SAE/ISO Standard for Fire Containment Covers

Presented to: International Aircraft Systems Fire Protection Working Group. Long Beach, CA

By: Dave Blake, FAA Technical Center Fire Safety

Date: Nov 14-15, 2012
• The FAA has requested that SAE develop a standard for Fire Containment Covers (FCC’s).

• FAA TSO C90 will be revised to reference the new standard.

• ISO is also developing a standard for FCC’s

• SAE and ISO have agreed to attempt to make the standards identical
SAE Standards for Works In Progress

WIP - Not available for purchase at this time.

Document Number: AS6453
Project Number:
Project Initiation:
Revision Number:

Title: Air Cargo Pallet Fire Containment Covers

Issuing Committee:
Age-2a Cargo Handling Committee

Scope:
The scope of this project is to develop a specification for a fire containment cover (FCC) for shipping pallets on aircraft to contain a fire for extended over water operation of up to 4 hours (777 ETOPS requirements). The specification will describe the type of material required, testing required, and in-service requirements.

Rationale:
Fire on board an aircraft during flight is becoming an increasing problem that is without a current solution. Recent FAA NPRMs and regulatory activity has focused on this problem and there are a number of industry groups currently working on a solution including, ULD cargo net manufacturers, operators, and the ISO. One operator already has a solution to the problem. The SAE is behind on developing guidance and a solution utilizing this technology.

Return to Works In Progress List
Current ISO Status:

ISO/DIS 14186 is listed as in Stage 40.60, Close of Voting
• Tech Center was requested to run tests to determine if wording on allowable gaps between the bottom edge of the FCC and the pallet were needed in the SAE Standard.

• Four FCC tests were conducted to determine damage tolerance and bottom edge gap effects.
  
• Test 1: FCC with moderate damage.
  
• Test 2: FCC with minimal damage.
  
• Test 3: Undamaged FCC with a 2.5” air gap between lower edge of FCC and pallet.
  
• Test 4: Undamaged FCC with a 1” air gap between lower edge of FCC and pallet.
• 4” steel channel all around lower edge of frame to catch lower edge of FCC and keep a constant air gap present for the duration of the 2 hour test.
2.5” gap between pallet rail and lowest edge of channel
• Fire load was cardboard boxes filled with shredded newspaper. Metal poles visible outside FCC are for mounting thermocouples at 48” and 90” above floor, 4” from sides of FCC on all four sides (only 2 are visible in picture)
• Thermocouple locations

TCs are at heights of 48” and 90” above floor and 4” away from face of FCC on all 4 sides.
• Conclusions

• All 4 tests failed due to exceeding 400° F on thermocouples 4” away from outside surface of FCC’s per draft SAE/ISO Standards.

• All 4 test fires were contained by the FCC’s but not extinguished.

• Small sections of the exteriors of the FCC’s briefly ignited in most test due to ignition of off-gassing resins.

• Cargo net on exterior of FCC’s ignited in all tests. (Net sample was tested to the 12 second vertical bunsen burner test and failed. Current regulations do not require this test but the draft SAE/ISO Standards do)
The Fire Containment Covers used in the previously described tests were prototypes units that were not fully developed by the manufacturer. The cargo nets were not treated with a fire retardant as the production units will be. Development work is continuing to address the observed off-gassing resin ignition. The FCC’s were considered to have failed the draft SAE/ISO Standards as they were written at the time. The final version of the Standards may be different.

For these reasons, the testing was inconclusive in achieving the objective of determining the need for specific language in the draft standards for allowable gaps along the lower edge of the FCC. Additional testing to address this issue is planned.