 787–8 airplanes with an overhead crew rest (OCR) compartment installed above the main passenger cabin adjacent to an exit door.

1. Occupancy of the OCR compartment is limited to the total number of installed bunks and seats in each compartment. There must be an approved seat or berth able to withstand the maximum flight loads when occupied for each occupant permitted in the OCR compartment. Maximum occupancy in the OCR compartment is six.

(a) There must be appropriate placards, inside and outside each entrance to the OCR compartment, to indicate:

(1) The maximum number of occupants allowed.

(2) That occupancy is restricted to crewmembers who are trained in the evacuation procedures for the OCR compartment.

(3) That occupancy is prohibited during taxi, take-off, and landing.

(4) That smoking is prohibited in the OCR compartment.

(5) That stowage in the OCR compartment area is limited to crew personal luggage. The stowage of cargo or passenger baggage is not allowed.

(b) There must be at least one ashtray on the inside and one ashtray on the outside of any entrance to the overhead crew rest compartment.

(c) For times when there is no flight attendant present in the area around the door to the OCR compartment, and also in the event of an emergency, there must be a means to prevent passengers from entering the OCR compartment.

(d) There must be a means for any door installed between the OCR compartment and the passenger cabin to be quickly opened from inside the compartment, even when crowding occurs at each side of the door.

(e) For all doors installed, there must be a means to preclude anyone from being trapped inside the OCR compartment. If a locking mechanism is installed, 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 compartment at any time.

(f) The means of opening doors and hatches to the OCR compartment must be simple and obvious. In addition, doors or hatches that separate the overhead crew rest compartment from the main deck must not adversely affect evacuation of occupants on the main deck (slowing evacuation by encroaching into aisles, for example) or cause injury to those occupants during opening or while opened.

2. There must be at least two emergency evacuation routes which could be used by each occupant of the OCR compartment to rapidly evacuate to the main cabin. These evacuation routes must be able to be closed from the main passenger cabin after evacuation. In addition—

(a) The routes must be located with sufficient separation within the OCR compartment to minimize the possibility of an event either inside or outside of the crew rest compartment rendering both routes inoperative.

Compliance with requirements of Proposed Special Condition No. 2(a) may be shown by inspection or by analysis. Regardless of which method is used, the maximum acceptable distance between crew rest compartment outlets is 60 feet.

Compliance by Inspection

Inspection may be used to show compliance with proposed Special Condition No. 2(a). An inspection finding that an OCR compartment has evacuation routes located so that each occupant of the seats and berths has an unobstructed route to at least one of the crew rest compartment outlets, regardless of the location of a fire, would be reason for a finding of compliance. A fire within a berth that only blocks the occupant of that berth from exiting the berth need not be considered. Therefore, crew rest compartment outlets that are located at absolute opposite ends (i.e., adjacent to opposite end walls) of the OCR compartment would require no further review or analysis with regard to exit separation.

Compliance by Analysis

Analysis must show that the OCR compartment configuration and interior features allow all occupants of the OCR compartment to escape the compartment in the event of a hazard inside or outside of the compartment.

Elements to consider in this evaluation are as follows:

(1) Fire inside or outside the OCR compartment, considered separately, and the design elements used to reduce the available fuel for the fire.

(2) Design elements used to reduce fire ignition sources in the OCR compartment.

(3) Distribution and quantity of emergency equipment within the OCR compartment.

(4) Structural failure or deformation of components that could block access to the available evacuation routes (*e.g.,* seats, folding berths, contents of stowage compartments, *etc.*).

(5) An incapacitated person blocking the evacuation routes.

(6) Any other foreseeable hazard not identified above that could cause the evacuation routes to be compromised.

Analysis must consider design features affecting access to the evacuation routes. Possibilities for design components affecting evacuation that should be considered include, but are not limited to, seat back break over, rigid structure that reduces access from one part of the compartment to another,

and items known to be the cause of potential hazards. Factors that also should be considered are availability of emergency equipment to address fire hazards, availability of communications equipment, supplemental restraint devices to retain items of mass that, if broken loose, could hinder evacuation, and load path isolation between components containing evacuation routes.

Analysis of fire threats should be used in determining placement of required fire extinguishers and protective breathing equipment (PBE). This analysis should consider the possibility of fire in any location in the OCR compartment. The location and quantity of PBE equipment and fire extinguishers should allow occupants located in any approved seats or berths access to the equipment necessary to fight a fire in the OCR compartment.

The intent of this proposed special condition is to provide sufficient exit route separation. Therefore the exit separation analysis described above should not be used to approve crew rest compartment outlets that have less physical separation (measured between the centroid of each exit opening) than the minimums prescribed below, unless compensating features are identified and submitted to the FAA for evaluation and approval.

For OCR compartments with one outlet located near the forward or aft end of the compartment (as measured by having the centroid of the exit opening within 20 percent of the forward or aft end of the total overhead crew rest compartment length) the outlet separation from one outlet to the other should not be less than 50 percent of the total OCR compartment length.

For OCR compartments with neither required crew rest compartment outlet located near the forward or aft end of the compartment (as measured by not having the centroid of either outlet opening within 20 percent of the forward or aft end of the total OCR compartment length) the outlet separation from one outlet to the other should not be less than 30 percent of the total OCR compartment length.

(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 crew rest compartment outlets. One of the two OCR evacuation routes should not be located where, during times when occupancy is allowed, normal movement by passengers occurs (i.e., main aisle, cross aisle or galley complex, for example) that would impede egress from the OCR compartment. 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. If there is low headroom at or near the evacuation route, provisions must be made to prevent or to protect occupants of the OCR compartment from head injury. Use of evacuation routes must not be dependent on any powered device. If a crew rest compartment outlet is over an area where there are passenger seats, a maximum of five passengers may be displaced from their seats temporarily during the process of evacuating an incapacitated person(s). If such 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.

(c) Emergency evacuation procedures, including procedures for emergency evacuation of an incapacitated occupant from the OCR compartment, must be established. The applicant must transmit all of these procedures to the operator for incorporation into its training programs and appropriate operational manuals.

(d) There must be a limitation in the airplane flight manual or other suitable means to require that crewmembers be trained in use of the OCR evacuation routes.

3. There must be a means of evacuating an incapacitated person (representative of a ninety-fifth percentile male) from the OCR compartment to the passenger cabin floor.

(a) Such an evacuation must be demonstrated for all evacuation routes. A crewmember (a total of one assistant within the OCR compartment) may provide assistance in the evacuation. Additional assistance may be provided by up to three persons in the main passenger compartment. These additional assistants must be standing on the floor while providing assistance. For evacuation routes with stairways, the additional assistants may ascend up to one half the elevation change from the main deck to the OCR compartment, or to the first landing, whichever is lower.

4. The following signs and placards must be provided in the OCR compartment, and they must meet the following criteria:

(a) At least one exit sign, located near each exit, meeting the emergency lighting requirements of § 25.812(b)(1)(i). One allowable exception would be a sign with reduced background area of no less than 5.3 square inches (excluding the letters), provided that it is installed so that the material surrounding the exit sign is light in color (e.g., white, cream, light beige, for example). 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 would also be acceptable. Another allowable exception is a sign with a symbol that the FAA has determined to be equivalent for use as an exit sign in an OCR compartment.

(b) An appropriate placard located near each exit defining the location of and operating instructions for each evacuation route.

(c) Placards must be readable from a distance of 30 inches under emergency lighting conditions.

(d) The exit handles and evacuation path operating instruction placards must be illuminated to at least 160 microlamberts under emergency lighting conditions.

5. There must be a means in the event of failure of the aircraft's main power system, or of the normal OCR compartment lighting system, for emergency illumination to be automatically provided for the OCR compartment.

(a) This emergency illumination must be 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 illumination level must be sufficient to allow occupants of the OCR compartment to locate and move to the main passenger cabin floor by means of each evacuation route.

(d) The illumination level must be sufficient, with the privacy curtains in the closed position, for each occupant of the crew rest compartment to locate a deployed oxygen mask.

6. There must be means for two-way voice communications between crewmembers on the flight deck and occupants of the OCR compartment. There must also be two-way communications between occupants of the OCR compartment and each flight attendant station in the passenger cabin required per § 25.1423(g) to have a public address system microphone . In addition, the public address system must include provisions to provide only the relevant information to the crewmembers in the OCR compartment (for example fire in flight, aircraft depressurization, preparation of the

compartment occupants for landing, *etc.*).

7. There must be a means for manual activation of an aural emergency alarm system, audible during normal and emergency conditions, to enable crewmembers on the flight deck and at each pair of required floor level emergency exits to alert occupants of the overhead crew rest OCR compartment of an emergency situation. Use of a public address or crew interphone system will be acceptable, provided an adequate means of differentiating between normal and emergency communications is incorporated. The system must be powered in flight, after the shutdown or failure of all engines and auxiliary power units, for a period of at least ten minutes.

8. There must be a means, readily detectable by seated or standing occupants of the OCR compartment, to indicate when seat belts should be fastened. If there are no seats in the OCR compartment, at least one means must be provided to cover anticipated turbulence (e.g., sufficient handholds). Seat belt type restraints must be provided for berths and must be compatible for the sleeping attitude during cruise conditions. There must be a placard on each berth requiring that seat belts be fastened when occupied. If compliance with any of the other requirements of these proposed special conditions is predicated on specific head location, there must be a placard identifying that head position.

9. In lieu of the requirements specified in § 25.1439(a) pertaining to isolated compartments, and to provide a level of safety equivalent to that provided to occupants of an isolated galley, the following equipment must be provided in the OCR compartment:

(a) At least one approved hand-held fire extinguisher appropriate for the kinds of fires likely to occur.

(b) 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.

(c) One flashlight.

Note: Additional PBE devices and fire extinguishers in specific locations, beyond the minimum numbers prescribed in Proposed Special Condition No. 9, may be required as a result of the egress analysis accomplished to satisfy Proposed Special Condition No. 2(a).

10. A smoke or fire detection system (or systems) must be provided that monitors each occupiable area within the OCR compartment, including those areas partitioned by curtains or doors. Flight tests must be conducted to show compliance with this requirement. If a fire occurs, each system (or systems) must provide:

(a) A visual indication to the flightdeck within one minute after the start of a fire.

(b) An aural warning in the OCR compartment.

(c) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, taking into consideration the positioning of flight attendants throughout the main passenger compartment during various phases of flight.

11. The OCR compartment must be designed so that fires within the compartment can be controlled without a crewmember having to enter the compartment, 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, don the firefighting equipment, and gain access to the OCR compartment must not exceed the time it takes for the compartment to become filled with smoke, making it difficult to locate the fire source. Approved procedures describing methods for searching the OCR for fire sources(s) must be established. These procedures must be transmitted to the operator for incorporation into its training programs and appropriate operational manuals.

12. There must be a means provided to exclude hazardous quantities of smoke or extinguishing agent originating in the OCR compartment from entering any other compartment occupied by crewmembers or passengers. The effectiveness of this means must include the time periods during evacuation of the OCR compartment and, if applicable, the time during which crewmembers are accessing the OCR compartment to manually fight a fire. Smoke entering any other compartment occupied by crewmembers or passengers when the access to the OCR compartment is opened, during an emergency evacuation, must dissipate within five minutes after the access to the OCR compartment is closed.

(a) Hazardous quantities of smoke may not enter any other compartment occupied by crewmembers or passengers during access to the OCR compartment to manually fight a fire. The amount of smoke entrained by a firefighter exiting the OCR compartment through the access is not considered hazardous. During the one-minute smoke detection time, penetration of a small quantity of smoke from the OCR compartment into an occupied area is acceptable. Flight tests must be conducted to show compliance with this requirement.

(b) There must be a provision in the firefighting procedures to ensure that all door(s) and hatch(es) at the crew rest compartment outlets are closed after evacuation of the compartment and during firefighting to minimize smoke and extinguishing agent entering other occupiable compartments.

(c) If a built-in fire extinguishing system is to be used instead of manual firefighting, the fire extinguishing system must be designed so that no hazardous quantities of extinguishing agent will enter other compartments occupied by passengers or crew. The system must have adequate capacity to suppress a fire considering the fire threat, the volume of the compartment, and the ventilation rate.

(1) The system must have sufficient extinguishing agent to provide an initial knockdown and suppression environment per the minimum performance standards that have been established for the agent being used. In addition, certification flight testing will verify the acceptable duration that the suppression environment can be maintained.

(2) If the capacity of the extinguishing system does not provide effective fire suppression that will last for the duration of flight from the farthest point in route to the nearest suitable landing site expected in service, an additional manual firefighting procedure must be established. For the built-in extinguishing system, the time duration for effective fire suppression must be established and documented in the firefighting procedures in the airplane flight manual. If the duration of time for demonstrated effective fire suppression provided by the built-in extinguishing agent will be exceeded, the firefighting procedures must instruct the crew to:

(i) Enter the OCR compartment at the time that demonstrated fire suppression effectiveness will be exceeded.

(ii) Check for and extinguish any residual fire.

(iii) Confirm that the fire is out.

(b) For a manual hand-held bottle extinguishing system (designed as the sole means to fight a fire or to supplement a built-in extinguishing system of limited suppression duration) for the OCR:

(1) There must be a limitation in the airplane flight manual or other suitable means requiring that crewmembers be trained in the firefighting procedures.

(2) The compartment design must allow crewmembers equipped for

firefighting to have unrestricted access to all parts of the compartment.

(3) The time for a crewmember on the main deck to react to the fire alarm, don the firefighting equipment, and gain access to the OCR compartment must not exceed the time it would take for the compartment to become filled with smoke, thus making it difficult to locate the fire source.

13. There must be a supplemental oxygen system within the crew rest compartment as follows:

(a) There must be at least one mask for each seat and berth in the crew rest compartment.

(b) If a destination area (such as a changing area) is provided in the OCR compartment, there must be an oxygen mask readily available for each occupant who can reasonably be expected to be in the destination area (with the maximum number of required masks within the destination area being limited to the placarded maximum occupancy of the crew rest).

(c) There must also be an oxygen mask readily accessible to each occupant who can reasonably be expected to be moving from the main cabin into the OCR compartment, moving around within the OCR compartment, or moving from the OCR compartment to the main cabin.

(d) The system must provide an aural and visual alert to warn occupants of the OCR compartment to don oxygen masks in the event of decompression. The aural and visual alerts must activate concurrently with deployment of the oxygen masks in the passenger cabin. To compensate for sleeping occupants, the aural alert must be heard in each section of the OCR compartment and must sound continuously for a minimum of five minutes or until a reset switch within the OCR compartment is activated. A visual alert that informs occupants that they must don an oxygen mask must be visible in each section.

(e) There must also be a means by which oxygen masks can be manually deployed from the flight deck.

(f) Approved procedures must be established for OCR occupants in the event of decompression. These procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

(g) The supplemental oxygen system for the OCR compartment must meet the same 14 CFR part 25 regulations as 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 OCR compartment lighting system must automatically be sufficient for each occupant of the compartment to locate a deployed oxygen mask.

14. The following requirements apply to OCR 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 privacy purposes, the OCR compartment into small sections. The placard must require that the curtain(s) remains open when the private section it creates is unoccupied. The vestibule section adjacent to the stairway is not considered a private area and, therefore, does not require a placard.

(b) For each section of the OCR compartment created by the installation of a curtain, the following requirements of these proposed special conditions must be met with the curtain open or closed:

(1) No smoking placard requirement (Proposed Special Condition No. 1).

(2) Emergency illumination requirement (Proposed Special Condition No. 5).

(3) Emergency alarm system requirement (Proposed Special Condition No. 7).

(4) Seat belt fasten signal or return to seat signal as applicable requirement (Proposed Special Condition No. 8).

(5) Smoke or fire detection system requirement (Proposed Special Condition No. 10).

(6) Oxygen system requirement (Proposed Special Condition No. 13).

(c) Overhead crew rest compartments that are visually divided to the extent that evacuation could be affected must have exit signs directing occupants to the primary stairway outlet. The exit signs must be provided in each separate section of the OCR 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 Proposed Special Condition No. 4(a) may be used to meet this requirement.

(d) For sections within an OCR compartment created by the installation of a rigid partition with a door physically separating the sections, the following requirements of these proposed special conditions must be met with the door open or closed:

(1) There must be a secondary evacuation route from each section to the main deck, or alternatively, the applicant must show that any door between the sections has been designed to preclude anyone from being trapped inside the compartment. Removal of an incapacitated occupant within this area must be considered. 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 removal of an incapacitated occupant from within such a small room must be considered.

(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) There may be no more than one door between any seat or berth and the primary stairway exit.

(4) In each section there must be exit signs meeting requirements of § 25.812(b)(1)(i), or shown to have an equivalent level of safety, that direct occupants to the primary stairway exit. An exit sign with reduced background area or a symbolic exit sign as described in Proposed Special Condition No. 4(a) may be used to meet this requirement.

(e) For each smaller section within the main OCR compartment created by the installation of a partition with a door, the following requirements of these proposed special conditions must be met with the door open or closed:

(1) No smoking placards requirement (Proposed Special Condition No. 1).

(2) Emergency illumination requirement (Proposed Special Condition No. 5).

(3) Two-way voice communication requirement (Proposed Special Condition No. 6).

(4) Emergency alarm system requirement (Proposed Special Condition No. 7).

(5) Seat belt fasten signal or return to seat signal as applicable requirement (Proposed Special Condition No. 8).

(6) Emergency firefighting and protective equipment requirement (Proposed Special Condition No. 9).

(7) Smoke or fire detection system requirement (Proposed Special Condition No. 10).

(8) Oxygen system requirement (Proposed Special Condition No. 13).

15. The requirements for two-way voice communication with the flight deck and provisions for emergency firefighting and protective equipment do not apply to lavatories or other small areas that are not intended to be occupied for extended periods of time.

16. If a waste disposal receptacle is fitted in the OCR compartment, it must be equipped with an automatic fire extinguisher that meets the performance requirements of § 25.854(b).

17. Materials (including finishes or decorative surfaces applied to the materials) must comply with flammability requirements of § 25.853(a) as amended by Amendment 25–116. Mattresses must comply with the

flammability requirements of § 25.853(c) as amended by Amendment 25–116.

18. The addition of a lavatory within the OCR compartment would require the lavatory to meet the same requirements as those for a lavatory installed on the main deck except with regard to Proposed Special Condition No. 10 for smoke detection.

19. Each stowage compartment in the OCR compartment must be completely enclosed. All enclosed stowage compartments within the OCR compartment that are not limited to stowage of emergency equipment or airplane-supplied equipment (i.e., bedding) must meet the design criteria given in the table below. Enclosed stowage compartments greater than 200 ft^3 in interior volume are not addressed by this proposed 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 fire extinguisher will require additional fire protection considerations similar to those required for inaccessible compartments such as Class C cargo compartments.

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[1]	Yes	Yes	Yes.
Smoke or Fire Detectors[2]	No	Yes	Yes.
Liner[3]	No	Conditional	Yes.
Fire Location Detector[4]	No	Yes	Yes.

[1] Compliant Materials of Construction

The material used to construct 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.^{3} in interior volume, the design must ensure the ability to contain a fire likely to occur within the compartment under normal use.

[2] Smoke or Fire Detectors

Enclosed stowage compartments equal to or exceeding 25 ft.^{3} 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. Flight tests must be conducted to show compliance with this requirement. Each system (or systems) must provide:

(a) A visual indication in the flight deck within one minute after the start of a fire.

(b) An aural warning in the overhead crew rest compartment.

(c) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, taking into consideration the positioning of flight attendants throughout the main passenger compartment during various phases of flight.

[3] Liner

If it can be shown that the material used to construct the stowage compartment meets the flammability requirements of a liner for a Class B cargo compartment (*i.e.,* § 25.855 at Amendment 25–116, and Appendix F, part I, paragraph (a)(2)(ii)), then no liner would be required for enclosed stowage compartments equal to or greater than 25 ft.^{3} but less than 57 ft.^{3} in interior volume. For all enclosed stowage compartments equal to or greater than 57 ft.^{3} in interior volume but less than or equal to 200 ft.^{3}, a liner must be provided that meets the requirements of § 25.855 for a Class B cargo compartment.

[4] Fire Location Detector

If an OCR compartment has enclosed stowage compartments exceeding 25 ft.^{3} interior volume that are located separately from the other stowage compartments (located, for example, away from one central location, such as the entry to the OCR compartment or a common area within the OCR compartment, where the other stowage compartments are), that OCR compartment would require additional fire protection features and/or devices to assist the firefighter in determining the location of a fire.

Issued in Renton, Washington, on December 28, 2009.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM411 Special Conditions No. 25–09–07–SC]

Special Conditions: Boeing Model 787–8 Airplane; Overhead Flightcrew Rest Compartment Occupiable During Taxi, Take-Off, and Landing

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Boeing Model 787–8 airplane. This airplane will have novel or unusual design features associated with an overhead flightcrew rest (OFCR) compartment, which is proposed to be occupiable during taxi, take-off, and landing (TT&L). 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. Additional special conditions will be issued for other novel or unusual design features of the Boeing Model 787–8 airplanes.

DATES: We must receive your comments by February 18, 2010.

ADDRESSES: You must mail two copies of your comments to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM–113), Docket No. NM411, 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. NM411. You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

FOR FURTHER INFORMATION CONTACT: Jeff Gardlin, FAA, Airframe/Cabin Safety Branch, ANM–115, Transport Standards Staff, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (425) 227–2136; facsimile (425) 227–1320.