



Federal Aviation Administration

Memorandum

Date: December 4, 2012

To: Manager, Transport Standards Staff, International Branch, ANM-116

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Jeff Gardlin, ANM-115

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for indication of the passenger door from outside position if the door is not fully closed, latched and locked for the Airbus Model A350 airplane (FAA Project Number TC0544IB-T)

ELOS Memo #: TC0544IB-T-CS-10

Reg. Ref.: § 25.783(e)

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 Airbus Model A350 airplane.

Background

Title 14, Code of Federal Regulations (14 CFR) 25.783(e) (2) states:

(e) Warning, caution, and advisory indications.

Doors must be provided with the following indications:

(2) There must be a positive means, clearly visible from each operator station for each door that could be a hazard if unlatched, to indicate if the door is not fully closed, latched, and locked.

Passenger doors can be operated from both the inside and the outside, and therefore this rule applies in both cases. That is, a person closing the door from either the inside or the outside is required to have a positive means to notify him/her if the door is not fully closed, latched and locked.

Applicable regulation

§ 25.783

Regulation requiring an ELOS finding

§ 25.783(e)(2)

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

The Airbus Model A350 passenger doors do not include a discrete indication that the door is not properly closed, latched and locked to a person operating the door from the outside. This requirement was added to the regulations at amendment 25-114, in addition to other requirements for indications to the flightdeck and overall safety precautions such as inhibiting pressurization should a door not be fully closed, latched and locked.

The A350 passenger doors contain an additional feature, such that the escape slides cannot be armed, if the door is not fully closed, latched and locked. The escape slide mechanism is independent of the door operating mechanism, and so this feature will effectively provide further indication that the door is, or is not, in its proper position. Arming the escape slide is a different and separate action than closing the door. However, the indication is provided to the cabin crew, and not the door operator outside the airplane.

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

Section 25.783(e)(2) is intended to inform any operator of a door that the operation to close, latch and lock the door is incomplete, through an unambiguous indication, directed at that operator. This is because the operator is the person most likely to check the particular door that they operate. The objective, though, is that, regardless of who operates the door, the direct indication of an improperly closed, latched and locked door has the same likelihood of being recognized. While this is a design feature that has existed for cargo doors in the past, it is not so common for passenger doors.

Although noncompliant with the regulation, utilizing the slide arming action as an independent indication does provide the necessary indication, and is independent of who operates the door. The key element to ensure the effectiveness of the compensating feature is making the arming of the slide a mandatory action tied to the type design. Airbus proposes to do this through a mandatory action in the cabin crew operations manual, which becomes required under the type design.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned ELOS finding in the Model A350 airplane Issue Paper CS-10, titled "Indication of the Passenger Door from outside Position if the Door is not fully Closed, Latched and Locked." This memorandum provides standardized

documentation of the ELOS finding 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 should be listed in the type certificate data sheet under the Certification Basis section. An example of an appropriate statement is provided below:

ELOS Findings have been made for the following regulation(s):
 14 CFR 25.783(e)(2), Warning, caution an advisory indications. (documented in TAD ELOS Memo TC0544IB-T-CS-10)

Original signed by

Suzanne Masterson

December 7, 2012

 Manager, Transport Airplane Directorate,
 Aircraft Certification Service

 Date

ELOS Originated by: Airframe and Cabin Safety Branch	Project Engineer Jeff Gardlin	Routing Symbol ANM-115
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