

Proposed Equivalent Safety Finding on CS 25.795 (a)(1) : “Application of reduced Intrusion Loads in certain Areas of the Flight Deck Boundaries”

Applicable to Airbus A350-941

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 certification basis of the A350 includes the requirements of CS 25.795(a)(1) at Amdt.9.

In that respect the flight deck door as well as the boundaries that are separating the flight deck compartment from the area occupied by passengers shall be designed to withstand the impact of 300J as defined in sub-paragraph (a)(1).

" (a) Protection of flightdeck. If a secure flightdeck door is required by operating rules, the bulkhead, door, and any other accessible boundary separating the flight crew compartment from occupied areas must be designed to:

(1) Resist forcible intrusion by unauthorised persons and be capable of withstanding impacts of 300 Joules (221.3 foot-pounds), as well as a 1113 Newton (250 pound) tensile load on accessible handholds, including the doorknob or handle, ..."

Airbus A350-941 – Equivalent Safety Finding D-31

– CS 25.795 (a)(1) : Application of reduced Intrusion Loads in certain Areas of the Flight Deck Boundaries –

Design Proposal:

On the A350, depending on the aircraft customized layout, several configurations are defined for the boundaries: it could be lavatories, galleys (full size/half size), stowage compartments, Flight Crew Rest Compartment or a combination of those monuments.

Airbus has made a detailed analysis of possible boundaries and is of the opinion that the impact energy of 300J required by 25.795(a) (1) is in certain cases beyond the loads that could effectively be applied from an attempt at forcible intrusion.

Justification:

The flight deck boundaries that are accessible by passengers are required by 25.795(a)(1) to be designed to withstand the intrusion impact load of 300J. However, in certain areas, the testing of these boundaries to 300 J is unrealistic, due to the limited access to the boundary or limited movement inside the compartment adjacent to the boundary (e.g. inside a lavatory).

Based on that, tests have been performed in a monument mock up environment to determine the level of energy and forcible intrusion loads that can realistically and physically be applied to these boundaries. All expected configurations have been evaluated and for each of them a realistic level of energy has been determined.

Safety Equivalency Demonstration:

EASA agrees that the level of energy and intrusion loads applied can be reduced based on the accessibility of the boundaries and on the ability of a person to manouvre themselves into an effective position in the available space.

Therefore the A350 aircraft is considered to ensure an equivalent level of safety to a literal compliance to 25.795(a)(1) provided that the limiting geometrical and/or construction features of monument layouts for allowing a lower impact energy, the magnitude of the lower impact energy in each case, and the method of generation of the lower impact energy in the associated certification testing are fully detailed and agreed with EASA.