**INTERNATIONAL AIRCRAFT MATERIALS FIRE TEST WORKING GROUP MEETING**

**Hosted by Airbus - Bremen, Germany**

**June 3-4, 2015**

## AGENDA:

## WEDNESDAY, JUNE 3, 2015

| | |
|---|---|
| 9:00-9:20 AM | Welcome from Airbus & Logistics/Introductions |
| 9:20-9:45 AM | Magnesium Alloy Test – T. Marker (FAATC) |
| 9:45-9:55 AM | SAE Seat Committee Update – Bruce Gwynne (Magnesium-Elektron) |
| 9:55-10:15 AM | Seat and Cargo Test Burner Items – T. Marker for T. Salter (FAATC) |
| 10:15-10:30 AM | Break |
| 10:30-10:40 AM | VFP Update – R. Ochs (FAATC) |
| 10:40-11:10 AM | Inaccessible Area Fire Tests – Composite Structure - R. Ochs (FAATC) |
| 11:10-11:30 AM | Foam Block Equivalent (FaBLE) – Development & Validation of a Foam Block Equivalent – Thomas Vielhaben (Airbus) |
| 11:30 AM-12:00 PM | OSU/HR2 Update – M. Burns (FAATC) |
| 12:00-12:20 PM | OSU Round Robin Test Result Analysis – Test Artifacts – HP. Busch (Airbus) |
| 12:20-12:35 PM | OSU Airflow Analysis Update – Theo Spanos (Boeing) |
| 12:35-2:00 PM | Lunch on your own |
| 2:00-2:15 PM | Radiant Panel Update – S. Rehn |
| 2:15-2:20 PM | RTCA – S. Rehn |
| 2:20-2:35 PM | Evacuation Slide Test – T. Marker (FAATC) |
| 2:35-2:50 PM | Flame Retardants/Material Change Similarity – D. Slaton (Boeing) |
| 2:50-3:00 PM | *Break* |
| 3:00-4:30 PM | Task Group Meetings Session I:<br>Magnesium Alloy – T. Marker<br>VFP Composite/Ducting/Wiring – R. Ochs<br>Seats – R. Hill<br>Flame Retardants/Material Change Similarity – D. Slaton<br>Radiant Panel – S. Rehn<br>HR2/OSU – M. Burns |

## THURSDAY, JUNE 4, 2015

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|---|---|
| 8:30-9:00 AM | ARAC Update – J. Davis (AccuFleet Testing Services, Inc.) |
| 9:00-11:00 AM | Task Group Meetings Session II:<br>Magnesium Alloy (if necessary) – T. Marker<br>HR2/OSU (if necessary) – M. Burns<br>Cargo –<br>Approved Material List – S. Campbell<br>RTCA – S. Rehn<br>Evacuation Slide (if necessary) |
| 11:00-11:15 AM | *Break* |
| 11:15-12:00 PM | Task Group Reports |
| 12:00-12:15 PM | Additional Discussion/Closing |

## MINUTES:

### WEDNESDAY, JUNE 3, 2015

Magnesium Alloy Test – T. Marker (FAATC)

The test method is now available in the *Aircraft Materials Fire Test Handbook*. Tim explained the test issues with coated samples and the work done to address these issues.

Testing of air regulators: a few different air regulators were tested in the magnesium test rig. Speedaire 4ZM10, Parker R119, and Brass/Chrome REGO air regulators were compared and results were presented. Speedaire 4ZM10 and Parker R119: both acceptable for NexGen Burner. Brass/Chrome REGO not suitable for NexGen burner application.
Magnesium Alloy Flammability Test Round Robin III: Purpose: to help identify differences in the labs. Results will help in the development of a repeatable test. Participants: FAA, Accufleet, Airbus, Magnesium Elektron. Data from three of the participating labs was shown. Preliminary Findings: temperature check shows burner flame agreement using igniterless stator. Melt times consistent between labs, indicating samples being exposed similarly. Weight loss still an issue, with excessive scatter. Further analysis to follow when all data received.
The Use of Magnesium Alloy in Other Cabin Areas: use in 5 primary seat components – can test with oil burner. Use in other non-primary seat components – oil burner? Use in other cabin components – accessible: oil burner? Inaccessible areas: elec arc? Is full-scale testing necessary to determine max allowable % of magnesium? What is the typical maximum % of magnesium in seat (target)? How could full-scale tests be conducted? Is the goal a strict limit, or simply guidance material in future Advisory Circular? Tim showed a photo of the update on the electrical arc testing machine and showed video.

Magnesium in Aircraft Seats: SAE Update – Bruce Gwynne (Magnesium Elektron)

Bruce has been the liaison between this Working Group and the SAE Committee. SAE Aerospace standard AS8049B; Paragraph 3.3.3. Magnesium alloys shall not be used. AIR6160 (White Paper) technical case for Mg alloy ban removal – published May 2014. AS8049C revision balloted Dec. 12, 2104, SAE Aircraft Seat Committee, passes, but comments need to be addressed. Re-balloted, passed unanimously. New TSO-C127b and new AS8049c don't align. TSO-C127b aligns with the "B" version AS8049B.

Seat Cushion and Cargo Liner Oil Burner Update – T. Marker (for T. Salter) – FAATC

Constant air pressure control is crucial for repeatable burner test results. Tim explained air pressure regulator comparison conducted at FAATC as part of magnesium burner test project. Cone Alloy Study: current rule for burner cone alloy is 16Ga, 310 stainless steel. SS cones have deformed up to ½ inch after only one heat cycle. Recent study involved testing 625 Inconel and Hastelloy X alloy cones. Results of Cone Alloy Study were presented. It may be possible to alter the initial design of the cone in order to accommodate deformation. Marlin Engineering allows for this in its manufacturing. The stainless steel data will be available and presented at the October 2015 Materials WG meeting. Busch: can we use this cone also for the burnthrough? Marker: we are trying to use what we learned in one test application for another test application and retrofit where applicable.
Cargo Liner Round Robin: 4 labs currently participating. 2 different cargo liner types supplied for testing: 5 of each liner type for a total of 10 liner samples. Data from 3 labs is currently available. This study is on-going. Additional materials will be supplied to participating labs for further testing and aid in burner and test cell research. These additional materials are intended to burnthrough unlike the liner materials. The final results will be presented in October 2015.
Seat Cushion Round Robin: 5 participating labs. 2 labs have completed the study and supplied data. Data for sonic vs. Park in the FAATC lab was presented. The results from the FAATC and one of the participating labs were presented.
Test Cell Airflow Study: a pair of NIST certified hot-wire anemometers were recently acquired by the FAATC Fire Safety Branch. The initial testing was performed with one anemometer attached to the seat cushion test frame. Average Fireblocked Cushion Test Results were presented. Slaton: Handbook: it would be good to identify updates from one version to another. Marker: note changes/revisions in updated version. We've discussed either indicating changes in red or leaving strikethroughs. Winn: How about a Revision number/log? Hill: The problem with the regulator is where you measure the pressure. That regulator would work if you measured the pressure right before the sonic choke. It is confusing because it allows measurement at two different ports. Bennett: we did confirm that. We put a pressure transducer between the two.

Development of a Flame Propagation Test Apparatus for Inaccessible Area Materials – R. Ochs (FAATC)

Objective: deliver a new test method to FAA Transport Directorate for use in certification of novel design airplanes; for inclusion in next-generation fire test requirements. A schematic of the vertical flame propagation test apparatus was presented. New since last WG meeting: a new VFP is under construction (base being used to traverse thermocouples through pilot flames). Integrated Traverseable Pilot Burner. Added a sash hood to VFP to keep smoke from affecting test personnel. Next Steps: gather large quantity of composite samples for testing. Currently reviewing comments on draft Advisory Circular material distributed in February 2015. Will be distributing draft Handbook Chapter and Drawings for review/comments. Busch: are these test methods comparable to the foam block? Ochs: information comes from measurements we made on the foam block.

Composite Fuselage Flammability – R. Ochs (FAATC)

Tests were performed to determine the influence of a variety of configurational factors on inboard flame propagation of composite fuselage panels. Warning: the tests are just R&D and are not intended to change the Special Conditions for composite fuselage structure. Test Series: Flat Panel Tests; simulated structure and panel tests. Rob showed photos of materials tested and reviewed test results. Summary to Date: inboard surface flame propagation found to be influenced by many parameters. Overall, increasing the external heat transfer rate prevents inboard flame propagation. Further testing: determine if paint on the outer surface has any influence on inboard flame propagation for static ambient and cooling external conditions. Investigate axial propagation of fire along stringers into adjacent bays. Bennett: what kind of exhaust system did you have? Ochs: we did these in our large facility and the fans were on. Nixon: individual little rectangles between each. Ochs: let's talk about that more in the Task Group meeting.

Inaccessible Area Materials – Riser Duct Tests – R. Ochs (FAATC)

These tests were performed to demonstrate the need for enhanced requirements for duct materials in inaccessible areas. Photos of the test rig were shown. Busch: are the ducts closed on the top? Ochs: no, they are open. Rob showed video of these tests. Lab-scale tests were also conducted. Summary: riser duct tests demonstrated the need for enhanced fire requirements for ducts.

Airbus Project – FaBLE – Thomas Vielhaben (Airbus)

What is FaBLE?: it is an equivalent to the FAATC hidden area fire source (Foam Block Equivalent). A schematic of the setup was presented. Validation: comparison of heat flux was described. We tested several materials and compared results during the validation testing. Conclusion: all specified requirements will be fulfilled; FaBLE is a repeatable fire source and represents foam block properties it is a low cost device, made from worldwide available standard parts. Videos of a FaBLE test and a foam block test were shown. Bennett: just one thermocouple? Vielhaben: no, we had 84 thermocouples. Hill: what's your opinion on problems you may encounter in areas with oxygen starvation? Vielhaben: I have not thought about this. Hill: with foam block it slows the burning rate. With propane you are going to have combustible gas. This is something to think about.

Heat Release Rate – M. Burns (FAATC)

Upper Pilot Burner Igniter – Hot Surface Igniter (HSI) installed in Aircraft Materials Fire Test Handbook for use in current OSUs. It is located in the Supplemental material.
HR2/OSU Round Robin: assembled a larger Focus Group RR comparing HR2 (1) and Industry OSUs (9). Purpose: gather and compare data using a modified heat release rate appratus (HR2) and several modern day OSU heat release rate units (OSUs). Mike explained how he analyzed the Round Robin data and showed the data reported by the labs. Conclusion: HR2 data (PHRR & THR) fit well within the average of all machines tested. Observed improvement in repeatability.
Material Simulator Test: empty sample holder inserted in Holding Chamber for 1 minute. Data from HR2 Simulator Test and OSU Simulator Test was presented.

DOE Draft Test Plan Concept: randomize 4 main parameters. Use Material Simulator to study impacts on data.
Next Steps: complete DOE Test Plan; begin DOE Testing; Possibly use the material simulator on other OSU machines.

OSU Round Robin 2015: Airbus Data Analysis Linked to the HR2 Project – P. Busch (Airbus)

Peter presented the Test results overview for materials tested. Factors influencing results: sample holder assembly. The sample holder assembly with a 1.6 mm AL sheet without any organic material, total heat release rates were presented from these tests. Peter proposed several items for future Round Robins: only robust, repeatable materials shall be used for RR; the influence of the air-split should be measured and investigated; the efficiency factor of each OSU chamber should be established; and correction factor for kH value based on meteorological data should be considered.

Numerical Acquisition of OSU Airflow Data ad Its Effects on Heat Release Results – Theodoros Spanos (Boeing)

Theo reviewed the observations from the Boeing Charleston lab (these were presented at the February 2015 Materials WG meeting). We set out to do the same thing at the Boeing Everett lab. 60 tests targeted to check effect of total airflow and airflow split ratio on OSU parameters. The results of these tests were presented. Theo reviewed the observations from the Boeing Everett lab: piping system configuration in laboratory has an observed effect on split ratio; trends seen in Charleston were observed in Everett using experimental piping system. Where do we go from here? 1) maintain status quo; 2) directly capture air data; 3) recommendation from Task Group. Hill: we have been taking a lot of time on the OSU and things that there are problems with, but no one wants to make a change (i.e.: splits – we worked on splits at least 15 years ago). The HR2 does not have splits. It tries to eliminate everything that is a problem in the OSU. Should we be looking at the future and working with the HR2. Schall: this work should be recorded in an informative annex, so 15 years from now we are not doing the same work again. HP Busch: How can we get a material ranking if we have different machines? Hill: that's the problem; no one wants to make a change. HP Busch: there is no guidance given by the authorities that we have to change our machines. Hill: the best we can do in the round robins is to find out if someone is doing something wrong.

Radiant Panel Update – S. Rehn (FAATC)

A new survey (length, width, height of radiant panel test apparatus) was sent out since the February 2015 Materials WG meeting. We received 12 responses from the new survey + the FAA's data. We had 6 responses from the previous survey. Drawer Change: FAA's radiant panel drawer was made bigger which allows less airflow around the drawer. Some labs also started using a bigger drawer. We want to control the gaps on each side of the drawer to control airflow better. There was huge variability with air gaps around drawer.
Training Video: the 2nd draft has been completed. Re-shoots were delayed because the video production group was completely booked until mid-June. Video will be sent out on DVD or posted on the FAA Fire Safety website when completed.
Round Robin: after this meeting we will start sending out samples.

RTCA – S. Rehn (FAATC)

RTCA DO-160G is the current internatinonal standard for environmental testing of commercial avionics. Next revision is due January 2016. Goal: alternative test procedure (ex: test the electronic enclosure whole instead of breaking down by components). A survey was sent out to Task Group members after the February 2015 Materials WG meeting. Only one response has been received. Marker: How many people did you send the survey out to? Rehn: 6 or 8, those that were at the February 2015 RTCA Task Group meeting.

Evacuation Slide Test Method – T. Marker for D. Do (FAATC)

Power control inputs were used to calibrate the radiant heat of the furnace for Round Robin 4 testing. A solid coil furnace was used during the tests. The distance from the coil to the opening of the furnace is 1 5/8 inches. A diagram showing use of power control input was presented. Calibration and Test Procedure using Power Control were reviewed. The conclusion reviewed volts used for each lab to get to a heat flux of 1.5 Btu/ft$^2$. However, lab C produced a heat flux slightly higher at 1.6 Btu/ft$^2$. The results of the tests from each lab were presented. Future Work: A Task Group meeting will be held in October 2015.

Flame Retardants/Material Change Similarity – D. Slaton (Boeing)/ R. Lyon (FAATC)

Update on qualification tests for adhesives: companies participating in similarity program supply samples with minor changes in material along with FAR results. Results of MCC testing were presented for the adhesives and films provided by industry participants.

**THURSDAY, JUNE 4, 2015**

ARAC Materials Flammability Working Group – Status Update – Jim Davis (Accufleet)

Jim reviewed the original objective and then the Renewed Charter of this ARAC. The New Task was in the Federal Register on January 20, 2015. The ARAC has 8 months from publication in the Federal Register. The final report is to be submitted to the parent committee by September 18, 2015. The Cost Benefit Framework of this ARAC was presented.

**Task Group Reports**

Magnesium Alloy Task Group Report – T. Marker

Task Group Report for Magnesium Alloy Flammability Test (provided by Tim Marker)

There were two main areas of discussion within the Task Group: 1) the flammability test for magnesium components used in seats (recent round robin results, the new burner configuration using the igniterless stator, recent test results at FAATC, and general perfection of the test method), and 2) the use of magnesium in other cabin areas.

**Magnesium Alloy Flammability Test**

Test Room/Chamber Size. The current specification calls for a room/chamber size of 10 by 10-feet *minimum*. Participants questioned whether this was an absolute restriction, or if exceptions could be made. In one instance a participant of the recent round robin interlab study conducted the tests in a room that was only about 8 feet wide, but longer than 10 feet. One suggestion was to specify a minimum floor area, which would enable test room/chambers to be slightly less than the 10-foot dimension. Another participant also suggested that the while the room size may or may not be a factor in the test results, it was possible that the distance of the burner from a wall may impact results as well. For example, the FAATC has their burner mounted external to the test chamber, with an opening in a wall for the draft tube to protrude through. In this configuration, the test sample is approximately 28 inches from the exterior wall. The FAATC agreed that it may be necessary to employ a minimum distance of the sample from an exterior wall. The FAATC discussed work currently being done to investigate the impact of airflow and chamber size on test results in other oil burner tests, including the cargo liner burnthrough test and seat cushion flammability test. These studies will focus on the amount of impact airflow, room size, chamber temperature and other parameters have on the test results.

Standby Position of the Test Sample. The current test standard calls for a minimum distance of 36 inches from the edge of the burner cone to the nearest point on the test sample to avoid pre-heating. This dimension is considered standard, as it is used in other FAA oil burner flammability tests. Task Group participants questioned whether this 36 inch minimum distance was necessary, and suggested it could be reduced for the

magnesium flammability test. The FAATC agreed to conduct some experiments to determine the impact of reducing the minimum separation distance between sample and burner during warm-up.

Conditioning of Samples. The magnesium flammability test standard specifies a 24-hour conditioning of the test samples at 70F +/- 5F and 55% +/- 10% Relative Humidity (RH) prior to test. One Task Group participant suggested that this level of RH is too high for a magnesium alloy sample, which may result in excessive oxidation prior to the test, thus impacting the results. The FAATC's position is that this is a standard level of conditioning, which is used in all other FAA flammability tests. The participant asked if this RH conditioning range could be expanded, thus allowing for conditioning at a lower RH. The FAATC agreed to investigate the occurrence of oxidation forming on samples that are conditioned at RH levels of 55% or higher. If no visible oxidation forms at this level for 24 hours, the standard conditioning parameters will remain.

Impact of Test Chamber Airflow/Ventilation. Test results obtained from the recent Round Robin interlab study suggest the likelihood that laboratory conditions are influencing the test results. In reviewing the interlab study data, all three labs that conducted tests had similar melt times, and times when the magnesium alloy test sample started to burn. However, the times required for the samples to self-extinguish and the weight loss were not nearly as similar. This suggests the possibility that the test chamber ventilation is different in each lab, causing additional after burning to take place, resulting in lengthy periods of time before the samples self-extinguish, and increased weight loss. As mentioned previously, the FAATC is in the process of studying the impact of ventilation airflow on the results of oil burner flammability tests.

Fuel Nozzle Clocking/Directionality. When reviewing the flame temperature data for the 3 labs involved in the interlab study, it was revealed that one burner showed a right-side bias, while the other 2 burners had more of a left-side bias (bias refers to the overall shape of the flame, based on temperatures, which should be as equal as possible). One Task Group participant suggested that the fuel nozzle irregularity could be the cause of these imbalances, since all other components are the same, with fairly tight tolerances on their position/location. The FAATC agreed to explore additional nozzle clocking (rotation) to see if the temperature profile is impacted.

Muffler Foam. The muffler foam was discussed briefly, as one participant indicated their foam had become dislodged from the muffler and travelled partially into the burner housing. The FAATC reminded participants that a small safety wire cross is necessary to prevent this. As stated in Chapter 24 of the Handbook, Supplemental Information, "It is necessary to affix two pieces of safety wire to the muffler's internal steel mesh at the outlet end, to prevent the foam cylinder from moving out of position into the burner housing. The two wires should be arranged perpendicular to each other in a cross pattern."

**Magnesium Use in Other Cabin Areas**

Task Group participants discussed the concept of using magnesium alloy in other cabin area applications, and more specifically, what the most appropriate test should be for these materials.
One participant discussed the current situation in which magnesium alloy is permissible for use in the 5 primary components of a coach seat (leg, spreader, crosstube, seat back frame, baggage bar). In a hypothetic case, if an aircraft were configured as an all-coach seating layout, it could possibly translate into a significant amount of magnesium being allowed on board the aircraft. This being the case, the participant inquired into the possibility of having a specific allowable weight limit of magnesium based on the total weight of magnesium used in the coach seats. For example, if the amount of magnesium in a triple coach seat was 20 pounds, and there were 50 seats on board the aircraft, the maximum amount of magnesium alloy would be 1000 pounds. This would enable an applicant to substitute magnesium parts in other areas of the cabin in exchange for some magnesium on the seats. The FAATC agreed to discuss this example with regulatory authorities.

The participants engaged in a lengthy discussion on the use of magnesium alloys in other areas and how to test/certify. The FAATC suggested that surface area-to-volume (SAV) ratio would be a reasonable concept for

limiting the use of magnesium to certain components (this concept was also suggested at the previous three IAMFTWG meetings). Basically, the higher the SAV ratio, the more easily ignitable the component is. The FAATC suggested that a maximum allowable SAV ratio could be established, thus limiting the use of magnesium alloy to constructions that are inherently more ignition resistant. One participant pointed out a potential problem with this concept. Currently it is acceptable to construct the crosstubes out of magnesium alloy. However, the SAV ratio of a crosstube is in the range of about 30 to 35. Since the crosstube is allowable, it could be assumed that other parts with similar SAV ratios would also be acceptable. This would essentially allow the use of thin magnesium sheet, which also has a similar SAV ratio to that of the crosstube. The participant questioned whether the FAA was prepared to accept thin magnesium sheet in widespread use, based on this scenario. The participant reminded the Task Group that thin magnesium sheet was not tested during the full-scale tests. After posing the question, the participant proposed a solution, in which there were two different allowable SAV ratios: one for solid parts (legs, spreaders, tray arms, etc.) and one for hollow parts (crosstubes, baggage bars, and seat back frames). The participant proposed a maximum SAV ratio of 20 for solid parts and 40 for hollow parts. Another consideration would be the location of the component in the aircraft cabin (i.e. should there be a height restriction on the magnesium components?). The FAATC also suggested additional criteria that would be possible. For example, limiting the amount of magnesium alloy in the construction of a seat, based on the total weight percentage (i.e., a maximum allowable 75% magnesium components by weight, etc.). The representative from EASA agreed to initiate a boilerplate document outlining the use of SAV for certification of magnesium alloy components.

Another participant suggested further development of the arc test, which could be used along with the current oil burner test. The two tests combined could be used to certify any part in any location. While this was a viable approach, the arc test has not yet been perfected or finalized.

**Web-Ex Interim Task Group Meeting**

The Task Group participants agreed to engage in an interim meeting via Web-Ex to discuss these issues in the mid-July timeframe. One airframe manufacturer advised that seat manufacturers be involved in the discussions, which was agreed to by the other participants.

VFP Task Group – R. Ochs

Translatable pilot flame and sashes were discussed. We discussed the distribution of the draft AC for inaccessible area materials. Comments can still be submitted. The Handbook Chapter draft will be distributed before the next meeting. It will include the drawings. We discussed next steps: things that came out in draft AC review. We discussed some tests that will be conducted for the ARAC.

OSU/HR2 – M. Burns

We decided to initially take a look at airflow split data. We will run a Round Robin to take total airflow measurement and take a bypass flow measurement. Then, maybe we can take a look back at the RR from two years ago. Theos from Boeing will do some analysis. We may also have a telecom or Web-Ex meeting prior to the October 2015 meeting. FAATC will distribute the anemometers for the RR. There was much discussion about developing a standard panel for the OSU/HR2. We will develop a 'wish list' of what we are looking for in a standard panel. HSI: some interest in having a hole to better secure it. We will look into making this addition to the Handbook. DOE for HR2: group agreed that we should proceed with parameters presented at Materials meeting on June 3, 2015. Slaton: can you give a quick status on the standards for the heat flux gauge? Burns: Chapter HF for the Workbook is completed at the moment.

RTCA – S. Rehn

The main goal of this group is to develop a new test method for the electronic boxes. We identified two test methods that we can possibly use: telecommunications test method or the Airbus test method. These will

both be investigated. The group will review both procedures and provide their comments. We set a basic timeline: comparative testing will be started next year.

Radiant Panel – S. Rehn

The wording of the Workbook section has to be changed, since newer aircraft are made out of materials other than aluminum. We decided that more study is still needed on finding some of the tolerances for the Workbook.

Approved Materials Group – S. Campbell

We've been discussing a UL model, SAE PRI model. We investigated the SAE PRI model since it seemed to be the best fit for what we needed. We looked into the cost of the SAE PRI model. We talked about the annual SAE PRI listing fee and who would be interested in using it. We discussed the Qualified Products Group – typically populated by SAE specialists that do not have to be SAE members. HP Busch: will you also address material process? Campbell: no, we did not address processes monolithic or paint.

Material Change Similarity Task Group - D. Slaton (Boeing)

Material Change Similarity Task Group minutes provided by Dan Slaton:

The task group discussed that the end goal is to define a process to be published in an Advisory Circular. Dan Slaton recommended that a final draft of the process needs to be prepared by the task group by the June 2016 meeting and provided to the FAA. The presentation provided by Dr. Rich Lyon should be reviewed in more detail by the task group members. The approach and data summarized by Dr. Lyon provides a good approach for comparing MCC results with FAR test results to assess "equivalency." Various aspects of the process were discussed including the following:

1) MCC "equivalence" - describe what this means, and the acceptable statistical methods and ranges. FAR 21.93 describes a minor change as having "no appreciable effect." Guidance should be developed to align "equivalent or better" to the definition in FAR 21.93.

2) The process should have options for assessing equivalency; Option 1: Compare MCC data analysis with a set of FAR requirement data analysis. Option 2: Define and use standard test configs (instead of the MCC since not everyone has MCC's). Option 2 provides simplification using FAR requirement tests and would help with some materials/config buildups that may be too complicated to test in MCC.

3) Define standard configurations for families of materials to simplify FAR requirement testing. Consider families such as adhesives, laminates, honeycomb, paint/coatings, etc… Leverage standard configs already defined in Policy Statement, and develop additional configurations.

4) The overall process could be described in two phases; Phase 1. Material evaluation, Phase 2. Minor change determination. The Phase 1 assessment could be used not only for minor change determination but as general material spec qualification evaluation to confirm "equivalent or better."

5) Discussed the approach of setting margins below FAR reg limits that would be acceptable even if new and old materials were not identical in performance (e.g. not statistically equivalent).

There is an open request to industry for material samples to evaluate as "test cases."

Seat Cushion and Cargo Liner Task Groups – D. Hill

Seat Cushion and Cargo Liner Task Groups – D. Hill

Notes provided by Tim Salter. (Dick Hill covered the Task Group meeting, since was unable to attend).

Both discussions centered around the NexGen burner. What is a sonic burner and how does it work? What are the differences between the oil burner temperature calibration compared to the new "flame temperature check" used with the NexGen burner.

The current seat cushion round robin is ongoing, and two labs have returned results at this time. There were some questions specific to the use of the test methods, particularly in the seats. These include the use of

leather and similarity of leathers for testing. Also, fire hardened foam which should be discussed in the new AC when it comes out.

The current cargo liner round robin study was discussed, and is currently ongoing. Additional materials intended to burn-through will be supplied to participating labs, and the results will be presented at the materials meeting in October 2015

There were some questions regarding similarity and when does it apply such that a lab does not have to test a particular seam or a joint because a similar joint has be proven to pass the liner test requirements. The new cargo AC material will address some of these issues, and will be available on the FAA Fire Safety website in the near future.

Final Discussion/Next Meeting

The next Materials Working Group meeting will be held October 19-20, 2015 at the Tropicana in Atlantic City, New Jersey, USA. The meeting will start on the afternoon of Monday, October 19, and will be a full day on Tuesday, October 20, 2015. Info will be available on the FAA Fire Safety website at a later date.