

# INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING MINUTES

Held at

Hardwick Hall Hotel and Conference Center, Sedgefield, Stockton-on-Tees, United Kingdom

Hosted by Darchem Flare

**June 27-28, 2001**

## **WEDNESDAY, JUNE 27, 2001**

### **Radiant Heat Panel Test – P. Cahill**

**Hook and Loop:** Pat discussed the testing she recently conducted on Hook and Loop material. She showed a video of some of the tests while explaining how the materials reacted during the tests. The reason the FAATC is conducting these tests is to develop an acceptable way to test the hook and loop material (ie: one of the insulation blanket components).

**Tapes:** Pat discussed the tests she conducted on tapes used to repair tears in insulation blankets and showed a video of some of the testing she recently conducted on tapes of different widths on insulation blankets in various configurations. Pat was asked if she had a summary of all the test results. Question: Where is the FAA going to go next with these tests? D. Hill: There is already an NPRM out that indicates that the hook and loop and tapes used with insulation blankets are to be tested with the insulation blankets as they are installed in an aircraft. Therefore, the rule will include these components. Question: What are the actual conditions that will fail the test? Has anyone ever tested the silicone adhesive tape? Pat: Not that I am aware of. D. Hill: In full-scale tests on films, we have found that the material shrinks away from a fire of a specified size. We have seen in a realistic fire scenario with a realistic insulation blanket configuration, that certain materials that shrink do not get involved in the fire. Those materials shrink away from the fire. Pat presented photos of the results of several various tape/film configurations. Question: How many different configurations (and types of materials) have you tested? Pat: At least 50 to 60 of each of these configurations. Our Radiant Panel Round Robin Task Group will be testing both tapes and hook & loop in the future to obtain results from other labs' test apparatus. Question: Have you conducted any tape tests with films with a controlled rip? Pat: We can do that in the future. D. Hill: The rule will be for insulation blankets and the various components that are used on the blankets. The main purpose of this test program is to ensure that the test method covers the worst cases so that we can determine an acceptable way to conduct the test and minimize the complexity and the number of tests that will be required.

**Round Robin:** Pat presented the results of the round robin tests conducted recently and gave a brief explanation of the comments received from the labs that conducted this set of round robin tests. All of the outside labs participating in this round robin used an electric panel test apparatus. The FAATC was the only participating lab using an air propane panel. There should be three additional labs ready to participate in the next set of round robin tests. Question: At what point do you start measuring at zero? Does every lab start measuring at the same point? Pat: From the time that I physically lift the flame. The samples used in these round robin tests are very representative of the materials currently used in aircraft.

## THURSDAY, JUNE 28, 2001

### Burnthrough Round Robin Overview Discussion – T. Marker

Tim presented comparison information for the four round robin test sets that have been completed to date. A copy of his presentation is available on the Fire Safety Section website ([www.fire.tc.faa.gov](http://www.fire.tc.faa.gov)). Tim showed where the standard deviations were for the materials tested during Round Robin III.

A member suggested contacting ASTM to find out if there is a standard analysis method for round robin data.

### Burnthrough Round Robin III Data Analysis – K. Tran (Mexmil)

Khang presented and explained the detailed analysis he prepared on the data collected during Round Robin III. A copy of his presentation is available on the Fire Safety Section website.

### Burnthrough Round Robin IV Discussion – T. Marker

Tim presented the data from this round robin. Tim reviewed the objective, hypothesis, and conclusion of this set of Round Robin tests (for details see his full presentation on the website).

### Air Velocity Measurement – J. Davis (Accufleet)

Tim mentioned that the airflow going into the burner and the measurement of the airflow velocity are consistent problems. Ensuring there is a tight seal is extremely important.

Jim discussed the investigation into the placement of the meter and the meter configuration. A short comparison test determined that the direction the meter faced in relation to the burner made a difference in the measurement readings. The measurements take by the two different meters were taken and compared. Jim did some research into manufacturers (sources) of these meters. He presented a list of recommendations for meter use and maintenance.

### Darchem Presentation on Burnthrough – D. Dodd (Darchem)

Darren provided a brief update and offered a copy of the summary of the conclusions found as a result of the burnthrough tests conducted at Darchem. The full paper will be printed as a CAA report in the near future. Some testing will be done on correlation between Darchem's medium-scale burnthrough tests and the FAATC's full-scale burnthrough tests.

### Aircraft Materials Fire Test Handbook – R. Hill

The Handbook has been broken down individually Chapter on the website. Items related to each Chapter are listed below the individual Chapter listing on the web page for easy access/reference. The related AC's are listed in the same manner under the Chapter for the materials they pertain to. The copy of the FAA Policy Letter referencing the Handbook is also available on the website.

### Renovation of Panels Discussion and Formation of Task Group – T. Marker

Renovation and Repair of interior materials includes work done like removing a laminate and replacing it or painting a panel. Tim gave a short presentation entitled: "Certification Procedures for Altered Interior Surfaces". He summarized the research done previously on this topic and the suggestion made after that work concluded such as use of a Critical Panel (Surrogate). FAATC is committed to reinvestigating this problem at this time. An Advisory Circular may be published after the completion of the new investigation into this area.

### Electrical Wiring in Inaccessible Areas – P. Cahill

Pat described the wire tests conducted recently at the FAATC and results of those tests. She described the test set up and showed a video of some of the tests.

## Task Group Reports

### Production Quality Assurance – C. Lewis

A fault tree was developed in order to evaluate and research the production quality assurance related issues/problems. The Task Group has agreed on the final outcomes and conclusions and a final report will be published by the next meeting.

### Materials In Hidden Areas – R. Hill

CEAT and Airbus have a joint program on materials in hidden areas. Task group members from each of these organizations provided a brief overview of that program. The FAA has a program in place in coordination with the JAA on flammability hazards of materials in hidden areas. The FAATC will be conducting some full-scale tests later this year. Dale asked about the possibility of including some of the older reports on the full-scale tests conducted at the FAATC on the website.

### Burnthrough Task Group – T. Marker

The group discussed calibration and set a plan to go forward in that area. Group members will investigate devices other than the Omega meter (at a comparable price) that may be more appropriate for the group's needs. The group will forward their calorimeters to the FAATC for recalibration. Tim described the test plan the group will use to determine what dictates the burnthrough and failure time. The group also discussed standardizing other parameters of the test and test rig including air velocity within the lab.

### Renovation and Repair – T. Marker

What do you do in the event that you are going to refurbish or alter the interior material and you no longer have the original substrate to run the test on? This group will do some preliminary testing to determine the next course of action for the group. The previous test work done on this topic will be revisited as well. The group would like to set up a meeting with the FAA and airline operators and some FAA ACO's to discuss this issue. Tim will finalize the draft of the report related report.

### Radiant Heat Panel – P. Cahill

The group discussed the round robin and the participants agreed to share individual data from the first round robin. The group discussed the recording of the flame propagation distance for clarification. The group also discussed preparations and the materials that will be used in Round Robin II. Four materials and one tape will be tested in Round Robin II. The FAATC will be making up the samples. The Task Group will meet during the of the October 2001 Conference to discuss the results of Round Robin II.

### Possible October 2001 Task Group Meetings:

Task Group Leaders who plan to hold a Task Group meeting during the week of the October 2001 Conference should let April know by August 1, 2001, so that space and a time slot may be allotted for each Task Group meeting. This information will be posted to the website as it becomes available.

No regular Working Group meeting will be held in fall 2001.

### Spring 2002/Summer 2002 Meetings:

Spring 2001 timeframe: February-March 2002

Summer 2002 timeframe: June-July 2002

There is presently no host for either of these meetings. If you would like to host a future meeting even beyond these dates, please contact April with your preference.