

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 ft³ 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 ft³ but less than 200 ft³ 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