



Federal Aviation Administration

Memorandum

Date: February 27, 2015
To: Manager, Wichita ACO, ACE-115W
From: Manager, Transport Airplane Directorate, ANM-100
Prepared by: Steve Litke, ACE-118W
Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for the Duncan Aviation Interior Modification on a Bombardier Inc. Model BD-700-1A10, Project # ST05991WI-T

ELOS Memo # ST05991WI-T-A-1

Regulatory Ref: 14 CFR 25.811(d)(1), 25.811(d)(2), and 25.812(b)(1)

This memorandum informs the certificate management aircraft certification office of an evaluation made by the Transport Airplane Directorate (TAD) on the establishment of an equivalent level of safety (ELOS) finding for the Bombardier Inc. Model BD-700-1A10.

Background

The Model BD-700-1A10 airplane is certified for a maximum capacity of 19 passengers. This airplane has a Type I emergency exit on the left side of the fuselage and a Type III over-wing exit on the right side of the fuselage.

Duncan Aviation installed a single, wedge shaped exit sign to serve the function of both the exit marking sign and the exit locator sign at the Type III overwing exit. This sign does not meet the size requirements of Title 14, Code of Federal Regulations (14 CFR) 25.812(b)(1)(i) and is installed somewhat low for its location to be considered overhead, as is required by § 25.811(d)(1) for an exit locator sign.

Applicable regulation(s)

14 CFR 25.811(d)(1), 25.811(d)(2), and 25.812(b)(1)

Regulation(s) requiring an ELOS finding

14 CFR 25.811(d)(1), 25.811(d)(2), and 25.812(b)(1)(i)

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

The certification basis for the Model BD-700-1A10 requires compliance with §§ 25.811 and 25.812 at Amendment 25-88.

Previous ELOS findings allowed the installation of smaller exit signs for specific airplanes based on their passenger cabin aisle lengths and fuselage diameters. The reduced sized signs were found acceptable for specific airplanes based on their small passenger cabin, aisle length, and fuselage diameters. The Model BD-7001A10 with its 8'2" wide 6'3" high cabin, low headroom and close proximity of the exits to one another puts it into this category. The FAA determined that reduced size exit signs provide an acceptable level of safety for a cabin of this size.

The illumination levels of the signs will meet the requirements of § 25.812(b)(1)(i).

Explanation of how design features or alternative Methods of Compliance (MoC) provide an equivalent level of safety to the level of safety intended by the regulation

The FAA determined it is acceptable to use the proposed exit signs to demonstrate compliance with §§ 25.811(d)(1), 25.811(d)(2), and 25.812(b)(1)(i) on a Model BD-700-1A10 airplane.

The FAA evaluates the proposed signs in a representative interior installation. Person(s) with 20/20 (or worse) eyesight confirm the legibility of the exit signs and bulkhead/divider signs. The exit signs are legible by occupants ranging from 5th percentile (in height) female (approximately 5'2") to a 95th percentile (in height) male (approximately 6'1"). The evaluation of the exit signs is accomplished from all standing locations in the aisle, forward or aft of the signs, as appropriate. The electrically powered signs are illuminated during the evaluation.

The signs' background area and height are substantially less than required by § 25.812(b)(1)(i). This can result in insufficient color contrast between the signs' letters and their background areas due to the surrounding airplane surface acting as the background area. In order to ensure legibility of the word "EXIT," the evaluation must consider either two worst case scenarios of background color or the existing background color but be subject to re-evaluation per a limitation on the supplemental type certificate (STC) every time the background color changes. For the worst case scenario option, conduct the first evaluation with an aircraft background color that is the same color as the sign's letters (representing the worst case for a lighted cabin). Conduct the second evaluation with an aircraft background color of black (representing a dark cabin).

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned ELOS finding in project issue paper A-1. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The TAD has assigned a unique ELOS memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS memorandum number must be listed in the Limitations and Conditions section of the STC.

Equivalent Safety Findings have been made for the following regulations:

14 CFR 25.811(d)(1) and (d)(2) Emergency exit marking; and 14 CFR 25.812(b)(1)(i) Emergency lighting (documented in TAD ELOS Memo ST05991WI-T-A-1)

Original signed by

Jeff Gardlin

Transport Airplane Directorate,
Aircraft Certification Service

2/27/15

Date

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| ELOS Originated by Wichita ACO | Project Engineer Steve Litke | ACE-118W |
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