U.S. Department
of Transportation
**Federal Aviation
Administration**

Technical Center

Atlantic City Int'l Airport
New Jersey 08405

February 25, 1993

Dear Group Member:

Enclosed please find your copy of the minutes of the February 8, 1993, meeting of the International Aircraft Materials Fire Test Working Group.

As you review these minutes, please note that your responses to the Action Items are due to us by Monday, April 5, 1993. This will allow us time to coordinate everyone's comments for the spring meeting.

SPECIAL NOTE: Please be aware that the telephone and fax exchanges for the FAA Technical Center have been changed to 485 (previously 484).

The spring meeting will be hosted by Boeing Commercial Airplane Group in Seattle, Washington, USA. The meeting dates are Tuesday and Wednesday, May 25 and 26, 1993. Most of day one will be dedicated to heat flux transducers. The major manufacturers of transducers as well as NIST representatives will be invited to attend for a discussion on the calibration problems.

I look forward to seeing you in May.

Sincerely yours,

Richard Hill

Richard Hill
Program Manager

INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP

MEETING HELD AT FAA TECHNICAL CENTER, ATLANTIC CITY INT'L AIRPORT, NEW JERSEY

FEBRUARY 8, 1993

ATTENDEES

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ACTION ITEMS

RESPONSE DEADLINE: APRIL 5, 1993

CHAPTER 1: VERTICAL BUNSEN BURNER TEST FOR CABIN AND CARGO COMPARTMENT MATERIALS

1) P. Cahill will check into correct FAR reference for Scope.

2) Ref: 1.6.2.5: F. Tiangsing (NWM) will have person who commented on honeycomb samples blowing out flame write a more specific statement to clarify reignition of flame.

APPENDIX: CHAPTER 1

3) P. Cahill will add guidelines for samples that occasionally reach pass/fail limit.

4) Group members asked to send information on how they test different types of materials. This information will be added to Appendix.

CHAPTER 2: 45-DEGREE BUNSEN BURNER TEST FOR CARGO COMPARTMENT LINERS AND WASTE STOWAGE COMPARTMENT MATERIALS

5) P. Cahill will check into reference to FAR in Scope.

CHAPTER 4: 60-DEGREE BUNSEN BURNER TEST FOR CARGO, CABIN COMPARTMENT, AND MISCELLANEOUS MATERIALS

6) P. Cahill will check into reference to FAR in Scope.

CHAPTER 5: HEAT RELEASE RATE TEST FOR CABIN MATERIALS (OSU)

7) Labs to supply information to D. Johnson as to whether 15 holes in Upper Pilot Burner should be kept.

8) Should there be some guidelines in Appendix on specimen orientation for different types of materials? F. Tiangsing (NWM) will check into this.

APPENDIX: CHAPTER 5

9) Labs to send D. Johnson more information on how to write up section 5.6.3. A paragraph could be added here.

CHAPTER 6: SMOKE TEST FOR CABIN MATERIALS (NBS)

10) D. Johnson to look into use of two wires for specimen set up (see Figure 11 notes). Labs requested to try this suggestion and send data to D. Johnson as well.

CHAPTER 8: OIL BURNER TEST FOR CARGO LINERS

APPENDIX: CHAPTER 8

11) Labs to send information on testing of different types of materials to D. Hill (as outlined in notes).

CHAPTER 1: VERTICAL BUNSEN BURNER TEST FOR CABIN AND CARGO COMPARTMENT MATERIALS

PAT CAHILL

1.1 SCOPE: H.D. Berg discussed Amendment system for clarification. P. Cahill will check into this for clarification.

1.2.3 DRIP FLAME TIME: Discussion took place concerning Boeing comment on this. J. Peterson (Boeing) and S. Campbell (Douglas) both explained procedures at their companies.
CONCLUSION: No change.

1.3.1 TEST CABINET: Boeing comment reviewed: J. Talandis (Atlas) explained that their entire cabinet is constructed of stainless steel.

D. HILL: Remove statement about galvanized sheet metal.

GROUP COMMENT: Appendix should include statement regarding toxicity of smoke when opening cabinet door.

1.3.3.1 BURNER FUEL: Pat reviewed comments from British Aerospace requesting removal of B-gas statement in Appendix.

1.3.3.1 and 1.6.1.1: Unclear as to whether air supply should be shut off when using Methane gas.

1.3.3 DECISION: Change 5/16" to 1 1/2" from top of barrel to be more specific.

1.4.1 PAT REVIEWED NWM COMMENT: Region sees the following statement as redundant: "Specimen may be cut from a flat sheet". Pat would like to add statement: 'cannot apply flame' as she wrote on viewgraph.

1.4.4 SPECIMEN THICKNESS: COMMENT: A large product may have variations in it in thickness. Pat explained that in the FAR Appendix F there is a statement about thickness.

1.4.4.1: Should both minimum and maximum thicknesses be tested? P. CAHILL STATED: We have to make a decision as to whether both minimum and maximum thicknesses must be tested or if only the minimum must be tested. She looked to F. Tiangsing (NWM) for his view on this. He explained that if it changed, it would be a regulatory change.

D. HILL: Change the word 'thickness' to 'worst case' and explain 'worst case' in the Appendix in relation to thickness. In Appendix give some explanation as to how to determine worst case.

1.6.2.5 PAT REVIEWED NWM COMMENT: They have witnessed honeycomb samples that blow out the flame.

J. PETERSON (Boeing): Boeing always relights and adds up ignition time. Relights are the practice at Boeing.

F. TIANGSING (NWM): We must be more specific in when reignition is allowed.

D. HILL: Going by test, flame must remain lit. Appendix will have to be specific as to when reignition is allowed. Asked F. Tiangsing to get NWM person who made comment initially to write a more specific statement to clarify this in Appendix.

P. CAHILL: Reviewed British Aerospace comment that some of the titles of the figures be changed.

FIGURE 1.1 BRITISH AEROSPACE COMMENT: Remove number under this figure and leave only title.

APPENDIX: CHAPTER 1

FOAMS STATEMENT: NWM COMMENT: Be more specific on other kinds of foams. P. Cahill will add a short paragraph about other kinds of foams.

P. CAHILL: Should a statement be added concerning panels with Nomex carpeting. There was some discussion about other types of materials bonded to panels being described as carpeting.

CONCLUSION: Add a much more general statement dealing with more materials than just Nomex carpeting.

S. CAMPBELL (Douglas): PAGE 1-15 TO 1-16: One word should be changed because it makes a difference.

CHAPTER 2: 45-DEGREE BUNSEN BURNER TEST FOR CARGO COMPARTMENT LINERS AND WASTE STOWAGE COMPARTMENT MATERIALS

2.1 SCOPE: S. CAMPBELL (Douglas): Asked for clarification on reference to FAR 25.855. P. Cahill to check into this.

CHAPTER 3: HORIZONTAL BUNSEN BURNER TEST FOR CABIN, CARGO COMPARTMENT, AND MISCELLANEOUS MATERIALS

3.1 SCOPE: QUESTION: Which FAR should be referred to here?

CHAPTER 4: 60-DEGREE BUNSEN BURNER TEST FOR ELECTRIC WIRE

4.1 SCOPE: S. CAMPBELL (Douglas): Question on referral to FAR 25.1359. Is this one correct. P. Cahill to check into this.

P. CAHILL: Reviewed changes and new drawings. Are the drawings clearer this way than they were before?

GROUP'S CONCLUSION: Show bases differently.

P. CAHILL EXPLAINED: These new drawings were created to clarify earlier questions.

P. CAHILL: Stated she would like to standardize gauge sizes. She does not feel it is necessary to test every size.

CHAPTER 5: HEAT RELEASE RATE TEST FOR CABIN MATERIALS (OSU)

RICHARD JOHNSON

D. JOHNSON: Reviewed measurement changes.

5.3.4 AIR DISTRIBUTION SYSTEM: The measurement for the thickness of the orifice will be changed to match figure. The millimeters should be .6 mm.

PIPE DIMENSION: Added inside diameter measurement to text as it appears in corresponding figure.

5.3.8.2 UPPER PILOT BURNER: Last sentence deleted in first paragraph. D. Johnson sent out 5 or 6 samples of these with 15 holes. The Upper Pilot Burner shall be constructed of stainless steel tubing. He is waiting for comments back from labs where samples were sent. OSU manufacturer concerned about whether 15 holes will become standard or not. Corresponding figure does not indicate that holes face heat source.

It was noted that throughout Chapter 5 there are some cases where text and figures do not correlate. Necessary changes will be made in order to keep the consistent.

FIGURE 5-3: H. BARRETT (Polyplastex): Figure needs to be corrected. Delete reference to flip on top of holder. It does not belong on top. It will change weight. Add the word 'vertical' in text where it refers to two wires attached-it should state two wires attached vertically.

5.4.1 SPECIMEN SIZE: Change this to be consistent with NBS sample size: 5.94 to 5.90 +/- .06.

5.4.4 SPECIMEN ORIENTATION: D. JOHNSON: We tried to incorporate decisions made concerning specimen orientation in NBS into this chapter. There was some discussion concerning specimen orientation among group members.

GROUP COMMENT: Are there materials that make a difference? What about carpets?

D. HILL: Put something in Appendix concerning this. He asked F. Tiangsing (NWM) to check into this as well.

5.6.5 CALIBRATION PROCEDURE: D. Johnson received no comments on this in response to last meeting.

5.7 TEST PROCEDURE: QUESTION CONCERNING PROCEDURE: How long do you keep transducer in there? Can we have something in text to clarify length of time? Some labs average 10 seconds of calorimeter readings on a computer.
D. JOHNSON: It is not mandatory to use a computer. L. DION (Delsen): If you don't have software for computer set-up, you can end up varying if you are doing this manually without computer assistance.

D. JOHNSON: It is important to cut a space around base so that it is not touching the board.

5.9 NOTE: F. Tiangsing (NWM) suggested a changing the word 'requested' to the words 'applied for' concerning Type Certificates.

K. FOREST (Chicago-ACO): Can sample be held by four wires?

D. JOHNSON: Two wires is what is stated in the Handbook.

APPENDIX: CHAPTER 5

5.4.4 SPECIMEN ORIENTATION: There was some discussion about adding a paragraph to Appendix concerning this statement. D. JOHNSON: Should it be located in the same place in Chapter 5 as it is in Chapter 6?

D. CARDIS (Schneller): In Chapter 6 it is in text presently, not Appendix.

D. JOHNSON: We can use same wording as we have in Chapter 6.

CHAPTER 6: SMOKE TEST FOR CABIN MATERIALS (NBS)

D. JOHNSON: Reviewed footnote after 6.3.1.1. Eliminate last sentence in 2nd paragraph.

6.3.1.3: Statement about placement of bottle on floor should be moved to Appendix.

6.3.1.11: Should we put a footnote at the bottom of the page with part number for bulb that works.

There was some discussion on etching of top glass plate in chamber. One lab described their method of cleaning glass. D. Johnson explained that it was important to be careful about what kinds of cleaners you use because certain cleaners could be considered to have absorptive properties and change results of test. NOTE: The film used on glass is Mylar D film. It is 5 millimeters thick.

D. JOHNSON: Do we need to keep temperature requirement on lower window surface?

J. PETERSON (Boeing): Yes, we need to keep it.

H. BARRETT (Polyplastex): Did we discuss 'C' clamp and thick specimens?

D. JOHNSON: You can make as many as you want to accommodate what you have.

H. BARRETT (Polyplastex): What about using wires?

G. BIAMONTE (Aviointeriors): Should we put something in Appendix about oversize samples?
D. JOHNSON: Yes, we can do that.

6.9.1: Change (a-1) to (c-1) in reference to FAR 25.853.

APPENDIX: CHAPTER 6

FIGURE 3: Location of sample face and measurement added to this figure.

FIGURE 4: Upper guide and lower guide identifiers were added.

FIGURE 8: Adjustment of holder and burner. Change tolerances-it is important to have a device to check your tolerances accurately.
Should we carry out millimeter equivalents and not round them off?
D. JOHNSON: Yes, we can.
FIGURE 11: D. Johnson looking for suggestions on specimen set up as illustrated in this figure. He would like some data results from different methods tried.
D. HILL SUGGESTED: For testing carpet, it may be possible to use two vertical wires to hold specimen similar to those on the front of the sample holder. D. Johnson will look into the use of these wires. He would like someone else to try this and get back to him with the results.

CHAPTER 7: OIL BURNER TEST FOR SEAT CUSHIONS

RICHARD HILL

D. HILL STATED: He is still waiting for comments from group as promised in last two meetings.

Updates made to this chapter so far were reviewed.

7.7.3: J. PETERSON (Boeing): Shouldn't we take tolerance out? Check into last sentence of 7.7.3 to make sure it correlates.

APPENDIX: CHAPTER 7

D. HILL: We are changing tolerance on fuel flow as per our discussion at the last meeting.

CHAPTER 8: OIL BURNER TEST FOR CARGO LINERS

Changes reviewed.

APPENDIX: CHAPTER 8

As discussed at previous meetings, we would like to include information in Appendix on how to test various types of materials. Therefore, this information must be sent to us from the group in order to be included in the Appendix.

Decision on new static disk for oil burner was reviewed.

OTHER TOPICS

NEW BURNER FOR NBS:
D. Johnson will send out new burner for NBS to five other labs to run a round robin. Samples were available at meeting for review.

REFERENCE MATERIAL FOR OSU and NBS:
Hugh Barrett (Polyplastex) explained that he had data from six labs out of seven correlated. He will have a report at the next meeting.

PROBLEMS WITH BUNSEN BURNER TEST:
J. PETERSON (Boeing): There are materials that are marginal in relation to bunsen burner. An example is nylon carpet. There are variables involved in burning of nylon carpet.

D. HILL: Should we develop another test for this type of material? Will a new or modified test be useful? Is this just a case with one or two labs, then the policy cannot be changed.

OTHER TOPICS (CONTINUED)

NEW TEST METHOD TO REPLACE OSU:

D. HILL: What are your thoughts and opinions on developing a new test method to replace OSU or equivalent test method to OSU with less problems with reproducibility and repeatability. Will this eliminate many of the problems with the OSU? Or, should we continue to work to improve and simplify testing using the OSU. The new machine would be a new design. This machine could be an equivalent test method.

J. PETERSON (Boeing): Maintenance of the OSU is the problem.

We would have to create a different test procedure where maintenance was much simpler.

D. HILL: Let us know if you feel this is a worthwhile project and give us some guidelines to work from. If we create a new test method it may take several years before this test method is completely worked out. This unit will be designed to make testing easier. The goal is a machine easier to handle than the OSU without changing results. Let us know your decision at the next meeting.

WIRES:

Round robins with wires on holders were run. Why did we recommend only two vertical wires?
F. TIANGSING (NWM): The only acceptable method is two vertical wires. This was a decision made by Region in conjuction with FAA Technical Center.

H. BARRETT (Polyplastex): When testing Declar we have to use many wires.

STANDARD PANEL ROUND ROBIN:

R. Felder (Schneller) will coordinate this group.

NEXT MEETING

The next meeting will be hosted by Boeing Commercial Airplane Group, Seattle, Washington, USA. The meeting dates are Tuesday and Wednesday, May 25 and 26, 1993.