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#easabusinessjets

Cabin Interior requirements for Business Jets

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Appendix S

- Executive Interior Requirements (EIR) rulemaking - NPA 2015-19
- CS25 revised at Amendments 19 and 21.
- Alternative criteria to the CS-25 basic requirements, for executive interiors to take into account the specificities of **privately operated and “low-occupancy”** aeroplanes’ according to the intended type of aircraft operations:
 - to maintain a high, uniform and proportionate level of safety, while facilitating the development and certification of executive interiors.
 - to clarify CS-25 requirements and interpretations thereof, based on feedback from certification projects, whilst reducing costs and certification burden on applicants and the Agency (avoiding repetitive issuance of CRIs);

EASA Experience with latest BJ TCs

- Certification Basis endorsing CS25 at Amdt 19 or later has recorded a significant reduction of CRIs thanks to the introduced Business jet proportionality by using provision of:
 - Appendix S
 - CS 25.788 and
 - VIP interiors applicable AMC update.

Internal Door System Safety Objective

Background

- S25.10(a)(b) allow to have a door in the passenger evacuation route in Commercial and Non-commercial operation (pax≤19) despite from CS25 Amendment 12, almost all interior doors are prohibited ;
- The level of safety that is established by S25.10(a) and S25.10(b), is achieved by requiring **multiple design features** as part of the interior door design.
- S25.10(a) - Non-commercially operated Aeroplanes
 - placarding - briefing - timely cockpit alert - dual latching – frangibility;
- S25.10(b) Commercially operated Aeroplanes (<19 pax only)
 - S25.10(a) + expanded placarding - auto opening or cabin crewmember on board mandated.

Internal Door monitoring system reliability

EASA TCs projects experience

- There is no single feature or subset of features, that can be considered sufficient to achieve the level of safety established by S25.10(a) or (b).
- Any failure condition of the systems that allow **the door position monitoring**, the **alerting of the flight crew about the door incorrect status**, and the **automatic reconfiguration of the door, or remote operation of the door and of its latching mechanism from the flight crew station**, should be considered as a reduction of safety margin.
- EASA has also considered appropriate to establish a reliability objective (1×10^{-3} or less) for the door status monitoring system and for the systems that ensure automatic (or remote) reconfiguration of the door by crew members, based on failure system effect commonalities with S25.20(b)(1).

Timely activation of cockpit/cabin alerts

Background

- Achieving this *fully automatically door latch and secure is difficult*.
- EASA accepts a cockpit **switch**, which is activated by AFM procedure, at appropriate point during descent, to arm alerting system.
- Alerts to flight crew/passengers, in the case of evacuation route obstruction (overwing exit or galley door) before TTO&L, need to be given in good time, i.e. “timely”.
- Before landing - “during descent” is required to ensure an appropriate action as per AFM entry.
- Monitoring activation triggered by Airplane configuration change (Flap≠0 or landing gear) is not considered early enough to match the “timely manner” S25.10(a) target.

Timely activation of cockpit/cabin alerts

EASA TCs projects experience

- indication provided before 3048 m (10.000 ft) Above Airport (or Aerodrome) Level (AAL) and within 30nm distance from destination airport is an adequate design solution to meet the intent of S25.10 (a), S25.10 (b) and S25.20(b).

Oversized class B compartments

Regulatory Background

- South African Airways B747 Combi (Flight 295) into the Indian Ocean in 1987 after having reported a Class B Cargo Fire;
- DOT/FAA/AR-96/5 and DOT/FAA/AR-TN99/29
- CS 25 Amdt 8 revised CS 25.857 and associated AMC (AMC 25.855 and 25.857 Cargo or baggage compartments)
 - *(b) Class B. A Class B cargo or baggage compartment is one in which:
(1) There is sufficient access in flight to enable a crewmember ~~to effectively reach any part of the compartment with the content of a hand fire extinguisher,~~ **standing at any one access point and without stepping into the compartment, to extinguish a fire occurring in any part of the compartment using a hand fire extinguisher;***
- Introduced AMC provides geometrical limits for Class B Cargo

Oversized class B compartments

EASA TCs Projects experience

- CRI discussion was supported by extensive series of developmental test to validate the test set up Test to demonstrate the capability of the chosen hand fire extinguisher to extinguish fires likely to occur in the Class B cargo compartment.
 - The **fire load should produce a catastrophic conditions if left unattended**;
 - Fire severity to be agreed with the Agency as outcome of developmental test;
 - Fire load, ignition (**Fire Severity parameter**) and ventilation are key factors for test **repeatability**;
 - Fire Load must represent fires likely to occur in the Class B cargo compartment (Class A and limited amount of flammable fluid);
 - Flammable fluid fully contributing to fire event (at least 100ml).
 - Agent Quantity Evaluation, Fire Severity peak and scenario faced by the Firefighter represent main areas of attention;
 - Oxygen starvation really sensitive to Fire load severity, and ventilation;
- Post fire evaluation (AC 25-17A Fire Containment principles) constant temperature decrease.
- Great coordination and convergence between FAA, TCCA, EASA.

Thank you for your attention

Floor to Industry... ...and then Questions?

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