



U.S. Department
of Transportation

**Federal Aviation
Administration**

Memorandum

| | | | |
|----------|--|-----------|-------------------|
| Subject: | <u>INFORMATION</u> :, Equivalent Level of Safety Finding (ELOS) for Bombardier Aerospace model CL-600-2D24 CRJ 900, AT2587NY-T | Date: | October 28, 2002 |
| From: | Manager, Transport Airplane Directorate, Airframe/Cabin Safety, ANM-115 | Reg Ref | § 25.813(c)(2)(i) |
| | | Reply to | Kevin Dowling |
| | | Attn. of: | ANE-170 |
| To: | Manager, New York ACO | ELOS | AT2587NY-T-SE-3 |
| | | Memo# | |

The purpose of this memorandum is to inform the certificate management certification office of an evaluation made by the Transport Airplane Directorate on the establishment of an equivalent level of safety finding for the Bombardier Aerospace model CL-600-2D24 RJ 900.

Background

Section 25.813(c)(2)(i) states that “the projected opening of the exit provided must not be obstructed” and “there must be no interference in opening the exit”. For airplanes in which the adjacent seat rows on the exit side of the aisle contain no more than two seats, an unobstructed passageway at least 10 inches in width must be provided. In addition, the centerline of the required passageway must not be displaced more than 5 inches horizontally.

An equivalent level of safety finding (ELOS) was granted for the RJ 700 to allow seat cushion encroachment into the projected opening of the Type III overwing exit [2.8 inches (horizontally) and 4.25 inches (vertically)]. Bombardier requests that a similar ELOS be granted for the RJ 900 except that 3.5 inches of horizontal encroachment be found acceptable.

Applicable Regulations

§§ 21.21(b)(1), 25.561(d), 25.562(c)(8), 25.809(b), 25.813(c)(1)(i), 25.813(c)(2)(i)

Regulation(s) Requiring an ELOS

§ 25.813(c)(1)(i)

Description of compensating design features or alternative standards which allow the granting of the ELOS (including design changes, limitations, or equipment needed for equivalency)

The following compensating factors are applicable to the RJ 900 design.

| FAR | Requirement | CL-600-2D24 Design |
|---|---|---|
| 25.807(a)(3) Type III Exit Minimum Size | 20 inches wide x 36 inches high minimum | 20 inches wide x 43.3 inches high (NC ¹) |
| 25.807(a)(3) Step Up | 20 inches maximum | 12.6 inches (NC ¹) |
| 25.807(a)(3) Step Down | 27 inches maximum | Fwd: 22.2 in. ² (NC ¹) Aft: 26.7 in. ² |
| 25.813(c)(1)(i) Unobstructed Passageway Width | 10 inch minimum | 17.04 inches ³ |
| 25.813(c)(1)(i) Centerline of passageway | Must not be displaced more than 5 inches horizontally from that of the exit | 4.88 inches ³ |

Notes:

1. NC means no change from the RJ 700 design
2. O/W exit “step down distance” is measured on the exit opening centerline and 12 in. away (outboard) from the exit lower sill
3. Dimensions based on a passenger seat bottom cushion protrusion into the Type III Exit of 4.25” H x 3.5” L. (As provided by Bombardier Aerospace.)

Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation

The FAA considers the RJ 900 compensating features to be acceptable as proposed. Although the seat cushion obstructs the projected opening of the exit, all of the dimensions for the required exit passage meet or exceed the requirements as identified in the table above. The compensating size of the passageway would allow for an equivalent level of safety intended by the regulation for persons to safely evacuate through the Type III overwing exits.

However, in verifying these compensating features upon installation, the installer must also verify that the proposed design will not interfere with the opening of the exit when opened from the inside and outside of the aircraft.

When these conditions are met, the comparison of the exit opening in relation to the seat bottom cushion protrusion provides an equivalent level of safety to the applicable regulations.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding addressed in issue paper SE-3. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Airplane Directorate has assigned a unique ELOS Memorandum number to facilitate archiving and retrieval of this ELOS. This number should be listed in the Type Certificate Data Sheet in the Certification Basis section as a statement for a TC or ATC project or on page 3 of the STC for an STC project. An example of an appropriate statement is provided below.

Equivalent Safety Findings have been made for the following regulation(s):
§ 25. 813 Emergency Exit Access (documented in TAD ELOS Memo AT2587NY-T-SE-3)

/s/ Franklin Tiangsing *October 31, 2002*
Manager, Airframe/Cabin Safety Branch, ANM-115 Date

| | | |
|-------------------------------------|-----------------------------------|---------------------------|
| ELOS Originated by New York ACO: | Project Engineer: Dan Parrillo | Routing Symbol ANE-172 |
|-------------------------------------|-----------------------------------|---------------------------|