INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP

A Message From The Coordinator's Office

June 25, 1997

Dear International Aircraft Materials Fire Test Working Group Member:

Enclosed is a copy of the Minutes/Information Package of the June 10-11, 1997, Working Group meeting hosted by Mankiewicz in Paris, France.

The next meeting will be held at Harrah's Casino-Hotel in Atlantic City, New Jersey, October 21-22, 1997. The Spring 1998 meeting will be held in Oakland, California, March 11-12, 1998. A Meeting Details Package contained further details on each of these future meetings will be mailed out under separate cover later this summer.

If you have any questions or comments, please do not hesitate to contact me at 609-485-4471, or by fax at 609-646-5229. I look forward to your continued participation in the Working Group and your attendance at future meetings.

Sincerely yours,

April Horner

Enclosure

Sponsored by:
Federal Aviation
Administration
Technical Center

INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING

June 10-11, 1997

Hosted by Mankiewicz, Paris, France

TUESDAY, JUNE 10, 1997

R. Hill - A thought to keep in mind that will be discussed during the course of this meeting and the next few meetings. Should we increase the level of safety in aircraft with the development and introduction of new jumbo aircraft?

Presentations and Updates by Task Group Leaders

Thermal Acoustic Insulation - P. Cahill - Showed and discussed Seat Component Full Scale Test Video. This test was conducted in 1993. Also discussed results of thermal acoustic insulation films tests (viewgraph presentation). Showed video on 0.34 PCF Density Fiberglass cover test recently conducted at the FAA Technical Center.

New Design Seats - P. Cahill - FAATC presently reconfiguring its oil burner test facility.

Certification Issues of Renovated Material Systems - R. Whiting (Boeing) - Presented summary of this Task Group's discussion at February 1997 meeting and clarification on the use of surrogate panels as given by the FAA Transport Directorate at that meeting. Also discussed the current activities of this Task Group.

Standardized Form for All Test Labs - H. Betz - Received a response from three test labs. He would like test labs to fax the test forms they are using to him, so that he can make a comparison of these and put together a preliminary standardized test form. He suggested removing the references to many of the amendments.

Continued Airworthiness - R. Hill - Report on Continued Airworthiness of In-Service Fire Blocked Seats (D. Ingerson) has been distributed to all Working Group members (Spring 1997).

Similarity of Fabrics - S. Hasselbrack - Discussed status of her report on similarity of fabrics. The report has been completed and is ready to be submitted to the FAA. Presented data that is included in the report. Reviewed recommendations made to the FAA as a result of this project. R. Hill: Our (FAATC) intention is to publish this report as an FAA report. This report will include Sally's name and the names of the Task Group members. Suggested rewriting recommendations as a list of problem areas that this Task Group has identified as a result of this project not as recommendations to the FAA. These recommendations should not be included in the report, however, once they are reworded, they should be forwarded to the authorities with a copy of the report. FAA reports usually include conclusions not recommendations. C. Lewis - All recommendations submitted to Transport Canada Aviation must be backed up by data from research. Expand the explanations of why these recommendations should be carried out. C. Lewis - Will the report include conclusions based on the data? S. Hasselbrack - Yes, there is a summary and conclusions.

Handbook on Materials - S. Hasselbrack - She wrote up a brief summary of the findings of her research for the Similarity of Fabrics report to included in the Handbook on Materials.

Round Robin Results - R. Hill - Presented results of the Round Robin R. Johnson ran on the Standard Panels (Schneller Standard Panel, Honeycomb Panel). The purpose of this Round Robin is to provide data to industry and to provide information from this Round Robin to authorities for review. (Copies of this presentation are included in this package.)

Heat Flux Transducer - Specification Discussion - R. Hill - A small group was organized to discuss the spec for heat flux transducers, and it was decided to go ahead and prepare a spec for the heat flux transducer. The spec will require a certain type of transducer. Contact Dick Johnson or April Horner if

you would like to borrow one of the transducers purchased from Vatell for comparison to your lab's transducers.

Oil Burner for Seats Update - Calibration Operation - P. Cahill - Pat discussed the present oil burner configuration and some of the planned tests to be conducted at the FAATC.

Burnthrough Testing - R. Hill -

J.F. Petit - Small Scale Burnthrough Tests - The need for a small scale test has been clearly identified. Presented CEAT's design and fabrication of a small scale burnthrough test using the 2-gallons per hour oil burner. P. Cahill - FAATC has built a similar smoke box which will be moved to the oil burner test lab. (A copy of his presentation is included in this package).

M. O'Donnell - Foams in New Seat Designs - Presented results of Imi-Tech tests on Polyimide Foam conducted to FAR test requirements based on discussion that came out of February 1997 Working Group meeting. R. Hill - When the test was developed there had to be a way of judging pass/fail --weight loss or percent weight loss. It was felt that in looking at the various ways of judging it, that percent weight loss was the best way of determining pass/fail. We need to look into what happens in an accident when fire burns into these seats. R. Hill - Equivalent level of safety for new design seats may be proven by conducting a full-scale test. C. Lewis - I agree that at this time, a full-scale test is the only answer to show equivalent level of safety for new design seats, however, we need to keep in mind that there may be materials out there that may be better than what we currently use. Therefore, at some point in the future there may be a need to develop a test that will show that the new materials show equivalent level of safety other than a full-scale test. R. Hill - Pat Cahill's Task Group on New Design seats is working to develop a test to show equivalent level of safety for the new design seats.

R. Hill lead discussion on thoughts of Working Group members on tests for new jumbo aircraft design. Discussion on burnthrough and water mist for new jumbo aircraft.

Separate Task Group Meetings

WEDNESDAY, JUNE 11, 1997

Task Group Discussion/Reports/Assignments

Thermal Acoustic Insulation - P. Cahill - The focus of the group's discussion was primarily on the cotton swab test. R. Hill: What will be reported to AIA? J. Peterson: The AIA has a Transport Committee and that committee has not convened since the testing at the FAATC. It has not been determined how the reporting to the AIA will be done at this time.

Similarity of Fabrics - S. Hasselbrack - Reviewed revisions to recommendations discussed during Task Group meeting. (List of revised recommendations is included in this package).

Discussion on Current Test Method Problems/Development of New Test Methods

Blanket Test Method - P. Cahill - Based on the fact that there are different densities of blankets which make the 3/4" distance difficult to maintain. As a result, a new specimen holder has been designed which should make it easier to move the blanket specimen up and down for any thickness of blanket. If you would like a copy of the design layout for the new specimen holder, contact Pat Cahill.

OSU Discussion - R. Hill - The specification for the transducer will be included in the Handbook. The specification will become a requirement. / Discussion on improvements to OSU in order to bring labs' numbers closer together. J. Peterson: Make sure that whatever changes you make in the OSU that the FAATC OSU numbers do not change. R. Hill: The new equipment out there has the same ranges as the OSU, i.e.: the cone calorimeter. M. O'Donnell: A piece of equipment should be designed to do what it is that needs to be done instead of adapting the OSU. J. Peterson: I would like to see the OSU adjusted and reworked a little more before giving up on it. Lets look into the OSU a little further. Lets see what happens after the specification is in place for the heat flux transducer. R. Hill: Should we look at

something other than a flame for the upper pilot? Does the group want to try to make additional changes to the OSU at this time to bring the labs' numbers closer together? How do we implement the use of the new transducer? M. O'Donnell: Set a date for implementation of the new transducers. J. Peterson: You can recommend that the labs use a transducer to the specification discussed earlier. H. Betz: The OSU test does not give realistic results. The deviation in the round robin tests for 6 to 10 years are still the same and show deviations in the different labs up to 20 to 30 points. It is absolutely unacceptable to base legal rules on a test method which is unreliable.

NBS Chamber - R. Hill - Is anyone here using the new heating coil for the NBS Chamber? No one present is using the new heating coil.

Oil Burner for Seats - J. Boggs - I think there needs to be work done on the Oil Burner calibration for fire blocking layer testing. There has to be some type of standardization for calibration. R. Hill: There is a difference of opinions within the group as to how you set standards.

Bunsen Burner Test - H. Betz - Our lab bought one chamber for the Bunsen burner tests that is FAA approved. The chamber is from Atlas Electric Devices. P. Cahill: That chamber was found to be acceptable through the Chicago ACO (Karen Forest) at that time. R. Hill: Test equipment is not sold as "FAA Approved". It may be found acceptable for specific tests. H. Betz: Should this be included in the Handbook? P. Cahill: I have included it in one of the Appendices for the Bunsen burner.

Other Discussion

N. Cano had a question on the testing of Velcro. R. Hill: Velcro is required to be tested on the Vertical Bunsen burner test. Andrew Allerton discussed testing of Velcro at a previous meeting.

R. Hill: Discussion on requirements for extremely large aircraft as compared to the aircraft of today. Does anyone have any thoughts on this? Discussion on this topic.

S. Hasselbrack: I don't want to see carbon as part of the insulation material. We really have to be careful about this issue.

Next Meeting

The next meeting will be held at Harrah's Casino-Hotel in Atlantic City, New Jersey, on October 21-22, 1997. A Meeting Details Package will be mailed out under separate cover at a later date.

LIST OF ATTENDEES

INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING

HOSTED BY MANKIEWICZ FRANCE
PARIS, FRANCE

JUNE 10-11, 1997

NAME	COMPANY	ADDRESS	PHONE	FAX
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MAUREEN OWEN	TEX TECH IND.	105 N. MAIN ST. P.O. BOX 8 N. MONMOUTH, ME 04265 USA	207 933 4404	207 933 9255

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J François PETIT	CEAT	idem (Same)	idem	idem
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RICK MOLYS	THE MEXMIL COMPANY	2865 S. PULLMAN ST. SANTA ANA, CA 92705	714-250-4999	714-250-7425
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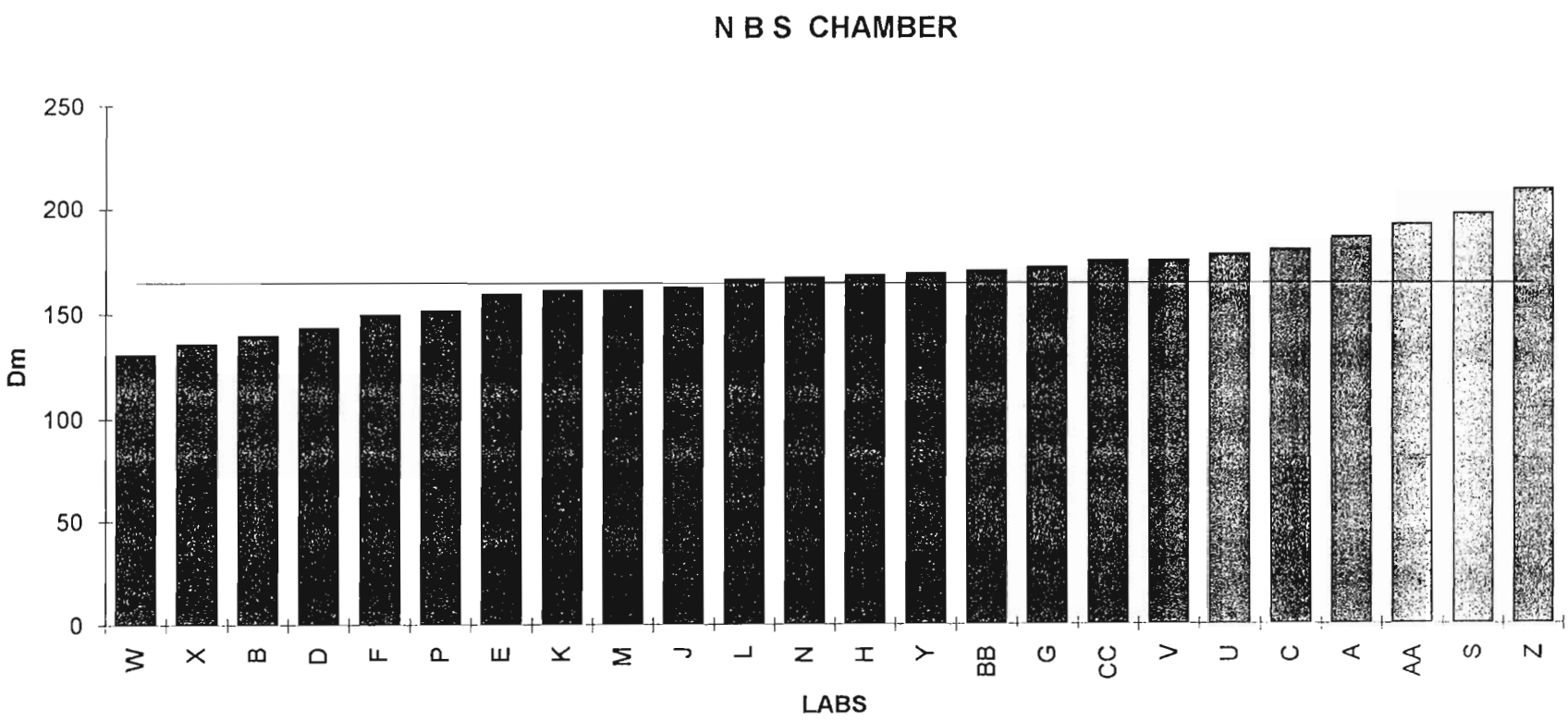
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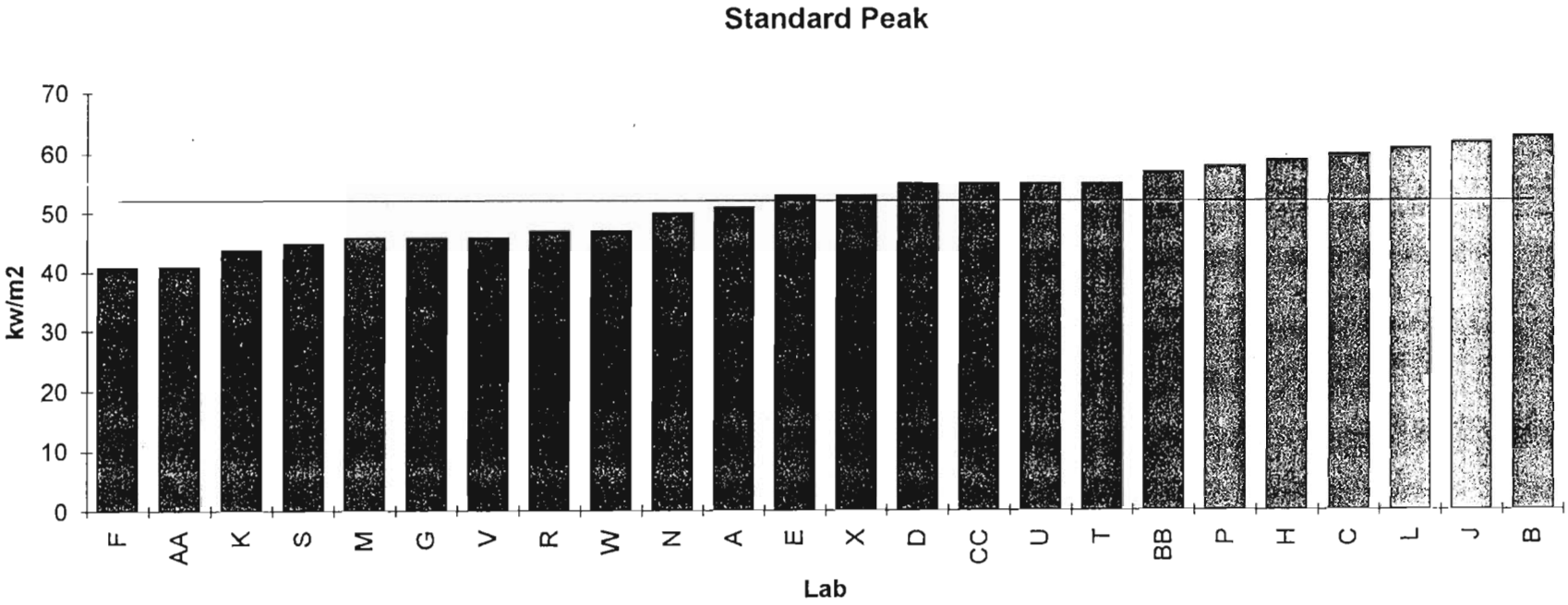
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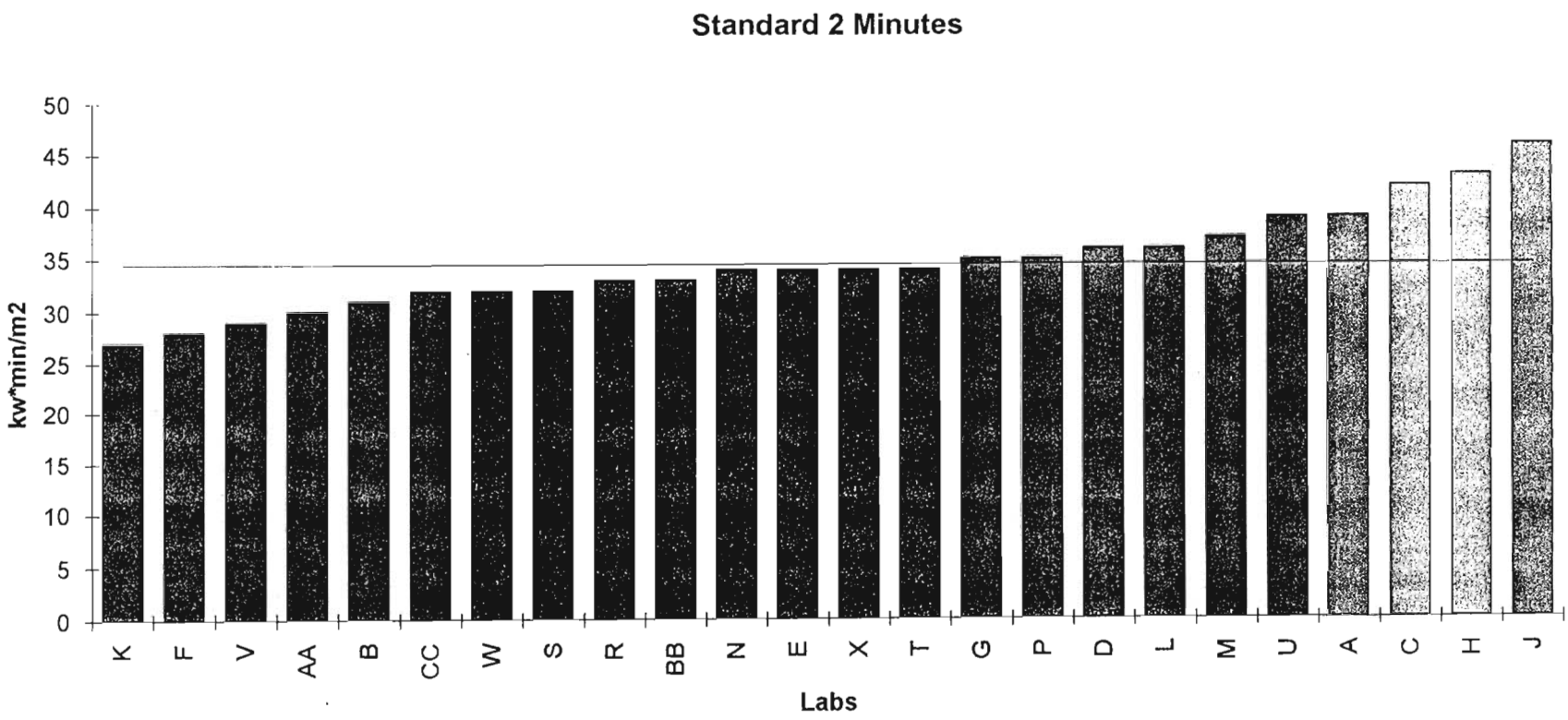
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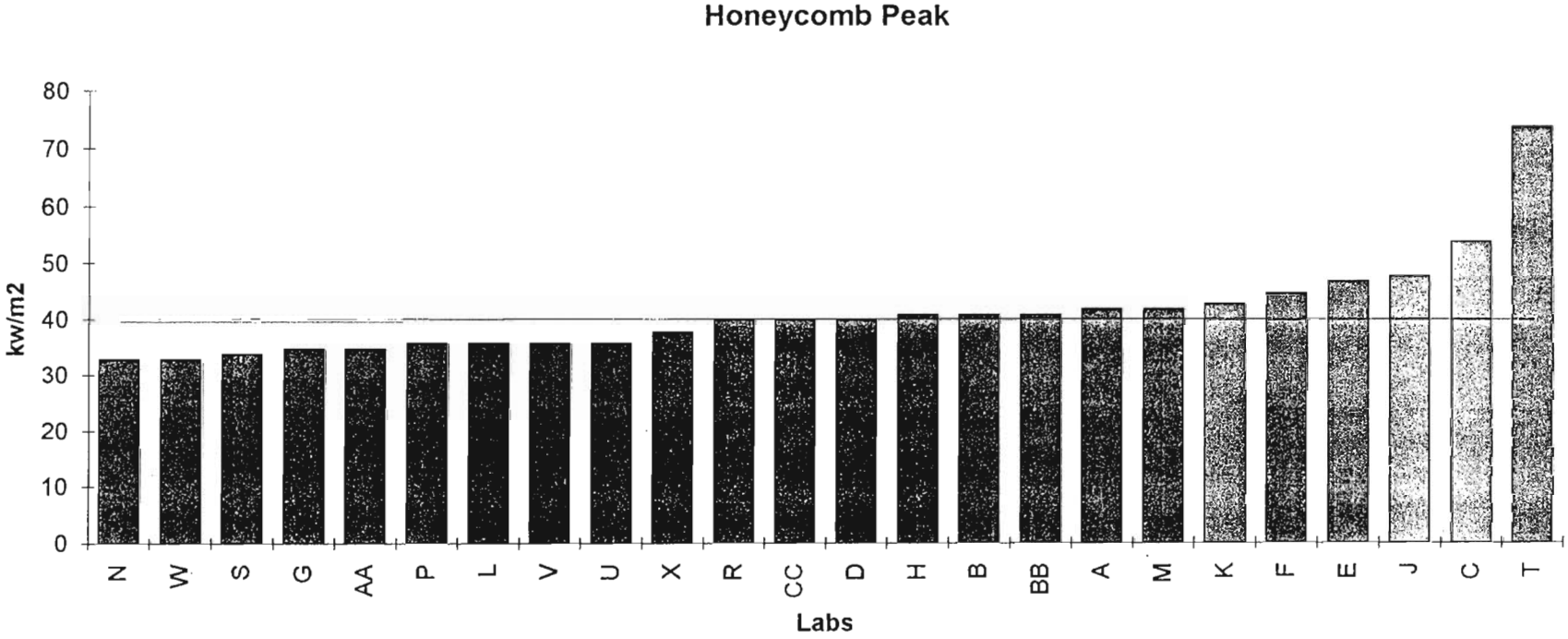
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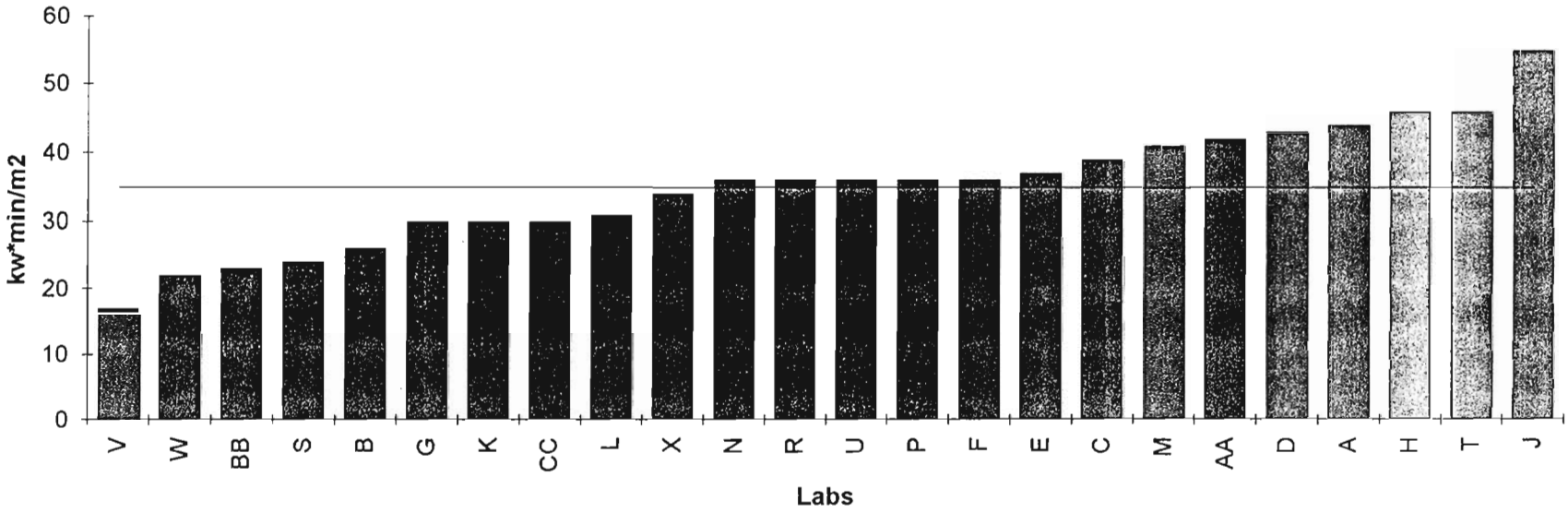


AccuFleet

March 18, 1997

Mr. David Indyke
IMI-Tech Corporation
538 Haggard Street
Suite 402
Plano, TX 75074

Dear Mr. Indyke,

Attached is a copy of the raw data sheet resulting from an unofficial flame barrier test of the Solimide Polyimide foam, bun SC-1016, 0.4 lb. sq. ft., on AccuFleet test no. 17797. These tests are for research and development only. No. 8110 will be issued.

The tests were conducted in accordance with the FAA approved "AccuFleet Flame Blocking Test Procedures" dated May 7, 1995. The test operator was Travis Hilborn. The witness and DER present was Ethel J. Dawson, FAA DER SW-884. VHS format video recordings were made of all tests with appropriate comments.

To pass this test, the average percentage weight loss must not exceed 10%; the char length (burn across) must not exceed 17 inches; and at least two of the three specimens must pass the test in all respects. As may be seen in the attached data, the average weight loss was 12.10 % the maximum char length was 8.50 inches, and the three specimen sets did not pass the burn test.

If you have any questions, please feel free to give me a call at (281) 999-0033.

Sincerely,

ACCUFLEET

Ethel J. Dawson

Ethel J. Dawson
General Manager

EJD/st
Enclosures

AccuFleet Inc.
16511 [illegible] Suite 210
Houston [illegible]
(281) [illegible]

TEST REPORT FOR TEST AFI 17797

RUN ON 03/18/97AT 2:38 P.M.

UNNOFFICIAL TEST. R & D PURPOSES ONLY

TEST MATERIAL AND AIRCRAFT INFORMATION:

IMI-TECH
SOLIMIDE SC-XXX POLYIMIDE FOAM
.04 LB SQ FT
BUN SC-1016

RUN #	SYSTEM WEIGHT	FINAL WEIGHT	% LOSS	CHAR LENGTH
1	2.15	1.89	12.06	8.0
2	2.16	1.87	13.43	8.5
3	2.17	1.94	10.80	6.8

AVERAGE WEIGHT LOSS: 12.10%
MAXIMUM CHAR LENGTH: 8.50

MATERIAL DOES NOT MEET REQUIREMENTS OF FAR 25.853(c), CH. 5, AMENDMENT 25-83.

CALIBRATION VALUES FROM FILE: c9703181.cal

THERMOCOUPLES:

1	2	3	4	5	6	7
1856	1867	1889	1870	1813	1802	1823

CALORIMETER	AIR AT BASE	AIR AT BACK
10.0	3.6	24.7

SOLIMIDE SCXXX	POLYIMIDE FOAM 0.4 LB/SF
TEST NO. 17797	BUN SC-1016

BACK RUN #1	initial wt	after test	wt. loss	component percent	percent of entire sys.
FOAM:	0.150	0.140	0.010	6.67%	0.47%
MUSLIN:	0.260	0.250	0.010	3.85%	0.47%
DRESS COVER:	0.600	0.590	0.010	1.67%	0.47%
BACK TOTAL WT.	1.010	0.980	0.030	2.97%	1.40%
BOTTOM RUN #1					
FOAM:	0.280	0.265	0.015	5.36%	0.70%
MUSLIN:	0.260	0.145	0.115	44.23%	5.35%
DRESS COVER:	0.600	0.500	0.100	16.67%	4.65%
BOTTOM TOTAL WT.	1.140	0.910	0.230	20.18%	9.38%
BK & BTM TOTAL	2.15	1.89	0.26	12.09%	

BACK RUN #2	initial wt	after test	wt. loss	component percent	percent of entire sys.
FOAM:	0.165	0.160	0.005	3.03%	0.23%
MUSLIN:	0.255	0.250	0.005	1.96%	0.23%
DRESS COVER:	0.600	0.560	0.040	6.67%	1.85%
BACK TOTAL WT.	1.020	0.970	0.050	4.90%	2.31%
BOTTOM RUN #2					
FOAM:	0.285	0.250	0.035	12.28%	1.62%
MUSLIN:	0.255	0.185	0.070	27.45%	3.24%
DRESS COVER:	0.600	0.460	0.140	23.33%	6.48%
BOTTOM TOTAL WT.	1.140	0.895	0.245	21.49%	9.95%
BK & BTM TOTAL	2.16	1.87	0.30	13.66%	

BACK RUN #3	initial wt	after test	wt. loss	component percent	percent of entire sys.
FOAM:	0.160	0.155	0.005	3.13%	0.23%
MUSLIN:	0.260	0.250	0.010	3.85%	0.46%
DRESS COVER:	0.610	0.590	0.020	3.28%	0.92%
BACK TOTAL WT.	1.030	0.995	0.035	3.40%	1.61%
BOTTOM RUN #3					
FOAM:	0.285	0.260	0.025	8.77%	1.15%
MUSLIN:	0.260	0.190	0.070	26.92%	3.23%
DRESS COVER:	0.595	0.490	0.105	17.65%	4.84%
BOTTOM TOTAL WT.	1.140	0.940	0.200	17.54%	8.08%
BK & BTM TOTAL	2.17	1.94	0.24	10.83%	

ACCUFleet

(4)

March 18, 1997

Mr. David Indyke
IMI-Tech Corporation
538 Haggard Street
Suite 402
Plano, TX 75074

Dear Mr. Indyke,

Attached is a copy of the raw data sheet resulting from an unofficial flame barrier test of the Solimide Polyimide foam, 1.0 lb. sq. ft., on AccuFleet test no. 17897. These tests are for research and development only. No. 8110 will be issued.

The tests were conducted in accordance with the FAA approved "AccuFleet Flame Blocking Test Procedures" dated May 7, 1995. The test operator was Travis Hilborn. The witness and DER present was Ethel J. Dawson, FAA DER SW-884. VHS format video recordings were made of all tests with appropriate comments.

To pass this test, the average percentage weight loss must not exceed 10%; the char length (burn across) must not exceed 17 inches; and at least two of the three specimens must pass the test in all respects. As may be seen in the attached data, the average weight loss was 7.13 % the maximum char length was 8.30 inches, and the three specimen sets passed the burn test.

If you have any questions, please feel free to give me a call at (281) 999-0033.

Sincerely,

ACCUFLEET

Ethel J. Dawson
General Manager

EJD/st
Enclosures

AccuFleet Inc.
16511 [illegible] Drive Suite 210
Houston Texas [illegible]
(281) 999-0033

(5)

TEST REPORT FOR TEST AFI 17897

RUN ON 03/18/97AT 3:41 P.M.

UNNOFFICIAL TEST. R & D PURPOSES ONLY

TEST MATERIAL AND AIRCRAFT INFORMATION:

IMI-TECH
SOLIMIDE SC-XXX POLYIMIDE FOAM
1.0 LB SQ FT

RUN #	SYSTEM WEIGHT	FINAL WEIGHT	% LOSS	CHAR LENGTH
1	3.05	2.83	7.06	6.2
2	3.22	3.00	6.98	6.3
3	3.13	2.90	7.35	8.3

AVERAGE WEIGHT LOSS: 7.13%
MAXIMUM CHAR LENGTH: 8.30

MATERIAL MEETS REQUIREMENTS OF FAR 25.853(c), CH. 5, AMENDMENT 25-83.

CALIBRATION VALUES FROM FILE: c9703181.cal

THERMOCOUPLES:

1	2	3	4	5	6	7
1856	1867	1889	1870	1813	1802	1823

CALORIMETER	AIR AT BASE	AIR AT BACK
10.0	3.6	24.7

POLYIMIDE FOAM 1.0 LB/SF
BUN SC-1016
TEST NO. 17797

BACK RUN #1	initial wt	after test	wt. loss	component percent	percent of entire sys.
FOAM:	0.53	0.52	0.01	1.89%	0.33%
MUSLIN:	0.27	0.26	0.01	3.70%	0.33%
DRESS COVER:	0.61	0.59	0.02	3.28%	0.65%
BACK TOTAL WT.	1.41	1.37	0.04	2.84%	1.30%
BOTTOM RUN #1					
FOAM:	0.8	0.77	0.03	3.75%	0.98%
MUSLIN:	0.26	0.2	0.06	23.08%	1.95%
DRESS COVER:	0.6	0.49	0.11	18.33%	3.58%
BOTTOM TOTAL WT.	1.66	1.46	0.2	12.05%	3.92%
BK & BTM TOTAL	3.07	2.83	0.24	7.82%	

BACK RUN #2	initial wt	after test	wt. loss	component percent	percent of entire sys.
FOAM:	0.67	0.65	0.02	2.26%	0.47%
MUSLIN:	0.27	0.25	0.02	7.55%	0.62%
DRESS COVER:	0.61	0.60	0.01	1.65%	0.31%
BACK TOTAL WT.	1.54	1.49	0.05	2.93%	1.40%
BOTTOM RUN #2					
FOAM:	0.82	0.80	0.02	2.91%	0.74%
MUSLIN:	0.26	0.20	0.06	23.08%	1.86%
DRESS COVER:	0.61	0.51	0.10	15.70%	2.95%
BOTTOM TOTAL WT.	1.69	1.51	0.18	10.60%	3.29%
BK & BTM TOTAL	3.22	3.00	0.22	6.95%	

BACK RUN #3	initial wt	after test	wt. loss	component percent	percent of entire sys.
FOAM:	0.61	0.6	0.01	1.64%	0.32%
MUSLIN:	0.26	0.25	0.01	3.85%	0.32%
DRESS COVER:	0.61	0.59	0.02	3.28%	0.64%
BACK TOTAL WT.	1.48	1.44	0.04	2.70%	1.28%
BOTTOM RUN #3					
FOAM:	0.78	0.76	0.02	2.56%	0.64%
MUSLIN:	0.26	0.2	0.06	23.08%	1.92%
DRESS COVER:	0.61	0.5	0.11	18.03%	3.51%
BOTTOM TOTAL WT.	1.65	1.46	0.19	11.52%	3.68%
BK & BTM TOTAL	3.13	2.9	0.23	7.35%	

Imi-Tech®

538 Haggard Street Suite 402•Plano, Texas 75074•U.S.A.•1-972-516-0702•FAX: 1-972-516-0624

COMPARISON OF PROPERTIES - SOLIMIDE® SC-XXX POLYIMIDE FOAM AT 7 kg/m³ (0.45 pcf) VS. NEOPRENE AND POLYURETHANE SEAT BACK CUSHIONING FOAMS

	SOLIMIDE SC-XXX	NEOPRENE SEAT BACK FOAM	POLYURETHANE SEAT BACK FOAM
Density, kg/m³ (pcf), ASTM D 3574(A)	6.9 (0.43)	61 (3.8)	26 (1.6)
Identation Force Deflection (IFD), N (lbs), ASTM D 3574 (B_1):			
25% IFD	93 (20)	97 (22)	113 (25)
65% IFD	293 (66)	221 (50)	193 (43)
Compression Set @ 50% Deflection, %, ASTM D 3574(D)	39	20	2
Tear Strength, N/m (ppi), ASTM D 3574(F)	1480 (8.5)	2610 (14.9)	1420 (8.1)
Ball Rebound Resilience Value, %, ASTM D 3574(H)	28	26	36
Ultimate Elongation, %, ASTM D 3574(E)	20	150	70
Tensile Strength, kPa (psi), ASTM D 3574(E)	51 (7)	100 (15)	65 (9)
Steam Autoclave Aging, % Change in Tensile Strength:			
ASTM D 3574(J_1)	+4	+9	-0.5
ASTM D 3574(J_2)	+9	+44	-25
Oxygen Index, % O_2, ASTM D 2863	31	39	21
Vertical Burn (12 seconds), FAR 25.853(a):			
Flame Time, seconds	0	0	7
Burn Length, cm (in.)	1.8 (0.7)	0.5 (0.2)	10 (4.0)
Dripping	None	None	Yes
Maximum Specific Optical Density of Smoke @ 4 minutes, ASTM E 662:			
Smoldering	2	79	130
Flaming	2	125	190
Toxic Gas Generation, ppm (max.), BSS 7239:			
CO	123	1313	420
HCN	<1	10	11
HCl	<5	87	88
HF	<1	<1	<1
HBr	<1	<1	<1
SO_2	<1	<1	<1
NO_x	4	5	7
Fatigue/Wear on Jounce & Squirm Tester: 200,000 cycles of jounce and 8,000 cycles of squirm on 51 mm (2 in.) thick samples @ 667 N (150 lbs) load, 58 mm (2.25 in.) jounce table amplitude, jounce rate of 100 cycles per minute, squirm rate of 4 cycles per minute, squirm amplitude of 10° with human back form; back form wrapped in SAE JA-26 cotton muslin cloth, and foam samples in wool/synthetic aircraft seat fabric.:	No tearing or other visible surface damage;		No tearing or other visible surface damage;
% height loss max.	31	-	6
% Change in 25% IFD	70	-	45

CEAT's

SMALL SCALE BURN THROUGH TEST

INTRODUCTION

refering to a paper from Tim Marker

The need for a small scale performance test has been clearly identified, this small scale test should meet the following objectives :

- good correlation with medium and full scale test results
- easy to duplicate
- low cost of use and fabrication
- be applicable to a large range of materials and fuselage and cabin design features (windows, grilles,..)

The purpose of this presentation is to give a description of the small scale burn through test equipment developped at CEAT and present our work programme.

OBJECTIVES

The purpose of this work is the design and fabrication of a small scale burn through test equipment based upon the existing cargo liner burn through test.

GENERAL DESCRIPTION

The CEAT small scale burn through test equipment is shown on figure n°1 and 2

It basically consists in :

- a kerosene burner as fire source
- a specimen holder
- a smoke chamber

CHARACTERISTICS

FIRE SOURCE

- the kerosene burner is adjusted to deliver a flame calibrated at 1100°C and 20 W/cm2

- the extension cone used in other FAA fire test standards is maintained

- to reach this level of temperature and flux, several modifications have been made on the nozzle, 45°, 7 Tab the fuel flow rate and the air flow rate

- calibration records are shown on figure n°3 and 4

SPECIMEN HOLDER

It consists in a 1m x 1m steel frame in which the test article is attached on a ceramic inner frame. Test article dimensions are adjustable from 400mm x 400mm to 1m x 1m.

SMOKE BOX

A 1 m^3 smoke box can be easily fitted to the back side of the specimen holder, to collect the smoke and gases released during the combustion of the specimen.

It is equipped with :

- a smoke detection device comparable to the NBS smoke chamber system
- a sampling system for gas analysis
- a video camera positionned behind a protection window to observe the degradation on the back side of the specimen
- several thermocouples on the chamber walls and on the back side of the specimen.

FIRST RESULTS

A series of tests on 2 mm thick aluminum sheets has been performed in order to compare burn through times with the Faverdale and FAA medium and full scale test results.

The measured burn through times were close to 40 seconds (further results are expected before the Paris meeting), they correlate with medium and full scale test results.

Tests have been conducted on 1 mm, 2 mm, 5 mm thick Al sheets and the results show a linear relation between thickness and burnthrough times.

WORK PROGRAMME

During the second half of 1997 :

1- Tests on assemblies of aluminum skin, thermal acoustical insulation bats and composite materials currently used in existing aircrafts :

- burn through time will be recorded for each component
- smoke density measurements and gas analysis will be implemented

These results will be considered as base line for the comparison of new materials or designs.

2 - Comparative tests on new insulation materials or composite panels based on previous results.

All these investigations are intended to be correlated with available medium and full scale results.

Jean-François PETIT

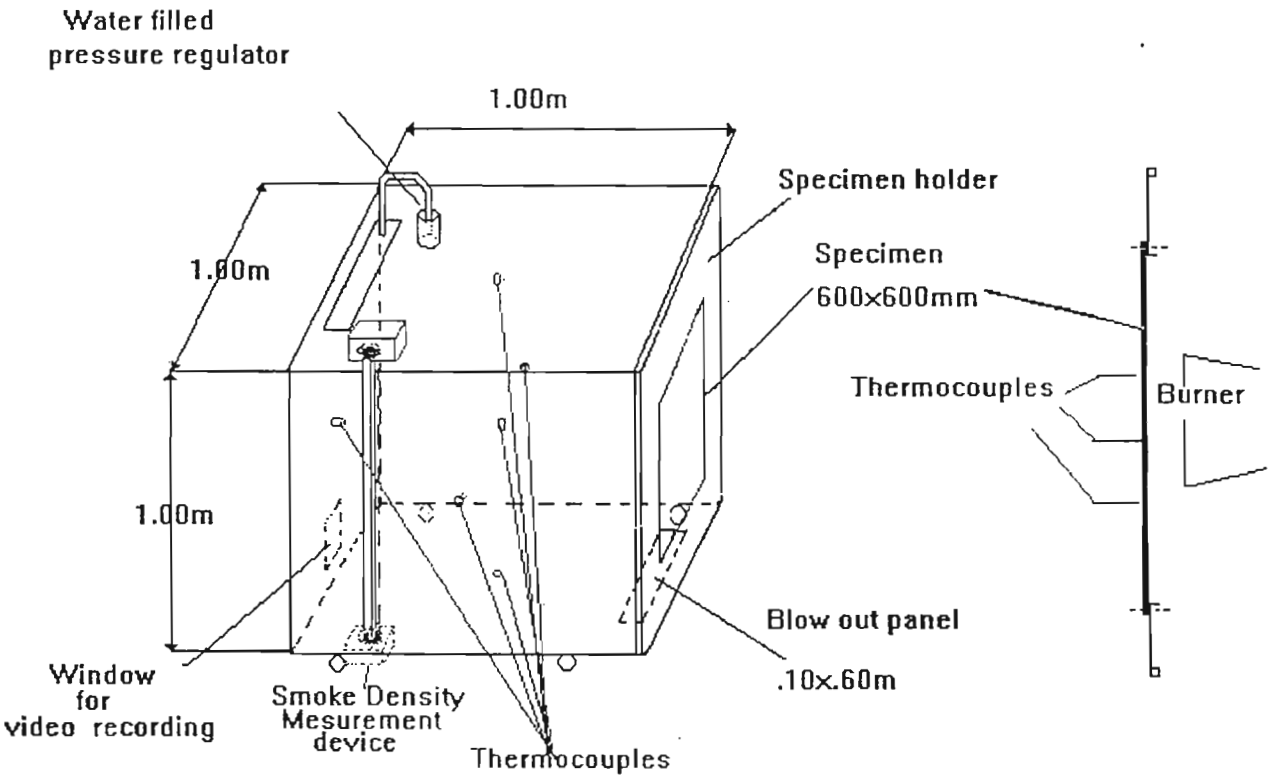
22nd may - 1997

D G A

Direction
Des Constructions
Aeronautiques

CENTRE D'ESSAIS
AERONAUTIQUE
DE TOULOUSE

SMALL SCALE BURN THROUGH TEST



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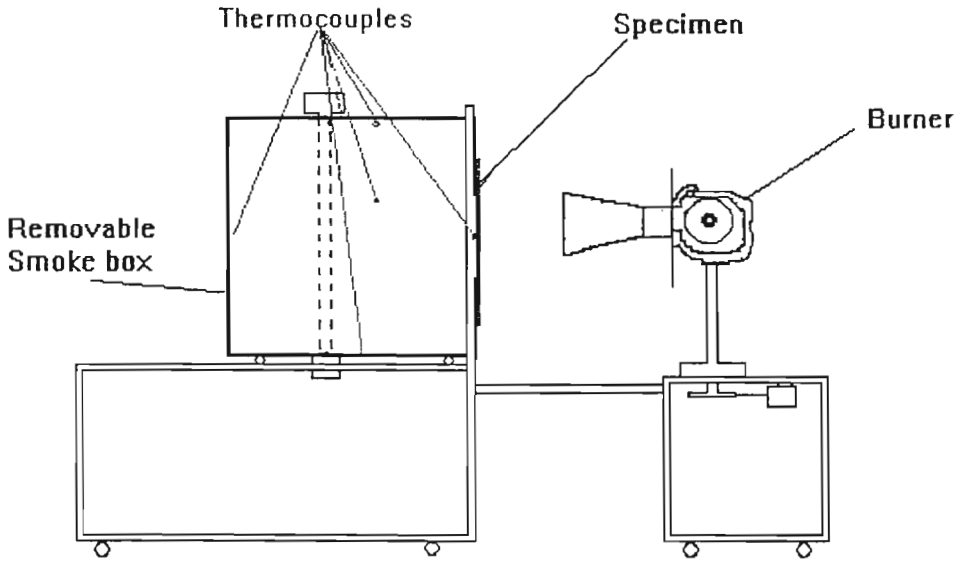
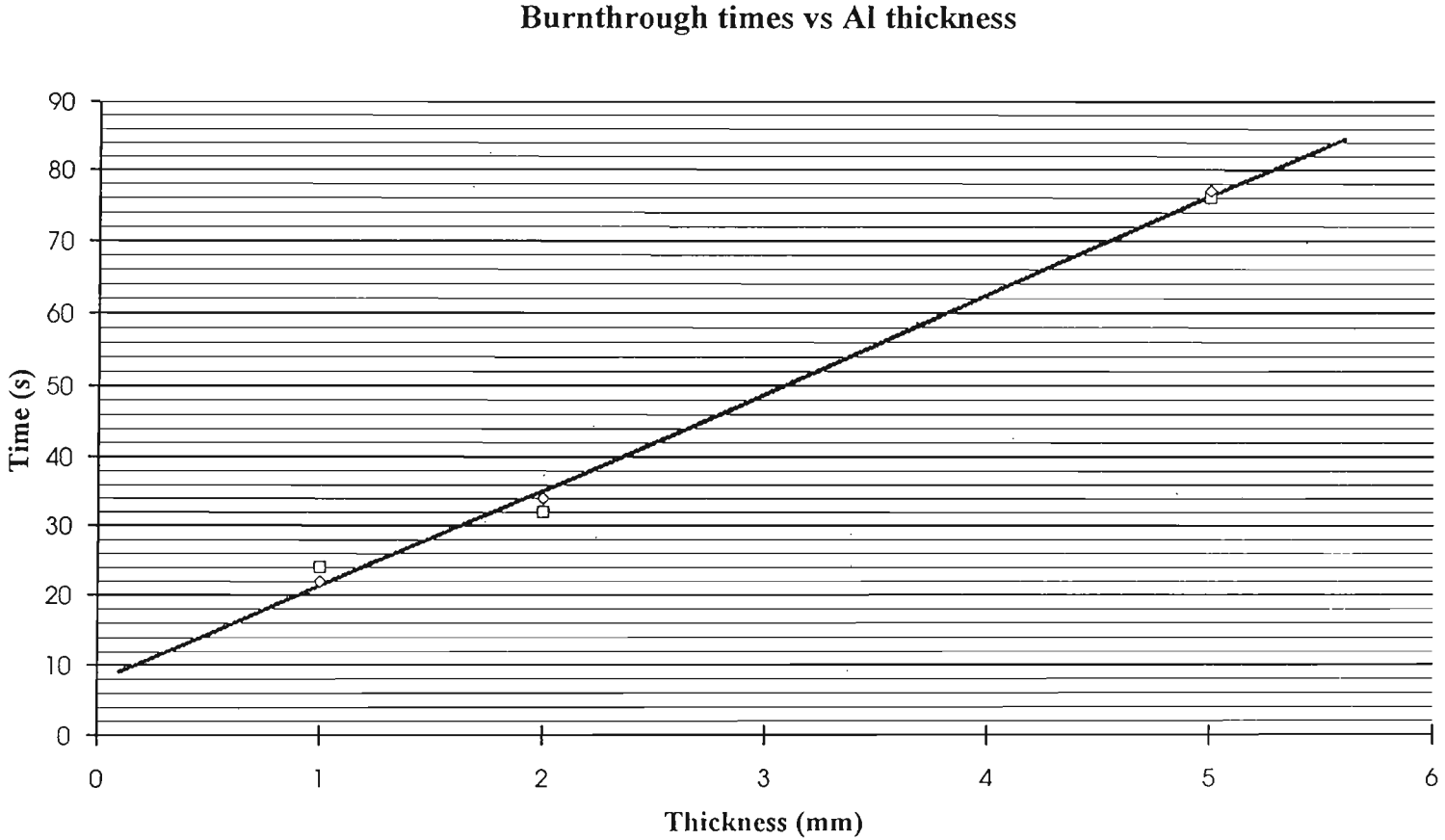
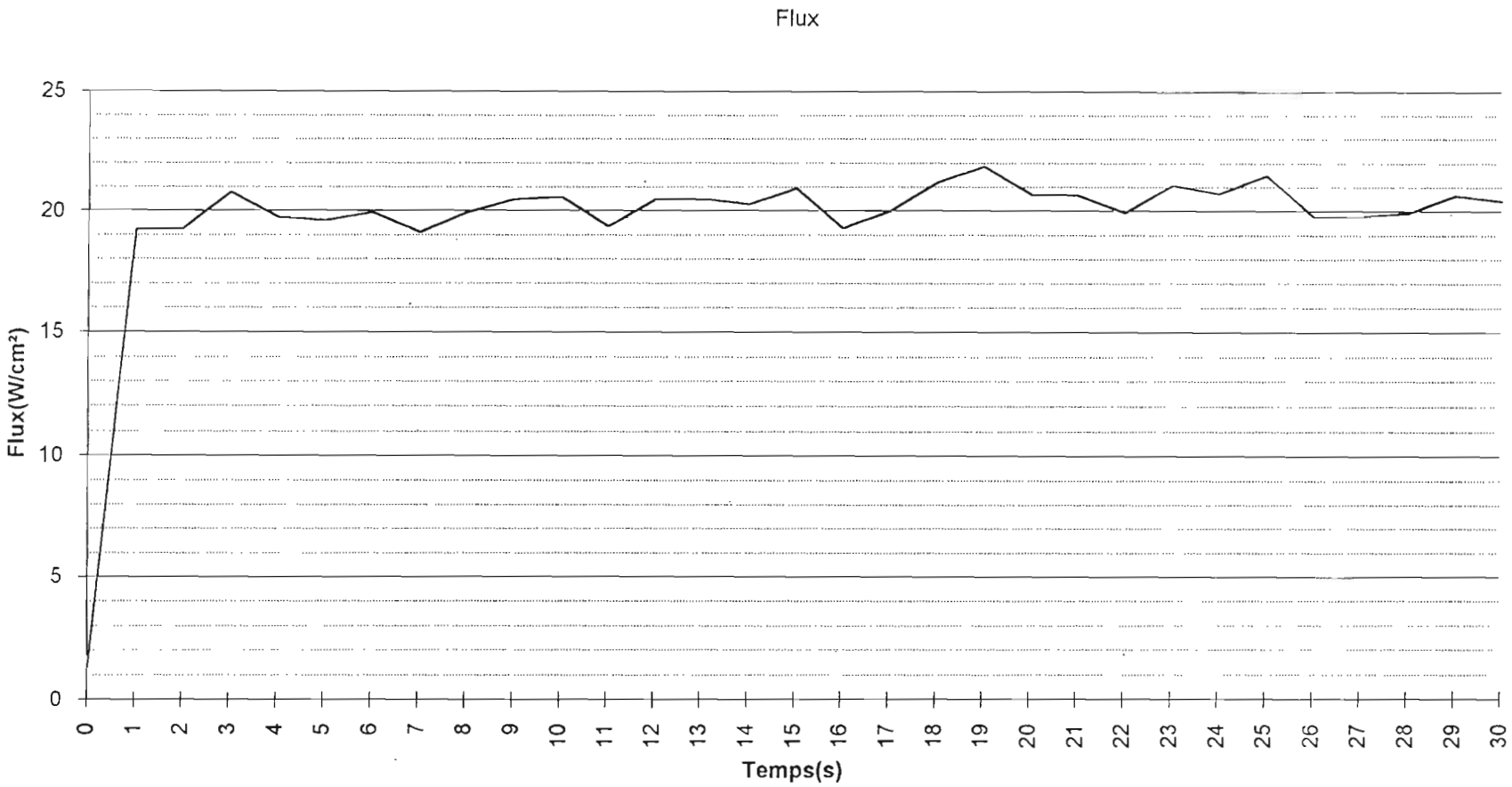
Direction Des
Centres d'Essai

CENTRE D'ESSAIS
AERONAUTIQUE
DE TOULOUSE

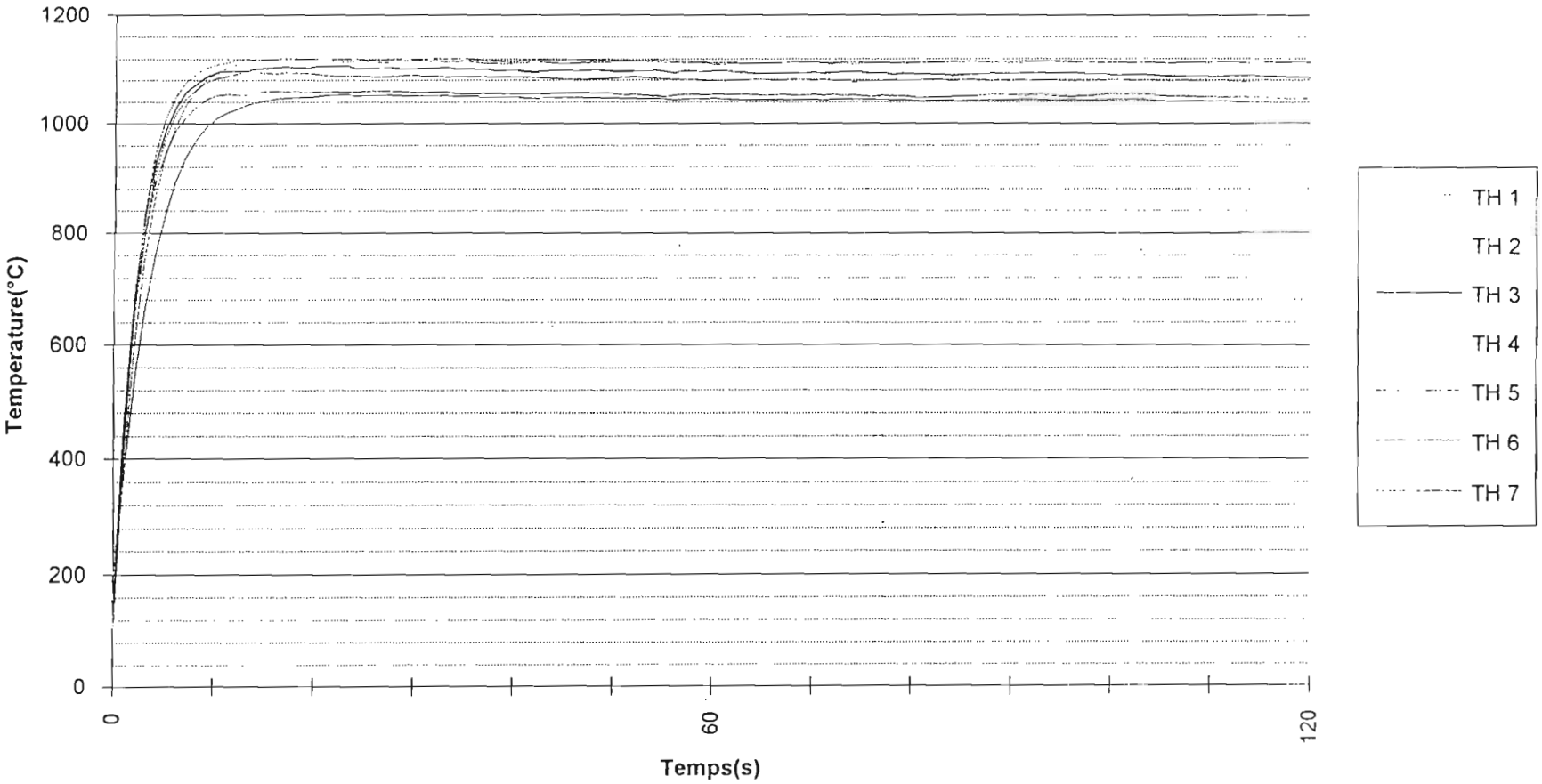
SMALL SCALE BURN THROUGH TEST




Burnthrough times vs Al thickness
Time (s)
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
Thickness (mm)


Flux
Flux(W/cm²)
25
20
15
10
5
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Temps(s)

n°4


1200
1000
800
600
400
200
0
Temperature(°C)
0
60
120
Temps(s)
TH 1
TH 2
TH 3
TH 4
TH 5
TH 6
TH 7

SIMILARITY OF FABRICS TASK GROUP RECOMMENDATIONS (REVISED)

S. Hasselbrack (Task Group's Discussion 6/10-11, 1997)

1. Establish a single method of interpreting the term "similarity" to ensure that all conformity, enforcement, and testing is conducted in a single manner.

2. Evaluate seat fire blockers for physical integrity (no holes, tears, cracks) at least every 18 months or whenever upholstery covers are removed.

3. Establish a means of identifying and eliminating those fire blockers known to separate or fracture in service.

4. Establish test protocols for non-foam seats, new foams, and new fire blockers.

5. Further information is needed to include lightweight (+/- 10 oz.-11.9 oz./yd^2) 90% wool 10% nylon blends in any change to the current meaning of "similarity".

6. There was considerable discussion as to the need for a small, planned study incorporating a simple method of testing of upholstery and fabrication, and/or fire blockers using uniform testing procedures in one laboratory prior to regulatory changes. This was followed by a discussion as to whether the thermoplastics -- Trevira CS, Ultra leather, and Ultra suede should be placed in a separate report. There is lack of uniformity of these issues.

AGENDA

INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING

Hosted by Mankiewicz
at
Hotel FRANTOUR Paris Suffren, Paris, France

June 10-11, 1997

TUESDAY, JUNE 10, 1997

9:00-9:15	Opening/Introduction
9:15-10:30	Presentations and Updates by Task Group Leaders
	Continued Airworthiness (J. Davis)
	Minor Changes to Qualified Materials (R. Hill)
	Certification Issues of Renovated Material Systems (R. Hill)
	Similarity of Fabrics (S. Hasselbrack)
	Handbook on Materials (S. Hasselbrack)
	New Design Seats (P. Cahill)
	Thermal Acoustic Insulation (P. Cahill)
10:30-10:45	Break
10:45-11:30	Presentations and Updates by Task Group Leaders (Continued)
11:30-12:00	Heat Flux Transducer - Specification Discussion
12:00-1:30	Lunch
1:30-2:00	Oil Burner For Seats Update - Calibration Operation
2:00-4:30	Separate Task Group Meetings
	Certification Issues of Renovated Material Systems (R. Whiting - Boeing)
	Thermal/Acoustic Insulation (P. Cahill)
	OSU Quality Assurance (R. Hill)
	Continued Airworthiness (J. Davis)
	Similarity of Fabrics/Handbook Guidance Document on Fabrics (S. Hasselbrack)
	New Design Seats (P. Cahill)
EVENING:	Group Dinner Hosted by Mankiewicz

WEDNESDAY, JUNE11, 1997

9:00-9:30	Task Group Discussion/Reports/Assignments
9:30-9:45	Formation of New Task Groups
9:45-10:45	Discussion on Current Test Method Problems/Development of New Test Methods
10:45-11:00	Break
11:00-11:15	Fire Test Handbook Discussion
11:15-1:00	Presentations by Working Group Members
1:00	Final Discussion/Next Meeting/Closing

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