

## **Special Condition on Structural Armrest between Seats**

### **Applicable to EMBRAER EMB-545**

#### **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 12/2007 dated 11 September 2007, 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**

In the context of the associated design change the applicant proposed an interior configuration for the EMB-545 that includes a side facing seat (divan), which can be occupied by two occupants for TTL. The divan is modular and comprised by two independent modules and two lateral closings (armrests). A simplified sketch of the arrangement is shown in Figure 1 below.

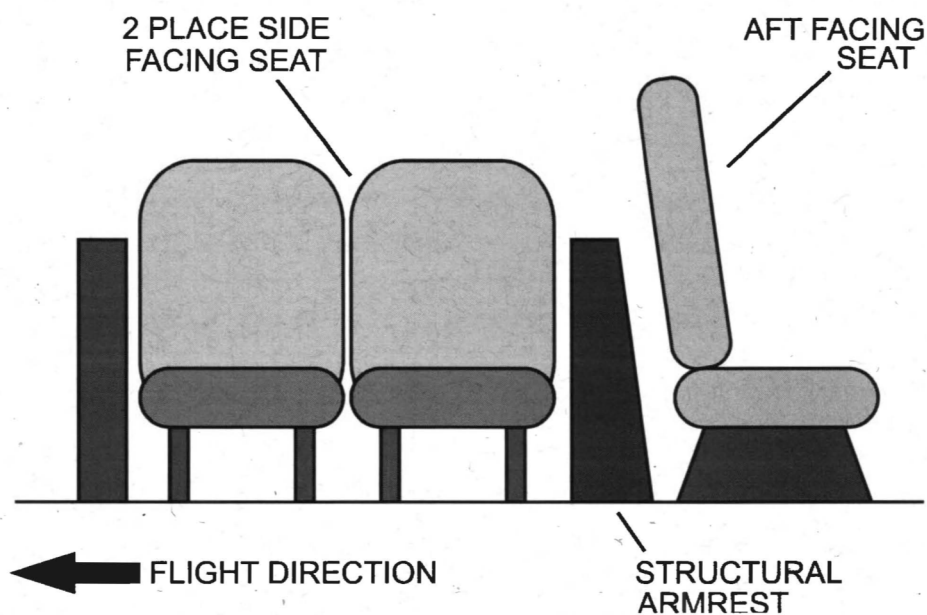


Figure 1: Proposed Seat Installation

Due to this independency, the armrests can be considered as interior monuments and, because of this, their certification does not have to consider compliance with CS 25.562.

However, the proposed interior configuration also comprises an AFT facing seat, and the interaction between AFT facing seat and divan rear most occupant is foreseen under some circumstances. To limit this interaction in such way that it would not be injurious to any of the seats occupants (in the divan and in the AFT facing seat), the applicant proposed that one of the armrests, so called "structural", would be designed to withstand loads imposed by the AFT facing seat in emergency landing dynamic conditions.

The current applicable requirements of CS 25 may not adequately address the installation of such kind of structures between seats and its intended functions, and therefore special requirements are developed.

**Special Condition D-34 - Structural armrest between seats**

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This Special Condition contains the additional safety standards that EASA considers necessary to establish an acceptable level of safety compared to the existing airworthiness standards.

Nota : ANAC has introduced an identical Special Condition through their FCAR ref. EI-32 Stage 4 dated 22 May 2015.

1. The proposed structural armrest, deformed due to the application of static, dynamic and interaction (with occupied AFT facing seat) loads, considering the applicable CS 25 requirements, must not touch the side facing seat most rear occupant (the occupant cannot act as an 'human cushion');
2. Similarly, the backrest of the occupied AFT facing seat must not touch the side facing seat most rear occupant, considering the same conditions;
3. The proposed structural armrest, deformed due to the application of static, dynamic and interaction (with AFT facing seat) loads, considering the applicable CS 25 requirements, must not impose loads to the side facing seat structure;
4. It must be demonstrated that the contact between the backrest of the AFT facing seat with the structural armrest, considering the applicable loading scenarios as above, is not significant, such that it would cause injuries to the back of the AFT facing seat occupant.