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(i) The submitter shall ensure that the document containing information sought to be withheld is marked as follows:

(A) The top of the first page of the document and the top of each page containing such information must be marked with language substantially similar to: "confidential information submitted under 10 CFR 2.790;" "withhold from public disclosure under 10 CFR § 2.790;" or "proprietary" to indicate it contains information the submitter seeks to have withheld.

(B) Each document, or page, as appropriate, containing information sought to be withheld from public disclosure must indicate, adjacent to the information, or at the top if the entire page is affected, the basis (*i.e.*, trade secret, personal privacy, etc.) for proposing that the information be withheld from public disclosure under paragraph (a) of this section.

(ii) The Commission may waive the affidavit requirements on request, or on its own initiative, in circumstances the Commission, in its discretion, deems appropriate. Otherwise, except for personal privacy information, which is not subject to the affidavit requirement, the request for withholding must be accompanied by an affidavit that—

(A) Identifies the document or part sought to be withheld;

(B) Identifies the official position of the person making the affidavit;

(C) Declares the basis for proposing the information be withheld, encompassing considerations set forth in § 2.790(a);

(D) Includes a specific statement of the harm that would result if the information sought to be withheld is disclosed to the public; and

(E) Indicates the location(s) in the document of all information sought to be withheld.

(iii) In addition, an affidavit accompanying a withholding request based on paragraph (a)(4) of this section must contain a full statement of the reason for claiming the information should be withheld from public disclosure. Such statement shall address with specificity the considerations listed in paragraph (b)(4) of this section. In the case of an affidavit submitted by a company, the affidavit shall be executed by an officer or upper-level management official who has been

specifically delegated the function of reviewing the information sought to be withheld and authorized to apply for its withholding on behalf of the company. The affidavit shall be executed by the owner of the information, even though the information sought to be withheld is submitted to the Commission by another person. The application and affidavit shall be submitted at the time of filing the information sought to be withheld. The information sought to be withheld shall be incorporated, as far as possible, into a separate paper. The affiant must designate with appropriate markings information submitted in the affidavit as a trade secret, or confidential or privileged commercial or financial information within the meaning of § 9.17(a)(4) of this chapter, and such information shall be subject to disclosure only in accordance with the provisions of § 9.19 of this chapter.

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(4) \* \* \*

(ii) Whether the information is of a type customarily held in confidence by its owner and, except for voluntarily submitted information, whether there is a rational basis therefor;

\* \* \* \* \*

(c) The Commission either may grant or deny a request for withholding under this section.

(1) If the request is granted, the Commission will notify the submitter of its determination to withhold the information from public disclosure.

(2) If the Commission denies a request for withholding under this section, it will provide the submitter with a statement of reasons for that determination. This decision will specify the date, which will be a reasonable time thereafter, when the document will be available at the NRC Website, <http://www.nrc.gov>. The document will not be returned to the submitter.

(3) Whenever a submitter desires to withdraw a document from Commission consideration, it may request return of the document, and the document will be returned unless the information—

(i) Forms part of the basis of an official agency decision, including but not limited to, a rulemaking proceeding or licensing activity;

(ii) Is contained in a document that was made available to or prepared for an NRC advisory committee;

(iii) Was revealed, or relied upon, in an open Commission meeting held in accordance with 10 CFR Part 9, Subpart C;

(iv) Has been requested in a Freedom of Information Act request; or

(v) Has been obtained during the course of an investigation conducted by the NRC Office of Investigations.

\* \* \* \* \*

(e) Submitting information to NRC for consideration in connection with NRC licensing or regulatory activities shall be deemed to constitute authority for the NRC to reproduce and to distribute sufficient copies to carry out the Commission's official responsibilities.

\* \* \* \* \*

Dated in Rockville, Maryland, this 7th day of April, 2003.

For the Nuclear Regulatory Commission.

**Annette Vietti-Cook,**

*Secretary of the Commission.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM237; Special Conditions No. 25-230-SC]

#### Special Conditions: Boeing Model 777 Series Airplanes; Overhead Crew Rest Compartments

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

**ACTION:** Final special conditions.

**SUMMARY:** These final special conditions are for Boeing Model 777 series airplanes. This airplane will have novel or unusual design features associated with the installation of an overhead flightcrew rest and an overhead flight attendant rest. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for these design features. 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.

**EFFECTIVE DATE:** The effective date of these final special conditions is April 9, 2003.

**FOR FURTHER INFORMATION CONTACT:** Alan Sinclair, 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) 227-2195; facsimile (425) 227-1149.

**SUPPLEMENTARY INFORMATION:**

## Background

On December 19, 2001, the Boeing Commercial Airplane Group (BCAG), P.O. Box 3707, Seattle, Washington 98124, applied for a change to Type Certificate No. T00001SE for a design change to install an overhead flight crew rest (OFCR) and an overhead flight attendant rest (OFAR) in the Boeing Model 777 series airplanes. The Boeing Model 777 series airplanes are large twin engine airplanes with various passenger capacities and ranges depending upon airplane configuration.

The OFCR compartment, adjacent to Door 1, is located in the overhead above the main passenger cabin and will include a maximum of two private berths and two seats. Occupancy of the OFCR will be limited to a maximum of four occupants. Several different OFAR compartments are being proposed under this design change. The OFAR adjacent to Door 3 will have berths for a maximum of seven occupants. The OFAR adjacent to Door 5 will have three compartment options available, with berths for a maximum of six, eight or ten occupants.

Both crew rests, the OFCR and OFAR, will be accessed from the main deck by stairs. In addition, an emergency hatch that opens directly into the main passenger cabin area will be provided for each compartment. A smoke detection system, an oxygen system, and occupant amenities will also be provided. These compartments will only be occupied in flight, not during taxi, takeoff, or landing.

Crew rest compartments have been previously installed and certified in the main passenger cabin area, above the main passenger area, and below the passenger cabin area adjacent to the cargo compartment of the Boeing Model 777 series airplanes. Also, overhead crew rest compartments have been installed on the Boeing Model 747 series airplanes.

The FAA has previously issued special conditions that contain the additional safety standards that must be met for the overhead crew rest compartments on Boeing Model 747 series airplanes. The FAA certified the lower lobe flight attendant rest compartment on the Boeing Model 777 series airplanes by an equivalent level of safety finding to the requirements of § 25.819. In addition, the FAA recently issued Special Conditions No. 25-169-SC, dated December 1, 2000, amended on May 2, 2001, for Boeing Model 777 series airplanes for overhead crew rest compartments for Flight Structures Inc. of Arlington, Washington. The FAA also issued Special Conditions No. 25-192-

SC, dated November 6, 2001, for Model 777 series airplanes for overhead crew rest compartments for the Boeing Commercial Airplane Group—Wichita Division Designated Alteration Station (DAS) of Wichita, Kansas.

## Type Certification Basis

Under the provisions of § 21.101, Amendment 21-69, effective September 16, 1991, Boeing Commercial Airplane Group must show that the Model 777 series airplanes, as changed, continue to meet the applicable provisions of the regulations incorporated by reference in Type Certificate Data Sheet No. T00001SE or the applicable regulations in effect on the date of application for the change. Subsequent changes have been made to § 21.101 as part of Amendment 21-77, but those changes do not become effective until June 10, 2003. The regulations incorporated by reference in the type certificate are commonly referred to as the "original type certification basis." The regulations incorporated by reference in Type Certificate No. T00001SE for the Boeing Model 777 series airplanes include 14 CFR part 25, as amended by Amendments 25-1 through 25-82. The U.S. type certification basis for the Boeing Model 777 series airplanes is established in accordance with 14 CFR 21.17 and 21.29 and the type certification application date. The type certification basis is listed in Type Certificate Data Sheet No. T00001SE.

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 series airplanes because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the Boeing Model 777 series airplanes 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.

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 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, the special conditions would also apply to the other model under the provisions of § 21.101(a)(1), Amendment 21-69, effective September 16, 1991.

Compliance with these special conditions does not relieve the applicant from the existing airplane certification basis requirements. One particular area of concern is that the overhead crew rest compartment installation creates a smaller compartment volume within the overhead area of the airplane. The applicant must comply with the requirements of §§ 25.365(e), (f), and (g), for the overhead crew rest compartment, as well as any other airplane compartments whose decompression characteristics are affected by the installation of an overhead crew rest compartment. Compliance with § 25.831 must be demonstrated for all phases of flight where occupants will be present.

## Novel or Unusual Design Features

While the installation of an overhead crew rest compartment is not a new concept for large transport category airplanes, each compartment design has unique features by virtue of its design, location, and use on the airplane. Previously, crew rest compartments have been installed and certified in the main passenger cabin area of the Boeing Model 777-200 and -300 series airplanes and the overhead area of the passenger compartment of the Model 777-200. Other crew rest compartments have been installed below the passenger cabin area adjacent to the cargo compartment. Similar overhead crew rest compartments have also been installed on the Boeing Model 747 series airplanes. The modification is evaluated with respect to the interior and assessed 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. Further, these special conditions do not negate the need to address other applicable part 25 regulations.

Due to the novel or unusual features associated with the installation of this overhead crew rest compartment, special conditions are considered necessary to provide a level of safety equal to that established by the airworthiness regulations incorporated by reference in the type certificate.

## Operational Evaluations and Approval

These special conditions outline requirements for overhead crew rest

compartment design approvals (*i.e.*, type design changes and supplemental type certificates) administered by the FAA's Aircraft Certification Service. Prior to operational use of an overhead crew rest compartment, the FAA's Flight Standards Service must evaluate and approve the "basic suitability" of the overhead crew rest compartment for crew occupation. Additionally, if an operator wishes to utilize an overhead crew rest compartment as "sleeping quarters," the crew rest compartment must undergo an additional evaluation and approval (Reference §§A121.485(a), 121.523(b) and 135.269(b)(5)). Compliance with these special conditions does not ensure that the applicant has demonstrated compliance with the requirements of part 121 or part 135.

In order to obtain an operational evaluation, the type design holder must contact the Aircraft Evaluation Group (AEG) in the Flight Standards Service and request a "basic suitability" evaluation or a "sleeping quarters" evaluation of their crew rest. The results of these evaluations should be documented in a 777 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 overhead crew rest compartment configuration that affect crewmember emergency egress or any other procedures affecting the safety of the occupying crewmembers and/or related training shall require a re-evaluation and approval. The applicant for a crew rest design change that affects egress, safety procedures, or training is responsible for notifying the FAA's AEG that a new crew rest evaluation is required.

Procedures must be developed to assure that a crewmember entering the overhead crew rest compartment through the vestibule to fight a fire will examine the vestibule and the lavatory areas for the source of the fire prior to entering the remaining areas of the crew rest compartment. These procedures are intended to assure that the source of the fire is not between the crewmember and the primary exit. In the event a fire source is not immediately self-evident to the firefighter, the firefighter should check for potential fire sources at areas closest to the primary exit first, then proceed to check areas in such a manner that the fire source, when found, would not be between the firefighter and the primary exit. Procedures describing

methods to search the overhead crew rests for fire source(s) must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

#### Discussion of the Special Conditions

In general, the requirements listed in these special conditions are similar to those previously approved in earlier certification programs, such as for the Boeing Model 777-200 series airplanes and Boeing Model 747 overhead crew rest compartments. These special conditions establish seating, communication, lighting, personal safety, and evacuation requirements for the overhead crew rest compartment. In addition, passenger information signs, supplemental oxygen, and a seat or berth for each occupant of the crew rest compartment are required. These items are necessary because of turbulence and/or decompression. When applicable, the requirements parallel the existing requirements for a lower deck service compartment and provide an equivalent level of safety to that provided for main deck occupants.

#### Special Condition No. 1

This special condition requires the seats and berths must be certified to the maximum flight loads. Due to the location and configuration of the overhead crew rest compartment, occupancy during taxi, takeoff, and landing is prohibited, and occupancy is limited to crewmembers during flight. Occupancy would be limited to four in the OFCR or the combined total of approved seats and berths in the OFCR whichever is less. Occupancy would be limited to twelve in an OFAR, or the combined total of approved seats and berths in the OFAR, whichever is less. This special condition has the requirements for door access and locking and the installation of ashtrays, and for appropriate placards to prohibit passenger access, access by crewmembers not trained in evacuation procedures, smoking and hazardous quantities of flammable fluids, explosives, or other dangerous cargo. The phrase "hazardous quantities" as used in this SC permits trained crewmembers to continue to carry baggage containing minute quantities of flammable fluids (*e.g.*, finger nail polish, aerosol hairspray, etc.) that would pose no threat to the airplane or its occupants. This wording is consistent with the existing wording of §§ 25.831(d), 25.855 (h)(2), 25.857 (b)(2), (c)(3) & (e)(4) and 25.1353(c)(3).

#### Special Condition No. 2

This special condition precludes occupants from being trapped in the crew rest compartment in the event of an emergency, there must be at least two emergency evacuation routes that could be used by each occupant of the overhead crew rest compartment to rapidly evacuate to the main cabin. These two routes must be sufficiently separated to minimize the possibility of an event rendering both routes inoperative. The main entry route meeting the appropriate requirements may be utilized as one of the emergency evacuation routes, or alternatively two other emergency routes must be provided. The intent of Special Condition No. 2(b) is to ensure that one of the two routes would be clear of moving occupants under most foreseeable circumstances.

The following clarifies the intent of Special Condition No. 2(b) concerning the utility of the egress routes. There are three issues that should be considered. First, occupied passenger seats are not considered an impediment to the use of an egress route (for example, the egress route drops into one row of seats by means of a hatch) provided that the seated occupants do not inhibit the opening of the egress route (for example, a hatch).

Second, an egress route may utilize areas where normal movement of passengers occurs if it is demonstrated that the passengers would not impede egress to the main deck. If the egress means (a hatch in this design) opens into a main aisle, cross aisle, or galley complex to an extent that it contacts a standing ninety-fifth percentile male, then the contact should only momentarily interrupt the opening of the egress hatch. The interruption to the egress means can be considered momentary if the egress means would continue to open normally once the person has moved out of the way.

Third, the escape hatch should be provided with a means to prevent it from being inadvertently closed by a passenger on the main deck. This will ensure main deck passengers can not prevent the overhead crew rest occupants from using the escape route. The crew should be able to stow the escape hatch prior to landing.

Training requirements for the occupants of the overhead crew rest area are included in this special condition.

New qualitative and quantitative criteria have been added to this special condition since the issuance of Special Conditions No. 25-192-SC to clarify how compliance can be shown to Special Condition No. 2(a).

*Special Condition No. 3*

This special condition requires that each evacuation route must be designed and procedures specified to allow for removal of an incapacitated person from the crew rest compartment to the main deck. Additional assistants to evacuate an incapacitated person may ascend up to one half the elevation change from the main deck to the overhead compartment, or to the first landing, whichever is lower. This special condition allows for five passenger seats to be emptied for the purpose of demonstrating evacuation of an incapacitated person, where the escape route is over seats.

*Special Condition No. 4*

This special condition requires the provision of exit signs, placards for evacuation routes, illumination for signs, placards and door handles. This special condition allows for exit signs with a reduced background area to be used. The material surrounding the sign must be light in color to more closely match and enhance the illuminated background of the sign that has been reduced in area (letter size stays the same). These reduced background area signs have been allowed under previous equivalent levels of safety for small transport executive jets.

*Special Condition No. 5*

This special condition requires an emergency lighting system to prevent the occupants from being isolated in a dark area due to loss of the normal crew rest compartment lighting. The emergency lighting must be activated under the same conditions as the main deck emergency lighting system.

*Special Condition No. 6*

This special condition requires a two-way voice communications and public address speaker(s) to alert the occupants to an in-flight emergency. Also required is a system to alert the occupants of the overhead crew rest compartment in the event of decompression and to don oxygen masks.

*Special Condition No. 7*

This special condition requires occupants of each overhead crew rest to be informed of an emergency situation via emergency alarm means, use of the public address system, or crew interphone system. Also, power is to be maintained to the emergency alarm system for a specific duration after certain failures.

*Special Condition No. 8*

This special condition requires a means that is readily detectable by

seated or standing occupants of the overhead crew rest compartment to indicate when seat belts should be fastened. The requirement for visibility of the sign by standing occupants may be met by a general area sign that is visible to occupants standing in the main floor area or corridor of the crew rest compartment. It would not be essential that the sign be visible from every possible location in the crew rest compartment. However, the sign should not be remotely located or located where it may be easily obscured.

*Special Condition No. 9*

This special condition requires the overhead crew rest compartment, which is remotely located from the passenger cabin, to be equipped with these tools specified to fight a fire should a fire occur: a hand-held fire extinguisher, protective breathing equipment (PBE), and a flashlight.

This requirement has been modified from previously issued Special Conditions No. 25–192–SC to clarify how it should be interpreted relative to the requirements of § 25.1439(a). Amendment 25–38 modified the requirements of § 25.1439(a) by adding, “In addition, protective breathing equipment must be installed in each isolated separate compartment in the airplane, including upper and lower lobe galleys, in which crewmember occupancy is permitted during flight for the maximum number of crewmembers expected to be in the area during any operation.” The requirements of § 25.1439(a) apply to the overhead crew rest compartment, which is an isolated separate compartment. However, the PBE requirements for isolated separate compartments of § 25.1439(a) are not appropriate because the overhead crew rest compartment is novel and unusual in terms of the number of occupants. In 1976 when Amendment 25–38 was adopted, underfloor galleys were the only isolated compartments that had been certificated with a maximum of two crewmembers expected to occupy those galleys. Special Condition No. 9 addresses overhead crew rest compartments that can accommodate up to 12 crewmembers. This large number of occupants in an isolated compartment was not envisioned at the time Amendment 25–38 was adopted. In the event of a fire, the occupant’s first action should be to leave the confined space, unless the occupant(s) is fighting the fire. It is not appropriate for all overhead crew rest compartment occupants to don PBE. Taking the time to don the PBE would prolong the time for the occupant’s emergency

evacuation and possibly interfere with efforts to extinguish the fire.

*Special Condition No. 10*

This special condition requires a smoke detection system and appropriate warnings since the overhead crew rest compartment is remotely located from the main passenger cabin and will not always be occupied. The smoke detection system must be capable of detecting a fire in each occupiable area of the compartment created by the installation of a curtain or door.

*Special Condition No. 11*

This special condition requires the overhead crew rest compartment to be designed such that fires within the compartment can be controlled without having to enter the compartment; or, the design of the access provisions must allow crew 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 crew rest compartment to become smoke filled, making it difficult to locate the fire source.

*Special Condition No. 12*

This special condition requirement concerning fires within the compartment was developed for, and applied to, lower lobe crew rest compartments in Boeing Model 777–200 and –300 series airplanes. It was not applied to the overhead crew rest compartment in earlier certification programs such as the Boeing Model 747 airplanes. The Model 747 special conditions were issued before the new flammability requirements were developed. This requirement originated from a concern that a fire in an unoccupied overhead crew rest compartment could spread into the passenger compartment or affect other vital systems, before it could be extinguished. This special condition would require either the installation of a manually activated fire containment system that is accessible from outside the overhead crew rest compartment, or a demonstration that the crew could satisfactorily perform the function of extinguishing a fire under the prescribed conditions. A manually activated built-in fire extinguishing system would be required only if a crewmember could not successfully locate and extinguish the fire during a demonstration where the crewmember is responding to the alarm.

The overhead crew rest compartment smoke or fire detection and fire

suppression systems (including airflow management features which prevent hazardous quantities of smoke or fire extinguishing agent from entering any other compartment occupied by crewmembers or passengers) is considered complex in terms of paragraph 6d of Advisory Circular (AC) 25.1309-1A, "System Design and Analysis." In addition, the FAA considers failure of the overhead crew rest compartment fire protection system (*i.e.*, smoke or fire detection and fire suppression systems) in conjunction with an overhead crew rest fire to be a catastrophic event. Based on the "Depth of Analysis Flowchart" shown in Figure 2 of AC 25.1309-1A, the depth of analysis should include both qualitative and quantitative assessments (reference paragraphs 8d, 9, and 10 of AC 25.1309-1A). In addition, it should be noted that hazardous quantities of flammable fluids, explosives, or other dangerous cargo are prohibited from being carried in the overhead crew rest compartment, a prohibition addressed in Special Condition No. 1(a)(5).

The requirements to enable crewmember(s) quick entry to the overhead crew rest compartment and to locate a fire source inherently places limits on the amount of baggage that may be carried and the size of the overhead crew rest compartment. The overhead crew rest compartment is limited to stowage of crew personal luggage and it is not intended to be used for the stowage of cargo or passenger baggage. The design of such a system to include cargo or passenger baggage would require additional requirements to ensure safe operation.

The FAA accepts the fact that during the one-minute smoke detection time that penetration of a small quantity of smoke from this overhead crew rest design into an occupied area on this airplane configuration would be acceptable based upon the limitations placed in this and other associated special conditions. The FAA position is predicated on the fact that these special conditions place sufficient restrictions in the quantity and type of material allowed in crew carry-on bags that the threat from a fire in this remote area would be equivalent to that experienced on the main cabin.

#### *Special Condition No. 13*

This special condition requires that the oxygen equipment and a supplemental oxygen deployment warning for the overhead crew rest compartment must be equivalent to that provided for main deck passengers. Procedures for occupants of the

overhead crew rest area in the event of decompression must be established.

#### *Special Condition No. 14*

This special condition has the requirements for a divided overhead crew rest compartment to address supplemental oxygen equipment and deployment means, signs, placards, curtains, doors, emergency illumination, alarms, seat belt fasten signals, and evacuation routes.

The wording in the Special Condition No. 14(a) was modified from previously issued special conditions to clarify that oxygen masks are not required in common areas where seats or berths are not installed. A visual indicator to don oxygen masks is required in these areas. The visual indicator is in addition to the aural alert for donning oxygen masks.

#### *Special Condition No. 15*

This special condition eliminates the requirements for flight deck communication as required by Special Condition No. 6, and emergency fire fighting and protective equipment as required by Special Condition No. 9, for lavatories or other small areas within an overhead crew rest compartment.

#### *Special Condition No. 16*

This special condition requires that where a waste disposal receptacle is fitted, it must be equipped with an automatic fire extinguisher.

#### *Special Condition No. 17*

This special condition requires that the materials in the crew rest compartment must meet the flammability requirements of § 25.853(a), and the mattresses must meet the fire blocking requirements of § 25.853(c).

#### *Special Condition No. 18*

This special condition requirement is a reiteration of existing main deck lavatory requirements to provide clear applicability. Overhead crew rest compartment lavatories are required to comply with the existing rules on lavatories in the absence of other specific requirements. In addition, any lavatory located in the crew rest compartment must also meet the requirements of Special Condition No. 10 for smoke detection due to placement within this remote area.

#### *Special Condition No. 19*

This special condition has requirements for fire protection requirements for overhead crew rest stowage compartments as a function of size (compartment interior volume). The special condition has been revised from

the special conditions previously issued due to the introduction of larger stowage compartments into the overhead crew rest compartment. The fire protection requirements for stowage compartments in the overhead crew rest compartment are more stringent than those for stowage in the main passenger cabin because the overhead crew rest compartment is a remote area that can remain unoccupied for long periods of time in contrast to the main cabin that is under continuous monitoring by the cabin crew and passengers. For stowage compartments less than 25 ft<sup>3</sup> the safety objective of these requirements is to contain the fire. The FAA research indicates that properly constructed compartments meeting the material requirements will prevent burn through. For stowage compartments greater than 25 ft<sup>3</sup> but less than 200 ft<sup>3</sup> the safety objective of these requirements is to detect and contain the fire for sufficient time to allow it to be extinguished by the crew. The requirements for these sizes of compartments are comparable to the requirements for Class B cargo compartments. The fire protection requirements are intended to provide a level of safety for the overhead crew rest compartment that is equivalent the level of safety established by the existing regulations for the main cabin.

These special conditions along with the original type certification basis provide the regulatory requirements necessary for certification of this modification. Other special conditions may be developed, as needed, based on further FAA review and discussions with the applicant, manufacturer, and civil aviation authorities.

The addition of galley equipment or a kitchenette incorporating a heat source (*e.g.*, cook tops, microwaves, coffee pots, etc.), other than a conventional lavatory or kitchenette hot water heater, within the overhead crew rest compartment, may require further special conditions to be considered. A hot water heater is acceptable without further special conditions consideration.

#### **Previous Comment**

During a previous publication of substantially identical special conditions, a comment was received after the comment period closed. The commenter thought that requiring placards prohibiting storage of "hazardous quantities of flammable fluids" was unnecessary and a duplication of International Air Transport Association (IATA) Dangerous Goods Regulations, specifically, "Provisions for Dangerous Goods Carried by Passengers or Crew." The FAA concurs with the commenter

that the placard requirement is similar to the IATA requirement, therefore, the requirement for the placard has been removed.

#### Discussion of Comments Received on Special Conditions No. 25–216–SC

Notice of final special conditions; request for comments, No. 25–216–SC, for Boeing Model 777 series airplanes was published in the **Federal Register** on October 11, 2002 (67 FR 63250). Three commenters responded to the notice.

##### *The First Commenter*

The first commenter requests changing the title of the special conditions to read “Boeing Model 777 Series \* \* \*” since it is the intent to utilize these special conditions on various models of the 777. The FAA concurs with this comment and the change is incorporated.

Next, this commenter requests a revision to the section of the preamble entitled “Operational Evaluations and Approval.” This commenter has a concern that a prescribed procedure in a dynamic situation, such as a crew rest fire, could be detrimental to the ability of the firefighter to address the fire threat. The FAA agrees and this comment is incorporated.

In the preamble material for Special Condition No. 13, the commenter suggests adding the following text: “Training requirements for the occupants of the overhead crew rest area in the event of decompression are included in the requirement.” The commenter feels this clarification is needed to ensure consistency with Special Condition No. 13. The FAA concurs and the intent of this comment is incorporated.

The commenter’s next request is for an editorial correction in the preamble material for Special Condition No. 14; it should read Special Condition No. 14(a). The FAA concurs with the commenter and the editorial correction is made.

The commenter requests that Special Condition No. 2 be revised to add the phrase “if the open panel would impede evacuation from the main deck.” The FAA disagrees. This comment is not incorporated as it deals with the method of compliance. The current statement adequately states the objectives of the requirement.

The commenter requests that Special Condition No. 8 be changed to include the statement “Consideration can be given to bunks, walls, partitions, etc. that can be utilized to brace oneself during turbulence.” The FAA disagrees and this comment is not incorporated.

The suggested statement would be considered a method of compliance. The current statement adequately states the objectives of this requirement.

Additionally, the commenter requests that in the preamble for Special Condition No. 10, the term “\* \* \*occupiable area\* \* \*” be included to better clarify the intent. The FAA concurs and the words “occupiable area” are added to Special Condition No. 10.

The commenter’s next request is to add a paragraph requiring procedures describing methods to search the crew rest for fire sources. This requirement would ensure that the proper procedures are transmitted to the operators. The FAA agrees and this change is incorporated in Special Condition No. 11.

Another request by the commenter concerns an editorial change to Special Condition No. 13. The commenter suggests deleting the final paragraph because it is redundant to the text that immediately precedes it. The FAA agrees and the paragraph is deleted.

The commenter also requests that Special Condition No. 14(d) be revised to include the phrase, “except for curtained bunks.” The FAA agrees and this comment is incorporated in Special Condition No. 14 as it helps clarify the intent of the requirement.

##### *The Second Commenter*

The second commenter’s request concerns the requirements of Special Condition No. 9(b) that requires the installation of two protective breathing equipment (PBE) devices, or one PBE for each hand-held fire extinguisher, whichever is greater. The commenter however, does not feel that it would provide any additional safety benefit to require additional PBEs for all of the fire extinguishers. The FAA disagrees and this comment is not incorporated. The current statement adequately states the objective of the requirement. This special condition is intended to clarify the requirements of § 25.1439(a), that requires one PBE for each occupant of isolated, separate compartments; and § 121.337(b)(9)(iv), that requires a PBE for each required hand held fire extinguisher. As stated this requirement provides protection for each person engaged in fighting a fire.

Another request by this commenter addresses Special Condition No. 19. The commenter believes that the stowage areas in the entry vestibule should not be considered remote, and should be treated like similar compartments on the main deck such as a closet. The FAA disagrees, and this comment is not incorporated. The current statement

adequately states the objective of the requirement. All areas behind the overhead crew rest entry door are considered remote, the area is unoccupied during taxi, takeoff and landing, and the area is not required to be occupied during flight.

##### *The Third Commenter*

The third commenter requests that Special Condition No. 1 be revised as follows: “1: The occupancy of the overhead crew rest 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 overhead crew rest compartment. When being used for required flight crew rest, the maximum occupancy of the OFCR compartment is two. The maximum occupancy in the OFAR is twelve.”

The FAA disagrees and this comment is not incorporated. This issue should be covered during the Operational Evaluation and Approval as described in the preamble in the paragraph “Operational Evaluations and Approval.” The number of occupants in a specific phase of flight, such as when it is being used as a required flight crew rest, is an operational issue and is outside the scope of these special conditions. Also, these special conditions are for this specific project for an overhead crew rest and do not pertain specifically to either a Overhead Flight Crew Rest (OFCR) or an Overhead Flight Attendant Rest (OFAR), again, this is an operational issue is outside the scope of these special conditions.

The next comment concerns occupying the crew rest during taxi, takeoff, and landing. These special conditions do not cover occupancy during taxi, takeoff, and landing, therefore, this comment is not incorporated.

The commenter’s last request encompasses both Special Conditions No. 6 and 7. The commenter views the OFCR as being an extension of the flight deck. Except for emergency notifications, all communications to the OFCR should come from the flight deck. The FAA agrees and this comment is incorporated into Special Condition No. 6 to include provisions to provide only the relevant information to the flight crewmembers in the overhead crew rest. Special Condition No. 7 remains unchanged.

##### **Applicability**

As discussed above, these special conditions are applicable to Boeing Model 777 series airplanes. Should the

Boeing Commercial Airplane Group 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 under the provisions of § 21.101(a)(1) Amendment 21-69, effective September 16, 1991.

#### 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 777 series airplanes with overhead crew rest compartments. These special conditions apply to both overhead flight crew rest (OFCR) compartments and/or overhead flight attendant rest (OFAR) compartments, unless specifically stated otherwise.

1. Occupancy of the overhead crew rest 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 overhead crew rest compartment. The maximum occupancy is four in the OFCR and twelve in the OFAR.

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

(1) The maximum number of occupants allowed,

(2) That occupancy is restricted to crewmembers that are trained in the evacuation procedures for the overhead crew rest compartment,

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

(4) That smoking is prohibited in the overhead crew rest compartment.

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

(c) There must be a means to prevent passengers from entering the overhead crew rest compartment in the event of an emergency or when no flight attendant is present.

(d) There must be a means for any door installed between the overhead crew rest compartment and passenger cabin to be capable of being 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 overhead crew rest 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.

2. There must be at least two emergency evacuation routes, which could be used by each occupant of the overhead crew rest compartment to rapidly evacuate to the main cabin and be able to be closed from the main passenger cabin after evacuation. In addition<sup>1</sup>

(a) The routes must be located with sufficient separation within the overhead crew rest compartment, and between the evacuation routes, to minimize the possibility of an event rendering both routes inoperative.

Compliance to the requirements of Special Condition No. 2(a) may be shown by inspection or by analysis. Regardless which method is used, the maximum acceptable exit separation is 60 feet measured between exit openings.

#### Compliance by Inspection

An overhead crew rest compartment in which the evacuation routes are located such that each occupant of the seats and berths has an unobstructed route to at least one of the evacuation routes regardless of the location of a fire would be acceptable by inspection. A fire within a berth that only blocks the occupant of that berth from exiting the berth need not be considered. Therefore, exits which are located at absolute opposite ends (*i.e.*, adjacent to opposite end walls) of the crew rest would require no further review or analysis with regard to exit separation.

#### Compliance by Analysis

Analysis must show the overhead crew rest compartment configuration and interior features provide for all occupants of the overhead crew rest 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 overhead crew rest compartment considered separately and the design elements used to reduce the available fuel for the fire,

(2) Design elements to reduce the fire ignition sources in the overhead crew rest compartment,

(3) Distribution and quantity of emergency equipment within the overhead crew rest 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. The design features that should be considered include but are not limited to seat back break over, the elimination of rigid structure that reduces access from one part of the compartment to another, the elimination of items that are known to be the cause of potential hazards, the availability of emergency equipment to address fire hazards, the availability of communications equipment, supplemental restraint devices to retain items of mass that could hinder evacuation if broken loose and load path isolation between components that contain the evacuation routes.

Analysis of the fire threats should be used in determining the placement of required fire extinguishers and PBEs and should take into consideration the possibility of fire in any location in the overhead crew rest compartment. The location and quantity of PBEs and fire extinguishers should allow occupants located in any approved seats or berths access to the equipment necessary to fight a fire in the overhead crew rest compartment.

The intent of this special condition is to provide sufficient exit separation, therefore the exit separation analysis described above should not be used to approve exits which 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 overhead crew rest compartments with one exit located near the forward or aft end of an overhead crew rest 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 exit separation should not be less than 50 percent of the total overhead crew rest compartment length.

For overhead crew rest compartments with neither required exit located near the forward or aft end of the overhead crew rest compartment (as measured by

not having the centroid of either exit opening within 20 percent of the forward or aft end of the total overhead crew rest compartment length) the exit separation should not be less than 30 percent of the total overhead crew rest 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 escape route. One of the two evacuation routes should not be located where, during times in which occupancy is allowed, normal movement by passengers occurs (*i.e.*, main aisle, cross aisle or galley complex) that would impede egress from the overhead crew rest compartment. If an evacuation route utilizes 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 overhead crew rest compartment) from head injury. The use of evacuation routes must not be dependent on any powered device. If the evacuation path is over an area where there are passenger seats, a maximum of five passengers may be displaced from their seats temporarily during the evacuation process of an incapacitated person(s). If the 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 the emergency evacuation of an incapacitated occupant from the overhead crew rest compartment, must be established. All of these procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

(d) There must be a limitation in the Airplane Flight Manual or other suitable means requiring that crewmembers be trained in the use of evacuation routes.

3. There must be a means for the evacuation of an incapacitated person (representative of a ninety-fifth percentile male) from the overhead crew rest compartment to the passenger cabin floor.

(a) The evacuation must be demonstrated for all evacuation routes. A crewmember (a total of one assistant within the overhead crew rest 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 having stairways, the additional assistants may ascend up to one half the elevation change from the main deck to the overhead crew rest compartment, or to the first landing, whichever is lower.

4. The following signs and placards must be provided in the overhead crew rest compartment:

(a) At least one exit sign, located near each exit, meeting the requirements of § 25.812(b)(1)(i), except that a sign with reduced background area of no less than 5.3 square inches (excluding the letters) may be utilized, provided that it is installed such that the material surrounding the exit sign is light in color (*e.g.*, white, cream, light beige). 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.

(b) An appropriate placard located near each exit defining the location and the 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 overhead crew rest compartment lighting system, for emergency illumination to be automatically provided for the overhead crew rest 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 for the occupants of the overhead crew rest compartment to locate and transfer to the main passenger cabin floor by means of each evacuation route.

6. There must be means for two-way voice communications between crewmembers on the flight deck and occupants of the overhead crew rest compartment. There must also be two-way communications between the occupants of the overhead crew rest compartment and each flight attendant station required to have a public address

system microphone per § 25.1423(g) in the passenger cabin. In addition, the public address system will include provisions to provide only the relevant information to the flight crewmembers in the overhead crew rest compartment (*e.g.*, 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 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 (APU), for a period of at least ten minutes.

8. There must be a means, readily detectable by seated or standing occupants of the overhead crew rest compartment, which indicates when seat belts should be fastened. In the event there are no seats, 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 must be fastened when occupied. If compliance with any of the other requirements of these special conditions is predicated on specific head location, there must be a placard identifying the head position.

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

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

(b) Two protective breathing equipment (PBE) devices approved to Technical Standard Order (TSO)-C116 or equivalent, suitable for firefighting, or one PBE for each hand-held fire extinguisher, whichever is greater, and

(c) One flashlight.

**Note:** Additional PBEs and fire extinguishers in specific locations, (beyond the minimum numbers prescribed in Special Condition No. 9 may be required as a result

of the egress analysis accomplished to satisfy Special Condition No. 2(a).

10. A smoke or fire detection system (or systems) must be provided that monitors each occupiable area within the overhead crew rest compartment, including those areas partitioned by curtains. Flight tests must be conducted to show compliance with this requirement. 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 overhead crew rest compartment; and

(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 overhead crew rest compartment must be designed such 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, 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. Procedures describing methods to search the overhead crew rests for fire sources(s) must be established. These procedures must be transmitted to the operator for incorporation into their 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 overhead crew rest compartment from entering any other compartment occupied by crewmembers or passengers. This means must include the time periods during the evacuation of the overhead crew rest compartment and, if applicable, when accessing the overhead crew rest compartment to manually fight a fire. Smoke entering any other compartment occupied by crewmembers or passengers when the access to the overhead crew rest compartment is opened, during an emergency evacuation, must dissipate within five minutes after the access to the overhead crew rest compartment is closed. Hazardous quantities of smoke may not enter any other compartment occupied by crewmembers or passengers during subsequent access to

manually fight a fire in the overhead crew rest compartment (the amount of smoke entrained by a firefighter exiting the overhead crew rest compartment through the access is not considered hazardous). During the one-minute smoke detection time, penetration of a small quantity of smoke from the overhead crew rest compartment into an occupied area is acceptable. Flight tests must be conducted to show compliance with this requirement.

If a built-in fire extinguishing system is used in lieu of manual firefighting, then 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 any fire occurring in the overhead crew rest compartment, considering the fire threat, volume of the compartment and the ventilation rate.

13. There must be a supplemental oxygen system equivalent to that provided for main deck passengers for each seat and berth in the overhead crew rest compartment. The system must provide an aural and visual warning to warn the occupants of the overhead crew rest compartment to don oxygen masks in the event of decompression. The warning must activate before the cabin pressure altitude exceeds 15,000 feet. The aural warning must sound continuously for a minimum of five minutes or until a reset push button in the overhead crew rest compartment is depressed. Procedures for crew rest occupants in the event of decompression must be established. These procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

14. The following requirements apply to overhead crew rest compartments that are divided into several sections by the installation of curtains or partitions:

(a) To compensate for sleeping occupants, there must be an aural alert that can be heard in each section of the overhead crew rest compartment that accompanies automatic presentation of supplemental oxygen masks. A visual indicator that occupants must don an oxygen mask is required in each section where seats or berths are not installed. A minimum of two supplemental oxygen masks are required for each seat or berth. There must also be a means by which the oxygen masks can be manually deployed from the flight deck.

(b) A placard is required adjacent to each curtain that visually divides or separates, for privacy purposes, the overhead crew rest 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.

(c) For each section of the overhead crew rest 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 No. 1),

(2) Emergency illumination (Special Condition No. 5),

(3) Emergency alarm system (Special Condition No. 7),

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

(5) The smoke or fire detection system (Special Condition No. 10).

(d) Overhead crew rest compartments visually divided to the extent that evacuation could be affected must have exit signs that direct occupants to the primary stairway exit. The exit signs must be provided in each separate section of the overhead crew rest compartment, except for curtained bunks, and must meet the requirements of § 25.812(b)(1)(i).

(e) Sections within an overhead crew rest compartment that are created by the installation of a rigid partition with a door physically separating the sections, the following requirements of these 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, it must be shown 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 short time duration, such as a changing area or lavatory, is not required. However, removal of an incapacitated occupant within a small room, such as a changing area or lavatory, 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) There must be exit signs in each section meeting the requirements of § 25.812(b)(1)(i) that direct occupants to the primary stairway exit. An exit sign with reduced background area as

described in Special Condition No. 4(a) may be used to meet this requirement.

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

- (1) No smoking placards (Special Condition No. 1);
- (2) Emergency illumination (Special Condition No. 5);
- (3) Two-way voice communication (Special Condition No. 6);
- (4) Emergency alarm system (Special Condition No. 7);
- (5) Seat belt fasten signal or return to seat signal as applicable (Special Condition No. 8);
- (6) Emergency firefighting and protective equipment (Special Condition No. 9); and
- (7) Smoke or fire detection system (Special Condition No. 10).

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

16. Where a waste disposal receptacle is fitted, 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 the flammability requirements of § 25.853(a) as amended by Amendment 25-83. Mattresses must comply with the flammability requirements of § 25.853(c), as amended by Amendment 25-83.

18. The addition of a lavatory within the overhead crew rest compartment would require the lavatory to meet the

same requirements as those for a lavatory installed on the main deck except with regard to Special Condition No. 10 for smoke detection.

19. All enclosed stowage compartments within the overhead crew rest 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<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 fire extinguisher will require additional fire protection considerations similar to those required for inaccessible compartments such as Class C cargo compartments.

Fire protection features	Stowage compartment interior volumes		
	Less than 25 cubic feet	25 cubic feet to 57 cubic feet	57 cubic feet to 200 cubic feet
Materials of Construction <sup>1</sup> .....	Yes .....	Yes .....	Yes.
Detectors <sup>2</sup> .....	No .....	Yes .....	Yes.
Liner <sup>3</sup> .....	No .....	Yes .....	Yes.
Locating Device <sup>4</sup> .....	No .....	Yes .....	Yes.

<sup>1</sup> *Material*: 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<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.

<sup>2</sup> *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. 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, and (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.

<sup>3</sup> *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 25-93, 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<sup>3</sup> in interior volume but less than 57 ft<sup>3</sup> in interior volume. 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.

<sup>4</sup> *Location Detector*: Overhead crew rest compartment which contain enclosed stowage compartments exceeding 25 ft<sup>3</sup> interior volume and which are located away from one central location such as the entry to the overhead crew rest compartment or a common area within the overhead crew rest 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 April 9, 2003.

Ali Bahrami,

Acting Manager, Transport Airplane

Directorate, Aircraft Certification Service.

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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. 2001-NM-99-AD; Amendment 39-13114; AD 2003-08-03]**

**RIN 2120-AA64**

**Airworthiness Directives; McDonnell Douglas Model DC-10-10, DC-10-10F, DC-10-15, DC-10-30, DC-10-30F, DC-10-30F (KC10A and KDC-10), DC-10-40, DC-10-40F, MD-10-10F, and MD-10-30F Airplanes**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

**SUMMARY:** This amendment adopts a new airworthiness directive (AD), applicable to certain McDonnell Douglas airplane models. This amendment requires repetitive inspections for chafing or potential chafing of the wiring for the throttle control module (TCM) on the center pedestal in the flight deck compartment, corrective actions if necessary, an inspection of the TCM to determine its part number and configuration, and modification of the TCM. Doing this modification terminates the repetitive inspections. The actions specified by this AD are intended to prevent chafing