

Proposed Special Condition on Installation of Crew Rest Area

Applicable to B777-200

Introductory note:

The hereby presented Special Condition has been classified as an important Special Condition and as such shall be subject to public consultation, in accordance with EASA Management Board decision 02/04 dated 30 March 2004, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of Issue

For CRC (crew rest featuring a door), the applicable airworthiness regulations do not contain adequate or appropriate safety standards for these design features. Special conditions are required for the certification of CRC to supplement CS 25 at Amdt 3.

This here below proposed Special Condition retakes the contents regularly applied by EASA to similar configurations. However, within this Special Condition, the 10(a) paragraph has been amended. The § 10(a) requiring "*A visual indication to the flight crew within one minute after the start of a fire*" has been replaced by requiring "*compliance with CS25.854(a)*"

For reference, 25.854(a) reads as follows:

"Each lavatory must be equipped with a smoke detector system or equivalent that provides a warning light in the cockpit, or provides a warning light or audible warning in the passenger cabin that would be readily detected by a cabin crew member"

This acceptance is based on the following elements:

- The applicant will ensure that adequate operational procedures will be put in place to allow cabin crew to alert flight crew within one minute of the start of a fire.
- The crew rest compartment is not an upper or lower lobe one, but installed on the main deck adjacent to lavatories.
- The crew rest is of reduced size, comprising of only two bunks

B777-200 Special Condition F-01

- Installation of Crew Rest Compartment -

- 1) These Special Conditions are applicable to a CRC located in the forward area of one of the passenger cabin zones, provided with two doors, each opening into one of the main longitudinal aisles, and containing two bunks, not occupied during Taxi, Take off and Landing, and with an occupancy limited to two crewmembers trained with the use of emergency equipment, emergency procedures and the systems of the CRC.
 - (a) There must be appropriate placards, inside or outside each entrance to the CRC to indicate:
 - 1. That maximum occupancy is two,**
 - 2. That occupancy is restricted to operating crewmembers,**
 - 3. That occupancy of the berth is restricted to flight (i.e., not including Taxi, Takeoff and Landing),**
 - 4. That smoking is prohibited in the CRC,**
 - 5. That the crew rest area is limited to the stowage of crew personal luggage and must not be used for the stowage of cargo or passenger baggage.**
 - (b) There must be at least one ashtray on the inside and outside of any entrance to the CRC.
 - (c) A limitation in the Airplane Flight Manual or other suitable means must be established to restrict occupancy to crewmembers and to specify the phases of flight occupancy that are allowed for each feature installed in the CRC.
 - (d) For each occupant permitted in the CRC, there must be an approved seat or berth that must be able to withstand the maximum flight loads when occupied.
- 2) There must be a means to preclude anyone from being trapped inside the CRC. If a locking mechanism is installed on the door, it must be capable of being unlocked from the outside without the aid of tools. The lock must not prevent opening from the inside of the compartment at any time.
- 3) The CRC door must allow rapid evacuation into the passenger cabin in an emergency situation.
 - (a) Means must be designed to minimize the possibility of blockage, which might result from fire (inside or outside the CRC), mechanical or structural failure, or persons standing against crew rest exits door. If there is low headroom, provisions must be made to prevent or to protect occupants (of the CRC) from head injury. The possibility to escape must not be dependent on any powered device.
 - (b) There must be a means to prevent passengers entering the CRC in the event of an emergency, including an emergency evacuation, or when no flight attendant is present.
 - (c) The means of opening CRC doors must be simple and obvious. In addition, the CRC doors must be able to be closed from outside.

- (d) The door must not adversely affect evacuation of occupants (slowing evacuation by encroaching into aisles, for example) or cause injury to those occupants during opening or while open.
- (e) In case of failure of its opening mechanism, the door must be frangible from the inside.
- (f) The evacuation of an incapacitated person (representative of a ninety-fifth percentile male in size, at the corresponding weight) must be demonstrated.

4) The following signs and placards must be provided in the CRC:

- (a) At least one exit sign, located near the door, meeting the requirements of CS 25.812(b)(1)(i),
- (b) An appropriate placard located conspicuously on or near the door that defines the operating instructions.
- (c) Placards must be readable from a distance of 30 inches under emergency lighting conditions.
- (d) The door 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 CRC lighting system, for emergency illumination to be automatically provided for the CRC.

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

6) 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 to alert occupants of the CRC of an emergency situation. In addition, the aural emergency alarm system must include provisions to provide only the relevant information to the crewmembers in the CRC (e.g., fire in flight, aircraft depressurization, etc.) so that occupants of the CRC will not be disturbed with normal, non-emergency announcements made to the passenger cabin. 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.

7) There must be a means, readily detectable by seated, lying or standing occupants of the CRC, which indicates when seat belts should be fastened. Seat belt type restraints must be provided for berths and must be compatible requiring that these restraints 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.

- 8) Means must be provided to cover turbulence. If the seat backs do not provide a firm handhold, or if there is no seat installed, there must be a handgrip or rail to enable persons to steady themselves while in the CRC, in moderately rough air.
- 9) The following safety equipment must also be readily accessible for use in the CRC:
 - (a) At least one approved hand-held fire extinguisher appropriate for the kinds of fires likely to occur,
 - (b) One Portable Protective Breathing Equipment (PBE) devices approved to European Technical Standard Order (ETSO)-C116 or equivalent and meeting CS 25.1439, closed to each hand-held fire extinguisher,
 - (c) One flashlight.
- 10) A smoke or fire detection system must be provided in the CRC. Such system must provide:
 - (a) compliance with CS 25.854(a),
 - (b) An aural warning in the CRC.
- 11) A means to fight and suppress a fire when the CRC is not occupied must be provided. This means can either be a built-in extinguishing system or manual hand held bottle extinguishing system.
 - (a) The design shall be such that any fire within the compartment can be controlled without entering the compartment or the design of the access provisions must allow crewmembers equipped for fire fighting to effectively reach any part of the compartment with the contents of a hand fire extinguisher.
 - (b) The fire fighting procedures must describe the methods to search the crew rests for fire sources(s). Training and procedures must be demonstrated by test and documented in the suitable manuals.
- 12) It must be demonstrated that the complete fire detection and fire fighting procedure can be conducted effectively without causing a hazard to crew and passengers due to excess quantities of smoke and / or extinguishant accumulating and remaining in occupied areas.
- 13) There must be a supplemental oxygen system equivalent to that provided for passenger for each seat and berth in the CRC (automatic drop down system with means by which the oxygen masks can be manually deployed from the flight deck). The system must provide an aural and visual warning to warn the occupants of the CRC to don oxygen masks in the event of decompression. The warning must activate before the cabin pressure altitude exceeds 15,000 feet.
- 14) Materials (including finishes or decorative surfaces applied to the materials) must comply with the flammability requirements of §25.853(a). Mattresses must comply with the flammability requirements of §25.853(c).
- 15) Where a waste disposal receptacle is fitted, it must be equipped with an automatic fire extinguisher that meets the performance requirements of CS 25.854(b).