BRITISH AIRWAYS
ENGINEERING

Technical Standards -
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121359

Date: 18th January 2001

BA Ref: QSD-MPS-PJS-26-0953

U.S Department of Transportation Dockets,
Docket No. FAA-2000-7909,
400 Seventh Street SW.,
Room Plaza 401,
Washington DC,
20590.

Subject Ref: **Docket No. FAA-2000-7909** – 34

Dear Sir,

British Airways (BA) submits the following comments to the referenced Docket.

a) Sec. 25.856 Insulation Materials

i) The term 'thermal / acoustic insulation' needs to more clearly defined as to location;
Suggest adding 'thermal / acoustic insulation as applied to the interior lining of aircraft fuselages, air duct wraps and equipment bays (eg: electrical / electronic compartments)'.

ii) The term 'lower half of the airplane fuselage' needs defining.
The preamble (ref. page 56996) notes that 'lower half' is above the cabin floor for most airplanes. This is considered an unsatisfactory definition for an airworthiness rule.
If the FAA consider that thermal / acoustic insulation applied below the aircraft main passenger deck (or lower main passenger deck in the case of the Airbus A380) window belt needs to demonstrate flame
penetration resistance, then this should be stated.
It is presumed that the entire thermal / acoustic insulation in the (to be defined) 'lower half of the airplane fuselage' needs to meet the proposed requirement ie: between the forward and rear pressure bulkheads.

The FAA should note that currently, certain aircraft within the defined category (capacity of 20 or greater) do not utilise lower fuselage thermal / acoustic insulation.
Q: Is the intent of the proposed rule that all aircraft (of affected capacity) must use a flame penetration resistant thermal / acoustic insulation to prevent flame ingress into the airplane, even if thermal or acoustic factors do not require the use of an insulation layer?.

b) Appendix F Part VI

i) Paragraph (c) Test Specimens - Part (2) Construction
This paragraph is ambiguous - whilst stating that 'Test specimens shall include all materials used in construction of the insulation' it allows for 'a number of ways to prepare the sample'.
The thermal / acoustic insulation test specimens should replicate the construction as used on the airplane - this would include materials, closure seam design and thickness.

It is usual airline policy to repair thermal / acoustic insulation blankets if they become damaged in service by the application of a 'repair tape'.
Due to the potentially large quantity of repair tape that could be used, BA consider that repair tape should also be qualified to the Appendix F part VI requirements.
BA recommends that the Flame Propagation Test be undertaken on representative thermal / acoustic insulation blankets but with a length of candidate repair tape aligned along the test specimen and with the tape centre line coinciding with the test flame application point.
The actual test protocol and criteria being as stated in the NPRM.

ii) Paragraph (f) Test Procedure - Part (6)
'The pilot burner shall be at 27 degrees angle with the sample....'.
This angle should include a tolerance for production purposes, BA suggest +/- 3 degrees.

iii) Paragraph (h) Requirements (1)
The criteria requirement for 'No flaming beyond 2 inches to the **left** of the centreline of the point of pilot
flame application....' is unclear.
'To the left' needs to be clarified as to the viewing position (ie: 'to the left' when viewed from the flame
application end of the specimen OR when viewed from the opposing end of the specimen).

(iv) Paragraph (h) Requirements (2)
It is unclear as to why one specimen (out of 3) is allowed to afterflame and the remainder may not.
As the purpose of the test is to eliminate flame propagation on thermal / acoustic insulation it appears contradictory to allow one specimen to afterflame beyond the flame application time of 15 seconds.

BA recommends that no specimen is allowed to afterflame.

c) Appendix F Part VII

i) Paragraph (c) Test Specimens - Part (3) Construction - Sub Part (iv)
This paragraph specifies attaching the blanket test specimens to the test frame using '12 steel spring type clamps'.
The preamble (ref. page 56996) states that '...the means intended to be used for fastening the insulation to the fuselage would have to be accounted for when performing tests'.
This implies that the proposed fastening (attachment) system for the insulation blankets into the airplane should be tested simultaneously with the insulation blanket.
Bearing in mind previous FAA statements that testing has found that the insulation blanket fastening method has frequently been the cause of failure of an otherwise 'acceptable' insulation blanket construction, it appears contradictory to use a 'standardised' attachment method for the certification tests.
BA accepts that development of candidate fastener methods is ongoing and would expect to see the final rule eliminate the '12 steel spring type clamps' and replace with 'proposed airplane installation method'.

d) Section 121.312 Materials for Compartment Interiors (e)

i) Parts (2) and (3) are aimed at stipulating a date by which new manufactured airplanes need to comply with (respectively) flame propagation requirements and flame penetration resistance requirements.
As responsibility to comply with the (new) rule is with the airplane manufacturer, BA consider that Parts (2) and (3) should be included in the Part 25 - Airworthiness Standards section.

ii) Part (1) specifies that 'when thermal / acoustic insulation materials are installed as replacements' they should meet the flame propagation requirements.

However, there is not an equivalent statement for the flame penetration resistance requirement.
BA consider this a contradictory stance.
If it is considered that 'one off' replacement thermal / acoustic insulation will enhance the flammability
standard of the airplane wrt flame propagation then this rationale should also apply to the flame penetration resistance requirement.
BA consider that improved flammability performance 'one off' replacement thermal / acoustic insulation (for airplanes manufactured before the effective date of the final rule) will not offer a significant increase in the safety of the airplane.
BA recommends, therefore, that the Part (1) requirement should be removed.

iii) BA supports the FAA position of not campaigning a retrofit program for thermal / acoustic insulation materials against both the flame propagation or flame penetration resistance requirements.

c) Conclusion

i) BA supports the FAA with the intent of improving airplane safety by the introduction of the proposed rules contained within NPRM 00-09.

ii) BA accepts that the Appendix F Part VI test protocol is sufficiently developed to produce repeatable and valid test results.

iii) Based upon observations and ongoing FAA test programs, BA is unsure if the Appendix F Part VII test protocol is sufficiently developed to produce repeatable and valid test results.

Yours faithfully,

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