

## INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING

September 13-14, 2000

Held at Sheraton Atlantic City West, Pleasantville, New Jersey, USA

### WEDNESDAY, SEPTEMBER 13, 2000

Website Demo --An explanation of the information included on the FAA Fire Safety Section Website was provided by Dick Hill.

#### Heat Flux Transducer Presentation – D. Johnson

Dick explained many of the problems that have arisen in the history of use of the heat flux transducers. He emphasized the importance of the careful handling of these gauges because of the thin one-millimeter foil located in the center. It is also extremely important to keep these gauges clean. The requirements and calibration information are provided in the Aircraft Materials Fire Test Handbook. The National Institute of Standards and Technology (NIST) calibrates these gauges for a fee. Dick (FAATC) is working closely with NIST to ensure that both facilities' calibration procedures are in line. The heat flux transducer is used in a number of flammability tests, therefore, the care, handling, and maintenance are extremely important in order to ensure its accuracy. Dick presented several photographs of transducers in various conditions in order to emphasize the importance of their care, maintenance, and handling. It is important to clean your transducer with a soft brush after every use to prevent build up.

#### Heat Flux Measurements in the OSU (Rate of Heat Release Apparatus) – B. Filipczak

Bob described the Lumped Heat Transfer Analysis calculations using the slug calorimeter (copper slug). He presented a schematic of the slug calorimeter he designed. He presented data collected during the use of the slug calorimeter. Bob has written an FAA Tech Note covering this research that is currently being published. The Tech Note will be available on the FAATC Fire Safety Section website once it is published. This will in no way impact the FAA requirements. The slug calorimeter may be used as an inexpensive way to check the heat flux gauge in the OSU. You must be certain that the slug is at uniform temperature from front to back prior to use in the OSU.

#### Radiant Heat Panel Discussion – P. Cahill

Pat reviewed issues that have been addressed. The biggest problem is variability in test results with film/fiberglass assemblies when fabricated and tested due to: compression (sample stapled around the perimeter), frame compression, loose (excess film material), and less compressible frame. The solution is to define a method by which all test samples are fabricated. The specs for the construction of the electric panel will be posted to the FAA Fire Safety Section website so that those labs ordering the electric panel may include them with their orders (to the manufacturer/vendor). Question: Is there a plan to do some cross checking or compatibility tests for the electric panel versus the air propane radiant panel? Answer: Yes, we (FAATC) will conduct extensive compatibility tests on the electric panel. The FAA Regulatory Group will not allow the electric panel to be used if it does not correlate with the air propane panel. The panel required by the FAA is not the same as the ASTM E-648 panel. Some discussion took place about standardizing the distance between the igniter and the panel. *NPRM Comments* – J. Gardlin: The FAA is trying to keep the NPRM as current as possible incorporating most of the recent information obtained during the recent research conducted at the FAATC. It should be published in the near future. Please read the entire document before making comments in order to understand the reasoning used in writing the requirements. There will be a generous comment period on the NPRM. The FAATC Fire Safety Section will set up a link to the NPRM from its website.

## Other Labs' Radiant Heat Panel Experiences

### Govmark – S. Sadinsky

Govmark has two panel frames: a heavyweight and a lightweight panel frame. They have found that the lightweight panel frame maintains heat flux better than the heavyweight panel frame.

### Burnthrough Standard Discussion – T. Marker

Tim discussed the proposed burnthrough test method:

- summarized the data from Round Robin 1 and Round Robin 2,
- presented and discussed the current (new) burner configuration (dimensions/specs are posted to FAATC website),
- presented and discussed full-scale versus lab-scale burnthrough correlation results (using new burner configuration),
- discussed the problems encountered in preparing for Round Robin 3,
- and presented Round Robin 3 Guidelines.

### Thermal Acoustic Liners Installation Testing (Burnthrough Fastening Systems Discussion) – R. Cherry

Ray described the stylized panel that was developed by Darchem. He explained that Darren Dodd at Darchem has been and continues to conduct the burnthrough fastening systems tests. He showed samples of the types of fixing pins/clips. He discussed the differences discovered between the stylized panel and an actual aircraft panel. Ray presented some of Darren's recent test results. He requested comments/thoughts on the Test Methodology for Bag Overlap Fixings. Comment: This configuration does not match the McDonnell Douglas DC-10 or MD-80 insulation blanket installation design.

## **THURSDAY, SEPTEMBER 14, 2000**

### Discussion on Aircraft Seats – P. Cahill

#### Skandia Test Experience – J. Boggs

Judy explained the newer seats and dress covers have very little weight, so very little weight can be lost in the tests in order to remain within the 10% weight loss allowed. There are some solutions such as using a fireblocker, but industry does not want the cost of adding fireblocker. Some of the cushions were prepared with a fireblocker made of fire retarding foam. Without the fireblocker, these new seats fail the oil burner test. Ethel Dawson (Accufleet) also explained the problems they have encountered in testing these new seat materials. The Advisory Circular (AC) for seat testing is on the Fire Safety Section website.

#### Aircraft Materials Fire Test Handbook Announcement – J. Gardlin

The FAA Regulatory Group will issue a Policy Notice in the Federal Register that explains what the Handbook is and indicate what sections of the Handbook relate to the federal regulations. An internal memorandum will be issued to the ACO offices to inform them of this decision. The foreign regulatory authorities will receive a copy of this memorandum as well. Tests must be conducted according to the FAR or by testing according to what is written in the Handbook as providing an equivalent level of safety or by proving to the FAA certification personnel that the your test provides an equivalent level of safety (the same as what is called for in the FAR).

#### Fire Resistant Aircraft Materials Research Overview – R. Lyon

Rich explained the work done by his group at the FAATC. This group's reports/information can be found on the FAA Fire Safety Section website by clicking on "Research" from the home page.

## Task Group Reports

### Potential Fire Threats Task Group Report – R. Hill

This group discussed the flammability of wire and cable contained in hidden areas. The standard test for wire and cable flammability will be examined. Dick presented photos from a recent Air Tran Airways aircraft (DC-9) that experienced a fire in a hidden area that caused the aircraft to turn back to the airport about 10 minutes into its flight. The aircraft experienced thick smoke in the cockpit area prior to landing. This points out the need to investigate and examine hidden fire hazards and fire protection requirements in the hidden areas. The Task Group also discussed different types of tests for different types of materials contained in hidden areas of the aircraft.

### Burnthrough Task Group Report – T. Marker

New stators were provided to the participating labs, the participating labs' burners will be configured to the latest guidelines (removing tabs and static discs—the spec is available on the FAATC Fire Safety Section website), calibrate and report back to FAATC by 9/29/00, begin blanket fabrication as soon as possible, complete Round Robin testing by mid/late-November, data analysis by the end of 2000.

### Radiant Heat Panel Task Group Report – P. Cahill

The group is developing a uniform sample preparation method and the weighting of the test sample when it is placed into the platform. The Task Group members will be providing suggestions/ideas for this to Pat via email, fax, and telephone. The specifications for the panel will be available on the FAA Fire Safety Section website by the end of September 2000. This group plans to have Round Robin data to present at the February 2001 Working Group meeting.

### Production Quality Assurance Task Group Report – C. Lewis

This group is attempting to identify the weak points/elements in production quality assurance through the use of a fault tree.

### Next Meeting

Claude Lewis of Transport Canada will host the next meeting on February 13-14, 2001, at the Government Conference Center in Ottawa, Canada.

### International Aircraft Fire and Cabin Safety Research Conference

The conference will be held at the Trump Taj Mahal Hotel Casino October 22-25, 2001, in Atlantic City, New Jersey, USA.