Equivalent Safety Finding on CS 25.1191 (b) : Firewalls
Applicable to Dassault Aviation Falcon 5X

Introductory Note:

The hereby presented Equivalent Safety Finding has been classified as an important Special Condition 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 CS 25.1191(b) requirement applicable to the Falcon 5X states:

CS 25.1191 Firewalls

(…)
(b) Each firewall and shroud must be –
(1) Fireproof;
(2) Constructed so that no hazardous quantity of air, fluid, or flame can pass from the compartment to other parts of the aeroplane;
(3) Constructed so that each opening is sealed with close fitting fireproof grommets, bushings, or firewall fittings; and
(4) Protected against corrosion.

The Inner Fan Duct (IFD) of the Safran Aircraft Engines Silvercrest SC-2D engine of the Dassault Aviation Falcon 5X is made of Aluminium material. The Aluminium IFD is fireproof during flight conditions but only fire resistant (5 minutes) and not fireproof (15 minutes) during ground operations (parking, taxiing…).

With this design, the strict compliance with CS.1191(b) is not met.

Equivalent Safety Finding E-22 on CS 25.1191(b) : Firewalls

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Applicant proposal:

To compensate this non-compliance to 25.1191(b) during ground operations, the applicant proposes the following additional features:

1) Fire resistance of elements surrounding IFD.
2) Draining capability.
3) Extinguishing capability in Zone 2 (core compartment).
4) Aircraft design with regard to emergency doors and fuel tanks respective locations.

Safety Equivalency Demonstration:

The above mentioned additional features bring compensating factors detailed here after:

1) Fire resistance of elements surrounding IFD.

   All the elements surrounding the IFD provide a ground fireproof multi-layer protection to the IFD in case of fire in the core compartment. The fire within zone 2 is then contained by all the surrounding elements for at least 15 minutes.

2) Draining capability.

   The draining capability lessens the fire threat and the duration of a fire even in case of large leakage.

3) Extinguishing capability in Zone 2

   There is fire extinguishing capability on ground within the engine Fire Zone 2 (Core compartment) with a high performance in terms of fire extinguisher agent concentration (4 seconds duration for Halon concentration above the 6%).

4) Aircraft design with regard to emergency doors and fuel tanks respective locations.

   An additional compensating factor is achieved by the fact that the fuel tanks and passenger doors (main door and emergency door) are remote from the engines.