U.S. Department of Transportation
Federal Aviation Administration

Technical Center

Atlantic City Int'l Airport
New Jersey 08405

February 17, 1994

Dear Group Participant:

Enclosed please find the Minutes/Information package from the recent International Aircraft Materials Fire Test Working Group meeting held February 2-3, 1994, in Clearwater Beach, Florida.

The next meeting is scheduled for Tuesday and Wednesday, June 7-8, 1994, at the Federal Aviation Administration (FAA) Technical Center. The enclosed Registration Form must be completed if you plan to attend so that we may make arrangements with Technical Center security for passes and visitor badges for the group. This form must be returned to April Horner at fax 609-485-5796, by Friday, April 22, 1994. Upon receipt of the form, she will forward an information package including area hotel rates, directions/maps, and a preliminary agenda for the meeting.

We hope to see you in June.

Sincerely yours,

Richard G. Hill

Richard G. Hill
Program Manager

Enclosures

List of Attendees
International Aircraft Materials Fire Test Working Group Meeting
February 2-3, 1994
Clearwater, Florida

		Organization	*Phone*	*Fax*
Andrew	Allerton	Avro		
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Steve	Beare	DuPont	302-999-2240	302-999-2718
Hanns-Jorg	Betz	Luftansa	49 69 696 4612	49 69 696 4617
Gilbert	Bonilla	Polyplastex	813-525-2173	813-522-9069
Peter	Brownell	Albany International	518-339-7300	508-339-4996
Pat	Cahill	FAA Tech Ctr	609-485-6571	609-485-5796
Scott	Campbell	Douglas Aircraft	310-497-6171	310-982-6713
Don	Cardis	Schneller		
Bruno	Carriere	Aerospatiale	61 18 09 06	61 18 04 95
Herb	Curry	GE Plastics		
Paul	d'Arnaud	Fokker	20 605 3406	20 605 4450
George	Danker	Akro Fireguard	913-888-7172	913-888-7372
Jim	Davis	AccuFleet	713-999-8800	713-999-9066
Yadi	Delaviz	Polyplastex	813-525-2173	813-522-9069
Larry	Dion	Delsen Testing Lab	818-247-4106	
Allan	Eads	Schneller		
Reinhard	Felder	Schneller		
Karen	Forest	FAA Chicago ACO	708-294-7697	708-294-7834
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Jeff	Gentry	Burns Aerospace	910-744-1065	910-744-1009
Sally	Hasselbrack	Boeing	206-342-9947	206-717-0460
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April	Horner	FAA Tech Ctr	609-485-4471	609-485-5796
Richard M.	Johnson	FAA Tech Ctr	609-485-6573	609-485-5796
Ned	Keltner	Sandia National Labs	505-845-3189	505-845-3151
Danko	Kramar	FAA/NY ACO	516-791-6427	516-791-9024
Wolfgang	Lampa	Deutsche Airbus	49 421 538 3484	49 421 538 4180
Tim	Marker	FAA Tech Ctr	609-485-6469	609-485-5580
Robb	McGeary	Akro Fireguard	913-888-7172	913-888-7372
Beth	McGee	Douglas Aircraft	310-982-7003	310-982-6713
Giovanni	Modugno	Aviointeriors	39 773 6891	39 773 631 546
Michael	O'Donnell	Imi-Tech	206-336-5054	206-336-5182
Johann	Ondrejas	Isovolta		
James	Peterson	Boeing		
Jean-Francois	Petit	CEAT	33 61 58 74 10	33 61 58 74 78
Jack	Polejes	Polyplastex	813-525-2173	813-522-9069
Duane	Randall	Akro Fireguard	913-888-7172	913-888-7372
Brenda	Reed	Duncan Aircraft	402-475-2611	same
Terry	Rees	FAA (Seattle)	206-227-2138	206-227-1320
Jacques	Robillard	Mankiewicz	33 1 45 07 16 66	33 1 45 34 06 29
Herwig	Ruthardt	Austro Control	011-43-662-1703-91	011-43-662-1703-96
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Chuck	Story	USAir	412-472-7828	412-472-4190
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Pamela	Turner	American Tech.	813-785-9638	813-785-9638
Aad	Visser	KLM	20 64 939 38	20 64 88 233
John	Walma	Fell-Fab Products	905-560-9230	905-560-9846
James	Walnock	DuPont	302-999-2058	302-999-4750
Travis	Werner	Delta Airlines	404-714-1465	404-714-3304
Bob	Williams	Delta Airlines	404-714-2392	404-714-5304
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JUNE 7-8, 1994
MEETING REGISTRATION FORM

INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP

The next meeting will be held at the Federal Aviation Administration (FAA) Technical Center on Tuesday and Wednesday, June 7-8, 1994. There is a cafeteria on-site for your convenience. Please return this form to April Horner by Friday, April 22, 1994, so that she can forward you a copy of the Preliminary Agenda, hotel rate information, directions/map, and security clearance information.

PLEASE COMPLETE THE FOLLOWING INFORMATON IF YOU PLAN TO ATTEND:

NAME: _____

COMPANY: _____

PHONE: _____ FAX: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

COUNTRY: _____

RETURN THIS FORM BY FAX BY <u>FRIDAY, APRIL 22, 1994</u>, TO:

APRIL HORNER
FAX: 609-485-5796

<u>OR CALL</u>:

PHONE: 609-485-4471

U.S. Department
of Transportation
Federal Aviation
Administration

INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING MINUTES

Hosted by Polyplastex International, Clearwater Beach, Florida

WEDNESDAY, FEBRUARY 2, 1994

NBS ROUND ROBIN UPDATE

D. JOHNSON: Reviewed Calibration Comparison. Reviewed Deutsch Airbus results and Boeing results. He explained that the new calorimeter and furnace are in a prototype phase now. We plan to put this data together for discussion with regulatory authorities in Seattle.

OSU STANDARD MATERIAL ROUND ROBIN

Presentation: H. Barrett (Polyplastex) - Reviewed background on standard material. Reviewed results of first and second Round Robins. Reviewed average results of the two. Contact Hugh at Polyplastex if you would like copies of the information he reviewed. Hugh has 10,000 samples available at a cost of $1.00 each.

Presentation: R. Felder (Schneller) - Gave background on his standard material project. Asked for 10 labs to participate in Round Robin using 2 sets of material from Schneller and 2 sets of material from other manufacturers reviewed. He would like to present the results of this Round Robin at June meeting, therefore, any labs participating should have their results to him by April 30, 1994.

D. Hill: Noted, if industry wants a standard panel, it will be up to industry to work something out. The FAA is not going to supply a standard panel.

RUSSIAN ROUND ROBIN UPDATE

D. Johnson: Gave background on this Round Robin project. We are in the process of running a Round Robin with VIAM in Russia. We put together 10 materials and 5 labs are participating in this Round Robin, and these materials were shipped out last week.

DOES CHAMBER SIZE MAKE A DIFFERENCE FOR SEAT TEST?

D. Hill: We ran some tests in our test chamber which is 10 feet square and then ran tests in our large facility. The results of our initial test led us to the decision to run another test. We have 18 seats of the same seat samples to run in our 10 foot square test chamber and in the large facility (we will be running this test in the near future).

HEAT FLUX TRANSDUCERS

D. Hill: Briefly reviewed previous discussions/presentations by manufacturers concerning heat flux transducers and May 1993 meeting. Thermogage, Hi-Cal, and Medtherm transducers have been purchased in order for us to run a Round Robin. We have sent the transducers to Thermogage and Medtherm so far and will be sending them to Hi-Cal next. After we get the results from Hi-Cal, we will send the transducers to NIST for them to calibrate.

D. Johnson: Reviewed calorimeter information for Hi-Cal, Medtherm, and Thermogage. Copies of his presentation are included with this Minutes Package. He noted that a report

will be put together upon completion of this project. He noted that the carbon plates deteriorate rather quickly. The readings change when the graphite plates are changed.

D. Hill: There is definitely more of a problem than we first though there would be - differences we did not foresee (more than just between incident and absorbed). Are there any other thoughts, ideas, concerns on the transducers?

H. Barrett: Do you have any plans to send a transducer around?

D. Hill: No, we have already done that in the past, and we don't see what the benefit would be in that. One problem is that these companies are defining absorbed and incident differently. Any other ideas/questions?

Member Question: When you are using them in the OSU devise, what type of air are you using? Are you using room temperature air?

D. Johnson: We are using controlled temperature air, just as if you were running a test in the OSU.

COMMENTS AND CHAPTERS 7 and 8

D. Hill: Chapters 7 and 8 were sent out for review and some comments were received and incorporated into the Handbook. Does anyone have any other comments on Chapters 7 and 8 before the updated Handbook draft is sent to the regulatory authorities for final review.

Member Question: Concerning testing of cargo liner patches and problems. It seems that the ACO's, etc., may not be communicating.

D. Hill: We will put something in these minutes about this problem.

C. Story (USAir): Why not include something in the Handbook on this?

D. Hill: We will include some advisory material in the Handbook on this. He asked Chuck Story to provide us with some words to include in Handbook on this.

D. Hill: The major changes in Chapters 7 and 8 are: (1) mandating an airflow measurement through the burner, (2) allowing for minor deviations on two thermocouple readings

Member Question: Static Disks: Are they mandatory?

D. Hill: The Static Disks are not required. They are suggested to help with airflow. They are to help distribute airflow.

COMMENTS ON OTHER HANDBOOK CHAPTERS

Chapter 4 - P. Cahill: Two things that are not included in the Appendix: (1) 3 samples of wire insulation-as it stands right now we have to test every gauge size at this point, (2) testing of flat ribbon cable (I suggest putting the flame in the center of the cable and on the edge).

D. Hill: Any comments on OSU/NBS or Bunsen Burner Tests?

Member Question: Is there a target date for publication of the revised Handbook?

D. Hill: Approximately 6 months. Possibly for the Fall 1994 meeting.

NEW AGENDA ITEMS

D. Hill: Reviewed three recent accidents that may have impact on group activities. He specifically requested information on the Air France 340 accident from any members that may have some. He explained that Pat Cahill will be setting up a simulation of the SAS MD87 to see if we can get the same situation. She will attempt to mock up what occurred in the SAS accident in answer to a request by the Danish Authorities.

There was group discussion on pillows and blankets.

D. Hill: There are several things I see happening: I am fairly certain that NTSB will give FAA a recommendation on pillows and blankets. More than likely the FAA regulatory authorities will come to the FAA Technical Center to discuss the issue or the regulatory authorities may say they are going to study the problem. We could do one of two things: (1) as a group right now we can wait and see what happens, or (2) we can begin to look at pillows and blankets and see what types are out there and begin to try and figure out what the problems are.

C. Story (USAir): He suggested having Don Collier from ATA send a questionnaire out to airlines on what type of materials the pillows and blankets are made of. Hanns Betz and Chuck Story will put together a questionnaire by the end of the meeting to be distributed by Don Collier (U.S. and foreign airlines).

D. Hill: What about insulation materials, batting materials, insulation around duct work (the materials behind the wall)? Are we all satisfied with Bunsen Burner test methods for these materials?

Should we look to develop a new test for these materials?

D. Hill: You can get together in small subgroups if you feel it will help. The FAA does not have to be invited to these groups. Should we have a small subgroup to look at some of the things discussed here today?

NEW PROBLEMS WITH TEST METHODS

C. Story (USAir): We have a problem with aluminum honeycomb panels in OSU testing. Has anyone else had a problem with this?

D. Hill: Yes, Schneller won't test aluminum honeycomb in their OSU because it damages the test chamber. I think there have been quite a few others that have experienced these problems as well, so there is a consensus that it is not worthwhile to try and figure out a way to work it out because these problems indicate that this material should not be used in aircraft. Is there anything else you want to discuss?

J. Peterson (Boeing): We are waiting for results on heat flux transducers Round Robin.

D. Hill: Suggested Round Robin with 2 or 3 materials using one heat flux transducer. Is this something you would like to see happen? Are there labs interested in participating in this?

S. Campbell (Douglas): We did something like that after the Seattle meeting last May.

D. Hill: Would you make that data available to this group? Give us the information and we will supply it to any labs that run OSU tests. If a few labs are interested in participating, let us know. We will supply a transducer.

P. d'Arnaud (Fokker): What about char lengths on seat cushion tests?

D. Hill: Is there a way to define this to be included in the advisory material?

D. Hill: Are there any other problem areas on any of these test methods?

TESTING OF FIBER OPTIC CABLES

P. Cahill: Discussed how this topic came up in a conversation with Issa Ghoreshi at Boeing. Does anyone in the group have any experience with testing of this type of cable?

J. Petit (CEAT): We have done some tests. I will send you the information. We used the 60-degree flammability test.

Member Question: Does military do any testing on fiber optic cable?

P. Cahill: She will look into it and see what she can find out. Please get me information you have on testing of fiber optic cable.

OVERVIEW OF FOUR NEW TASK GROUPS

1. Continued Airworthiness: Do materials put into a plane several years ago still meet standards like they did when they were put into the plane?

2. Production Quality Assurance: Is what we are doing right now adequate?

3. Minor Changes to Qualified Material Systems: This concerns new materials.

4. Material Systems Renovation and Repair: Finish or wallpaper, fixing something torn, ripped, or damaged.

Background on These Requests

D. Hill: Main Reason: We received a request from engineering people in Northwest Mountain Region who got a request from Joint Airworthiness Cabin Safety Committee (FAA, Transport Canada, JAA). An effort to look at cabin safety issues and harmonize any changes or interpretation between the 3 regulatory bodies. These were 4 areas of concern that were brought to this committees attention. The Chairman of this committee, Lionel Ver (of the CAA) requested us to do this.

We will also be doing work on seat testing in conjunction with testing previously done on China Air seats.

OTHER

D. Hill: We have video tapes on the test methods for the cargo liner, seat block tests, and OSU. Question to Members: Do we need to update these videos? Does anyone want to come up with some new wording for these videos? Do we wait until the new Handbook comes out before we work on this?

THURSDAY, FEBRUARY 3, 1994

FAA TASK GROUP LEADER PRESENTATIONS

1. Continued Airworthiness (D. Hill): Cited China Air accident. Wear-durability problem of compliance. We need to address these questions: Is what we are doing now good enough? What are various airlines doing now?

2. Production Quality Assurance (P. Cahill): Cited a A/C written about 6 years ago dealing with quality assurance. A/C 21-31 dated 11/15/91.

J. Peterson (Boeing): Suggested talking to Frank Tiangsing (FAA, Seattle) to see how much further they want to go with this.

D. Hill: This is geared toward everyone that has to run quality control during production. We are trying to see what is out there. Can we make easier tests once material is qualified? Maybe we will find out we need to develop a test.

H. Barrett (Polyplastex): We need to define a lot or a batch.

P. Cahill: That is important to find out.

N. Keltner (Sandia): You might think about running some checks on materials that have different performance levels in OSU in full-scale tests.

D. Hill: We have already done that.

J. Peterson (Boeing): This group should approach this issue from the understanding of who has the responsibilities to the FAA and who has responsibility to that guy. Who is this information aimed at?

D. Hill: This information is meant to be used as guidance material. It has to go through Northwest Mountain Region for review and approval before we distribute it.

P. Cahill: We are going to deal with the flammability issue of quality assurance. We are trying to make testing a little easier and cheaper for industry.

C. Story (USAir): Smaller suppliers test materials in-house for vertical burn in an unapproved chamber. The internal quality control these companies have means nothing to the FAA, because it is not witnessed by a DER.

D. Kramar (FAA NY-ACO): It might be helpful to get PMI's and MITO Reps involved in this working group or some of these task groups.

D. Hill: The information on this group went through Joe Sullivan and others in Washington for them to inform everyone who might be interested in participating or should be involved.

K. Forest (FAA Chicago-ACO): There is an FAA Order that deals with quality assurance. I will get a copy to Pat Cahill.

3. Minor Changes to Qualified Material Systems (D. Johnson): Concerns minor changes in colors or decorative materials for panels.

C. Story (USAir): Boeing has a lot of information on this subject already.

D. Johnson: This information would be useful to this group. Please bring this information into the group.

C. Story (USAir): I think there is an enormous amount of information available about minor color changes, etc. The problem may be whether the companies will be willing to give us the information.

D. Hill: Maybe this task group will put a database together to show regulatory people we have this information.

H. Barrett (Polyplastex): If we can get the panel, we will do all the testing.

D. Hill: Put some material together in writing to submit to FAA so that we can look at it. We want something in writing to put in the Handbook so all authorities involved (FAA, JAA, CAA, etc.) have the same advisory material.

4. Material Systems Renovation and Repair (T. Marker): Repairs to such materials as seats, cargo liners, etc. were cited as examples.

TASK GROUP MEETINGS

The main Working Group broke into the four respective Task Groups for approximately 2 hours.

TASK GROUP REPORTS

Included with this package are Minutes of each of the above Task Groups.

GENERAL DISCUSSION

D. Hill: Any thoughts on anything discussed yesterday?

M. O'Donnell (Imi-Tech): Wait until after Handbook is reviewed by Northwest Mountain Region before videos are updated so revisions can be included.

H. Curry (GE): Make a video for NBS basic test and Vertical Bunsen Burner also.

ACTION ITEM FOR JUNE MEETING

D. Hill: We will allot 10-15 minutes at next meeting for subgroups to review and edit scripts for videos. What films will we make and how we will make them. We will add this to June Agenda.

D. Hill: Is there anything else group should address?

Group: No comments.

D. Hill: Any comments on the way we are approaching these new Task Groups?

H. Betz (Lufthansa): More airlines should be integrated and take part in these Task Groups.

D. Hill: We agree with that. We have sent information out through ATA and international airline representatives, and we are relying on airlines spreading the word. We rely on group members airlines to get other airlines involved in this group.

NEXT MEETING

The next meeting will be held at the Federal Aviation Administration (FAA) Technical Center on Tuesday and Wednesday, June 7-8, 1994. A Registration Form is included with this package. If you return the form to April Horner by Friday, April 22, 1994, she will forward you an information package including local hotel rates, directions/maps, and exact location of meeting.

AIRCRAFT MATERIALS TASK GROUP #1
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
Task Group Leader: Richard Hill
Established February 2-3, 1994
TASK GROUP MEMBERS

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AIRCRAFT MATERIALS TASK GROUP #1
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
Task Group Leader: Richard Hill
Established February 2-3, 1994
TASK GROUP MEMBERS

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AIRCRAFT MATERIALS TASK GROUP #2
PRODUCTION QUALITY ASSURANCE
Task Group Leader: Pat Cahill
Established February 2-3, 1994
TASK GROUP MEMBERS

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AIRCRAFT MATERIALS TASK GROUP #3
MINOR CHANGES TO QUALIFIED MATERIAL SYSTEMS
Task Group Leader: Richard M. Johnson
Established February 2-3, 1994
TASK GROUP MEMBERS

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AIRCRAFT MATERIALS TASK GROUP #3
MINOR CHANGES TO QUALIFIED MATERIAL SYSTEMS

Task Group Leader: Richard M. Johnson
Established February 2-3, 1994

TASK GROUP MEMBERS

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AIRCRAFT MATERIALS TASK GROUP #4
MATERIAL SYSTEMS RENOVATION AND REPAIR PROCEDURES

Task Group Leader: Tim Marker
Established February 2-3, 1994

TASK GROUP MEMBERS

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AIRCRAFT MATERIALS TASK GROUP #4
MATERIAL SYSTEMS RENOVATION AND REPAIR PROCEDURES

Task Group Leader: Tim Marker
Established February 2-3, 1994

TASK GROUP MEMBERS

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Notes from Task Group #1
Continued Airworthiness

Discussions and assignments were divided into three areas;

1. Seating
2. Large surface, interior cabin materials
3. Hidden materials

Discussion

Seating

The present TSO (39B) was discussed. Some members of the group were not familiar with it. Comments were made on the lack of information on durability or methodology for maintainability for continued compliance with flammability requirements. A draft of a new TSO dealing with the flammability of the seat cushions was mentioned, however, no information was available.

Questions addressed, and needing further investigation were: 1) What type of material is out there? 2) How is it maintained?, and 3) How and when is it inspected?

It was agreed that present durability testing is varied and may not relate to the real world. A more meaningful standard test method would be useful.

Large Surface Interior Cabin Materials

The group's opinion was that finished composite and thermoplastic panels have little or no continued airworthiness problems. However, panels with textiles may be a problem. There was no agreement on how maintenance requirements are developed for those materials.

Hidden Materials

The group had very little information in this area.

Assignments

Seating

Information will be gathered on what is being used, and how it is maintained and inspected.

ATA will poll airlines domestically, and coordinate it internationally. Burns Aerospace will poll seat manufacturers domestically and Aviointeriors internationally. Dupont will poll material manufacturers domestically and ? internationally. Albany International will obtain info on durability testing. FAA Technical Center will begin research on durability test and report at next meeting.

Large Surface Interior Materials

Information on maintenance of textile covered panels will be obtained be ATA and ?.

Hidden Materials

Requirements and recommended maintenance will be obtained by Douglas and Boeing.

Notes from Task Group #2
Production Quality Assurance

Group Leader: Pat Cahill phone 609-485-6571 fax 609-485-5796

1. General agreement on setting test (flammability) limits -- Is there redundant and unnecessary testing?

2. Langenthal, Polyplastex, GE, and Schneller will send me flow sheets (when, what, and how often) they perform flammability testing.

3. All members agree that we need OEM quality control and materials qualifiers' input.

4. I (Pat Cahill) will contact Boeing and McDonnell Douglas and try to arrange having a Q.C. person from both companies attend our next meeting.

5. Since there is no European representation in this task group, I will get in touch with European OEM's and ask if they would give input.

Notes from Task Group #3
Minor Changes to Qualified Material Systems

This group was formed by Richard M. Johnson on February 3, 1994. A total of 16 persons signed up and 14 were present at this meeting.

The aim of this group is to reduce and control unproductive fire tests of aircraft cabin materials that result from minor changes in qualified material systems, ie: color, texture, and other minor changes.

Suggestions made by the members are listed with some explanations. We should determine what is meant by the words minor changes and how it is interpreted. A task was made to contact FAA and foreign Aircraft Certification Offices (ACO) as to their use of the words, minor changes, in deciding the need of further testing. This would include procedures. A second task was organized as several members volunteered to supply data relevant to "minor changes" to support the contention that test result changes are minimal and not a factor to disqualify material systems. The following are contributors: Reinhard Felder, Schneller; Hanns-Jorg Betz, Lufthansa; Ken Young, de Havilland; Andrew Allerton, Avro; Beth McGee, Douglas; Gilbert Bonilla, Polyplastex. Other aircraft interior manufacturers will be contacted for input to this data bank. Because of the unique task at hand, it was decided to pursue Rate of Heat Release (RHR) data only and to expand to other test methods when it was determined that the group is on the right course of action. Database should include color, sub-strate, texture. Customers names not necessary. The lab doing the test work should be included. Also, this should only go back to the 90's and later testing.

The following tasks should be supported and acted on by all task group members: We need guidelines to support evidence that "minor changes" do not need continued testing. Information to identify basic levels of panel construction and possibly what some combinations of materials would be considered unstable to test results need to be identified. Find a standard panel that will accept many different decorative covers.

It was noted by one member that changing the raw material makes the greatest changes in data.

We should identify the layer of a panel most likely to increase the RHR.

Then rank the materials most likely to impact data. This will enable us to prepare a case for testing of "minor changes" of qualified systems.

I wish to thank all participants that signed up to support this task. Your enthusiasm and willingness to work toward our goal is very encouraging, and I know we will succeed in achieving our aims. More correspondence will be sent out periodically or as needed. Please feel free to contact me at anytime.

AIRCRAFT MATERIALS WORKING GROUP
SUBGROUP #4: MATERIAL SYSTEMS RENOVATION AND REPAIR

Subgroup Leader: Tim Marker ph (609) 485-6469 fax (609) 485-5580

Dear Participants:

Thanks for the interest in our subgroup on material systems renovation and repair. Following is a recap of our meeting on February 3, 1994.

The main objective of the group is to establish guidelines and in many cases develop standardized procedures for testing/qualifying different repaired/renovated systems. In order to develop these guidelines and standardized procedures, it is first necessary to determine any background information on what types of repairs/renovations are currently being made. Once this task is accomplished, we should have no problem developing guidelines and determining which repairs require requalification (and which ones do not, since many repairs are so small they can be considered insignificant).

Group Assignments:

1. Testing of painted/decorative laminated sidewall panels and the feasibility of testing using a common substrate with several different thicknesses of paint. Should the layers of paint be tested on the particular type of panel material they are to be used on, or is a common substrate sufficient? Should a paint specification be established for this type of repair?

Chuck Story, USAir
Bob Williams, Delta
Jacques Robillard, Mankiewicz
Aad Visser, KLM
Yadi Delaviz, Polyplastex

2. Cargo liner patching; should there be a limit as to what size damage (rip, tear, hole) can be patched? When certifying a patch, there are two criteria which have to be met: first, the patch material must be tested as a full sheet (16" x 24") and pass the standard 5 minute cargo liner test in either the ceiling position or sidewall position, depending on its position in service, and secondly, a standard size patch (6" x 6") must remain attached to a cargo liner ceiling panel (16" x 24") for the duration of the 5 minute test. Problem areas: what size rip, tear or hole should be under the 6" x 6" standard patch when it is tested? Also, what type of cargo liner material is used in the ceiling position when testing the patch for adhesion? (i.e. in order for the patch to be qualified for a variety of liner materials, should the patch be tested for adhesion on all of these different liner materials, or would a standard type or liner be sufficient for all?)

George Danker, AKRO Fire Guard
Robb McGeary, AKRO Fire Guard
Don Robinson, Douglas Aircraft
Additionally, Sally Hasselbrack will be investigating the Boeing stitching specification on soft cargo liners.

3. Vertical carpet surfaces (bulkheads, risers); what types of repairs are made on these systems? Check with various airlines.

Sally Hasselbrack, Boeing

4. Small parts exclusion/ 144 square inch rule. Check with certification people; where did this rule of thumb originate? Is it valid?

Tim Marker, FAA

5. Seat repair. What types of repairs are being made?

Wolfgang Lampa, Deutsche Aerospace Airbus
Don Collier, Air Transportation Association
* Hanns-Joerg Betz, Luftansa has done some work in this area

6. Sanding/filling of sidewall panels. What types of compounds are used; what is maximum hole size that is filled with compound?

Sally Hasselbrack, Boeing
Bruno Carriere, Aerospatiale