

Proposed Special Condition on Medical Evacuation configuration

Applicable to Large Aeroplane category

Introductory note:

The following 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

The conversion of the cabin of a large aeroplane from a standard airline layout into a configuration to be used in case of Medical Evacuation (Medevac) foresees the installation of certain number of stretchers to carry passengers that could be incapacitated and/or non-ambulant. In some cases, a significant number of incapacitated passengers could be carried on board.

The stretchers may directly be attached to the aeroplane seat tracks or be restrained to a support unit that is attached to the aeroplane structure. The stretchers and their support units are compliant with 25.561 but do not comply with 25.562.

According to Appendix J of FAR/CS 25, the evacuation demonstration required to comply with 25.803, does not address evacuation of incapacitated passengers transported on a stretcher. For all large aeroplanes, compliance with 25.803 is demonstrated performing (or demonstrating similarity to) an evacuation demonstration in which no stretcher installation has ever been assessed.

In general, all medical evacuation configurations foresee areas that are not compliant with 25.785(j), i.e. do not provide to passengers/crew members a means to steady themselves in case of turbulence (firm handhold), and with 25.785(h)(2), i.e. cabin attendant seats are not installed so that cabin attendants have direct view of the cabin during TT&L.

Medevac configurations may also not be compliant with 25.1447(c)(1). In fact, in case of cabin decompression, -oxygen masks may not be automatically presented to the passengers in the stretchers and life preservers might not be within easy reach of occupants of the stretchers.

Finally, stretchers sometimes incorporate mattresses, which may not be compliant with the overall 25.853 flammability requirement upgrade introduced by the cushion flammability test (oil burner) per CS 25 Appendix F Part II.

—As JAR/CS 25 does not contain requirements that specifically address medical evacuation configurations, Special Conditions are needed to establish a level of safety compatible with that intended by the applicable airworthiness code.

Large Aeroplane category - Special Condition D-xx

- Medical evacuation configuration -

EASA considers that it is reasonable to assume that some, or potentially many such passengers will have reduced mobility and/or may be in a reduced state of consciousness. This will impact on their ability to evacuate the aircraft unaided.

Although compliance with 25.803 in the normal case assumes all passengers are fully able to themselves evacuate the cabin such an assumption has questionable validity in the case of the subject design.

-Designs incorporating low numbers of stretchers into airliner cabins have been approved in the past on the assumption that assistants will be detailed to assist in evacuation of the stretcher borne occupants and that in doing so the risk that they will endanger either themselves or other occupants is low. The large number of stretchers in some of the desired layouts of the subject design change application and the correspondingly relatively low number of seated occupants brings this assumption into question. It can only be concluded that, in certain cases, stretcher borne occupants will have very little chance of rapid evacuation.

The fact that some stretcher occupants will not be automatically presented with supplemental oxygen in the event of a cabin depressurisation, will not have a life preserver within easy reach, movement around the cabin will not be aided by the normally expected provision of firm handholds in all areas and the reduced cabin attendant “direct view” are four additional examples where safety is compromised in comparison to the conventional passenger operations envisaged by JAR/CS25.

However, EASA appreciates that aeroplanes configured for medical evacuation allow transportation of passengers in health conditions that might be extremely critical and where rapid repatriation is important. The number of flights made with such cabin configurations is assumed to be relatively low.

After consideration of all the above, EASA is in agreement that practicable design solutions which would remove the above safety concerns are limited. Reducing the maximum number of stretchers allowed on the aircraft would presumably result in more flights with an increase in the probability of an emergency evacuation being required. The provision of automatically presented oxygen masks for stretcher occupants whilst not impossible would be difficult to achieve when more than one stretcher is installed on the same support module (i.e. the lower stretcher occupant cannot make use of the PSU located masks). Improved firm handhold provisions and cabin attendant direct view would similarly be possible but not easy, and bearing in mind the characteristics of the intended operations (i.e. supervision by medical personnel familiar with the cabin interior) this would likely provide small additional safety.

Having considered the benefit of evacuating injured people located in areas where, for many different reasons, their health and/or safety might be at high risk, EASA is of the opinion that strict non-compliance with 25.803, 25.785(j), 25.785(h)(2), 215.1411(f),

25.1415(e) and 25.1447(c)(1), can be sufficiently compensated by showing compliance with the [following](#) Special Conditions :

- a) In regards to seated occupants, each crew and passenger area must have emergency means to allow rapid evacuation in crash landings, with the landing gear extended as well as with the landing gear retracted, considering the possibility of the aeroplane being on fire. In regards to stretcher occupants, all practicable design precautions and operational procedures must be developed to facilitate evacuation without compromising the egress of cabin attendants and other passengers. Precautions may include features such as location relative to normal passenger seating and emergency exits, easy release of stretchers from their attachments to the a/c to enable patients to be stretcher borne to emergency exits, easily accessed patient restraint buckles to alternatively allow removal and direct carrying of patients, associated training/briefing procedures for attendants, etc. Proposed design precautions and procedures will be evaluated by the Agency for acceptability. An entry shall be made in an AFM supplement to define the procedure to be followed for the evacuation of the occupants of the stretchers.
- b) In areas where closely spaced firm handholds cannot be easily provided as per 25.785(j), (e.g. along aisle portions where stretchers are installed) all practicable efforts must be taken to provide useable handholds to enable passengers to reach their designated seats. The proposed design will be evaluated by the Agency for acceptability. In all other areas where the cabin layout is similar to a standard airline layout (i.e. with seats installed on both sides of the aisle) firm handholds as normally expected for such seating areas must be provided.
- c) To the extent practicable, without compromising proximity to a required floor level emergency exit, flight attendant seats must be located to face the cabin area for which the flight attendant is responsible.
- d) The stowage provisions for life preservers described in- 25.1415 must accommodate one life preserver for each occupant for which certification for ditching is requested. In the case of seated occupants, each life preserver must be within easy reach, whilst seated. In the case of each stretcher occupant, there must be a life preserver in a stowage location that enables an able bodied assistant to quickly locate it and hand it to the stretcher occupant. Operational procedures must be developed (e.g. pre-flight briefing to appropriate persons) to facilitate that such retrieval and distribution will occur. For aeroplanes not certificated for ditching under 25.801 and not having approved life preservers, there must be an approved flotation means for each occupant. This means must be readily removable from the aeroplane.
- e) If certification for operation above 7620 m (25 000 ft) is requested, there must be oxygen dispensing equipment meeting the following requirements (See AMC 25.1447(c)):
 - (1) There must be an oxygen dispensing unit compliant with 25.1443 (c) connected to oxygen supply terminals immediately available to each cabin occupant.
 - (2) If certification for operation above 9144 m (30 000 ft) is requested, the dispensing units providing the required oxygen flow must be automatically presented to the occupants of flight attendant and passenger seats and to occupants of the stretchers before the cabin pressure altitude exceeds

4572 m (15 000 ft) and the crew must be provided with a manual means to make the dispensing units immediately available in the event of failure of the automatic system. In case it is not practicable to have oxygen dispensing units automatically presented to all occupants of the stretchers, all efforts should be made to provide the safest alternative possible. In any case, dispensing units should be within easy reach of the occupants of the stretchers and should be such that they can be accessed and operated without assistance. Procedures must be developed to ensure assistance to the occupants of stretchers from cabin attendants as soon as it is reasonably practicable following a depressurisation of the cabin. The design of the dispensing units, any required pre-flight briefing, and/or cabin attendant training and assistance procedures must be substantiated and relevant information and limitations must be included in an AFM supplement.

- (3) The total number of dispensing units and outlets must exceed the total number of seats and stretchers by at least 10%. The extra units must be as uniformly distributed throughout the cabin as practicable. (See AMC 25.1447(c)(1).)

- f) As well as the entries discussed above, a supplement to the Aeroplane Flight Manual shall be developed containing a limitation stating that fare-paying passengers cannot be transported on the aeroplane.

In addition, a specific limitation must be indicated in the AFM to prohibit operation of the aeroplane with fare-paying passengers.

For what concerns 25.562, the intention when the requirement was introduced was to provide an overall increased level of safety to passengers in a survivable accident. However stretchers for medical use were not considered when the requirements of 25.562 were defined. As a matter of fact, appropriate injury criteria for a non-ambulant person occupying a stretcher do not exist for the time being. For the above-mentioned reasons, JAA issued TGM/25/12 in order to exempt medical stretcher from 25.562. EASA considers the content of TGM/25/12 relevant to medical evacuation configurations. Therefore EASA maintains the interpretation that JAR/CS 25.562 is not applicable to stretchers. It is understood that the stretchers must provide an adequate restraining means for the occupant, taking into consideration the applicable ground and flight loads in addition to the requirements of CS 25.561. Moreover, the stretcher design must take into account the protection of other passengers, e.g. it must foresee appropriate padding of exposed protuberances, etc.

EASA, considering the cushion function of the stretcher mattress, requires the stretcher mattress to comply also with CS 25.853(c), and therefore successfully pass flammability testing of Part II of Appendix F on JAR 25.

It should be noted also that other dimensional requirements related to passageways, width of aisle, and exit size remain applicable without additional provisions for passage of stretcher or highly incapacitated occupant.