

Equivalent Safety Finding (ESF) on CS 25.783(e)(1) and CS 25.783(e)(3) at Amendment 15 : Fuselage doors for Cockpit Sliding Windows

Applicable to Airbus A330-700L “Beluga XL”

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

The Airbus A330-700L “Beluga XL” will be certified as a derivative cargo aircraft of the A330-300 aeroplane for the special purpose of transporting outsized cargo items, mainly aircraft components and subassemblies between the Airbus sites of its manufacturing / production locations. These outsized cargo items are intended to be carried on dedicated TCUs (Transport Cargo Units) in the Main Deck Cargo Compartment (MDCC), which has a large volume and height and is not pressurized.

The aircraft is designed with a lowered cockpit when compared with that of the baseline aircraft A330-300. This lowered cockpit has a maximum occupancy of three persons (pilot, co-pilot and observer) and is extended by an adjacent courier area that can accommodate up to four additional occupants who must be knowledgeable about the aircraft’s evacuation features and physically able to accomplish the associated emergency procedures.

As per design restrictions for such specific purpose aircraft, the only emergency exits available are the two cockpit sliding windows (CSW), as no passenger door from the A330-300 baseline aircraft are suitable to be used as emergency exit under all foreseeable conditions could be retained.

Among the requirements of CS 25.783(e) at amendment level 15 regarding warning, caution and advisory indications for aircraft doors there are:

- CS 25.783(e)(1): *“There must be a positive means to indicate at the door operator’s station that all required operations to close, latch, and lock the door(s) have been completed”.*

- CS 25.783(e)(3): *“There must be a visual means on the flight deck to signal the pilots if any door is not fully closed, latched, and locked. The means must be designed such that any failure or combination of failures that would result in an erroneous closed, latched, and locked indication is remote for:*
 - (i) each door that is subject to pressurisation and for which the initial opening movement is not inward; or*
 - (ii) each door that could be a hazard if unlatched”.*

For the cockpit sliding windows (CSW's) in the A330-700L "Beluga XL" derivative, compliance with CS 25.783(d)(2) at amendment level 15 (door's latches and their operating mechanisms) is achieved by an overcentering of the latches in relation to the rails and with a spring which confirms the overcentered position. The latch overcentering and the spring prevent back driving forces on the latching mechanism.

However during the CSW closing and latching process, the visual indicator of the CSW (a red unlock indicator protruding from the opening handle) does not provide indication whether the latches of the CSW are overcentered or not as it retracts before reaching this overcentered position.

This represents a non-compliance with CS 25.783(e)(1) requirement. In addition, the fact that the CSW latches may be in a not overcentered position without the CSW red unlock indicator being visible is a non-compliance with CS 25.783(e)(3).

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Proposal

A preflight check will be in place to be performed by the flight crew to ensure that the sliding window is correctly closed and latched, that the handle of the sliding window has been pushed fully forward to the closed position, and that it has been verified that the red indicator is no longer visible.

This physical preflight check supplements the visual indicator of the CSW. By means of this preflight check:

- A. The flight crew will confirm that all required operations to close and latch the CSW have been completed, which results in an equivalent level of safety compared with a design compliant with CS 25.783(e)(1).
- B. In case the CSW is not fully closed and latched when the check is started, the flight crew will recognize this by a residual forward handle movement during the check, which results in an equivalent level of safety compared with a design compliant with CS 25.783(e)(3).

Safety Equivalency Demonstration:

The set of requirements described here above have been found to provide an equivalent level of safety than the CS 25.783(e)(1) and 25.783(e)(3) when applied to the "Beluga XL" A330-700L Cockpit Sliding Windows (CSW's).