

Proposed Special Condition on In-flight Fire : Composite Fuselage Construction

Applicable to Hawker 4000

Introductory note:

The following Special Condition has been classified as an important Special Condition and as such shall be subject to public consultation, in accordance with EASA Management Board decision 02/04 dated 30 March 2004, 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 FAA issued Hawker 4000 Type Certificate on the 21st November 2006. The EASA Certification Basis for the Hawker 4000 is set at 31st December 2001 making the application regulations JAR 25 Change 15.

Historically, JAR 25 fire requirements have been focused upon interior structures. Existing JAR 25 Change 15 does not specifically address composite airframe structures subject to fire (e.g. burn through, release of toxic materials, ... etc).

In-flight fires have originated in inaccessible areas of aircraft where thermal/ acoustic insulation located adjacent to the aluminium aircraft skin has been the path for flame propagation and fire growth. The flammability standards required for this insulation material (JAR 25.853(a) and 855(d)) have thus been shown to be inadequate. In response to this, the US Federal Aviation Administration (FAA) has developed an improved rule (FAR 25.856(a)) which introduces an improved test method.

During the development of the improved FAR25 rule, it was shown that a conventional aircraft's aluminium structure did not contribute to in-flight fire propagation, but, as the Hawker 4000 makes extensive use of Composite Materials in airframe structure, and thus the contribution of the structure to a fire situation may be different, the EASA proposes a Special Condition, as part of the Hawker 4000 Type Certification Basis, in order to rectify the demonstrated inadequacy of the current JAR requirements for flammability resistance of thermal/ acoustic insulation material, and to ensure that the composite construction of the aircraft does not introduce new hazards.

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In lieu of JAR 25.853(a) requirement, for thermal/acoustic insulation materials, the following requirement shall be substituted:

[Thermal/acoustic insulation material installed in the fuselage must meet the flame propagation test requirements of part VI of Appendix F to this part, or other approved equivalent test requirements. This requirement does not apply to "small parts," as defined in part I of Appendix F of this part.]

Moreover, it must be demonstrated that the use of composite structural materials does not introduce any additional in-flight fire risks (e.g. reduced flame propagation resistance, emission of hazardous quantities of toxic products into occupied areas) that would not be present if the structure were of conventional aluminium alloy.