

Proposed Equivalent Safety Finding D-19 on JAR 25.813 : Emergency exit

Applicable to Bombardier Aerospace (BA) CL-600-2C10

Introductory Note:

The hereby presented Equivalent Safety Finding has been classified as an important Equivalent Safety Finding 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:

Original type certification of the CL-600-2C10 (CRJ-700) model aeroplane includes a maximum passenger seating capacity of 78 passengers, with a maximum of 26 of those passengers being seated in the "dead-end" zone behind the overwing exits (i.e. this aeroplane has no emergency exits located at the rear of the passenger cabin).

The latter limitation is in accord with the contents of the FAA Advisory Circular (AC) 25.807-1, accepted by the JAA at the time of the Type Certification, which recommends a dead-end zone capacity not to exceed 75% of the rating of the emergency exit pair bounding that zone.

Each of the pair of exits bounding the dead-end zone in this case meet the requirements for a Type III exit, with a rating of 35 passengers allowed for the pair (in accordance with JAR25.807 at Change 14). This leads to a maximum dead-end seating capacity of $35 \times 75\% = 26.25$, rounded down to 26.

Equivalent Safety Finding D-19 to JAR 25.813 : Emergency exit access

– Applicable to Bombardier Aerospace CL-600-2C10 –

Applicant Proposal:

BA wishes to receive EASA acceptance for an increase in the allowable seating capacity of the dead-end zone to 28, whilst at the same time limiting the maximum passenger seating capacity of the aeroplane to 71.

The additional two passenger seats will be installed no further behind the overwing exits than the rearmost seats in the type design cabin configuration (they will occupy the empty RHS position found in the type design layout of 7 double seat units on the LHS, and 6 double seat units on the RHS, of the main aisle).

This passenger seating configuration has been accepted, on the basis of a finding of equivalent safety, by Transport Canada (Issue Paper OS-13 Dated April 23, 2015 refers).

Applicant Safety Equivalency Demonstration:

EASA has reviewed the contents of the Transport Canada finding of equivalent safety and considers that the following compensating features detailed therein substantiate the safety equivalency of the proposed design :

1. Each Type III overwing emergency exit and its associated exit passageway are oversized compared to the minimum requirements set by JAR25, at Change 14. Evidence from emergency evacuation demonstrations for the CL600-2B19 and the subject CL600-2C10, shows that the latter aeroplane's oversized overwing exits exhibit an increase in escapee flowrate of 17% over the former. The former aeroplane has overwing exits more closely meeting the minimum requirements set by JAR 25.

This 17% increase in escapee flowrate capability can be compared to the less than 7% increase in desired dead-end zone passenger seating capacity compared to the maximum figure set by AC 25.807-1 (i.e. $28/26.25 = 1.067$).

2. The reduction in overall seating capacity to 71, in comparison to the limit of 79 set by JAR 25.807, further compensates by appreciably reducing the maximum number of escapees seated in the forward cabin zone from 51 to 43. This will reduce the time taken to empty the forward zone via the forward exit(s) thus allowing passengers in the dead-end zone to earlier elect, or be guided by cabin crew, to also use the forward exit(s). This will further enhance the overall evacuation performance of the dead-end zone.