REDAC Subcommittee on Airports
Summer/Fall Meeting
August 12-13, 2014
Meeting Minutes

Day One
Tuesday, August 12, 2014

Introductions

Meeting formally started with opening remarks by Mr. Christopher Oswald, Subcommittee Chairperson. Mr. Oswald thanked everyone for attending and introductions of Subcommittee members and attendees were made.

Mr. Dennis Filler, Director, FAA WJH Technical Center, introduced himself and thanked everyone for attending. He spoke briefly of the visit he had the day before with Secretary of the Department of Transportation Anthony Foxx, FAA Administrator Michael Huerta, U.S. Representative Frank LoBiondo, and Senator Cory Booker and how unaware they were about what type of work was performed at the R & D site. Mr. Filler stressed his belief that the R & D program needs to guide the research towards being more proactive and not reactive. He stressed the need for looking 5-10 years in the future, finding potential problems/issues, developing solutions, and filtering those needs into the budget. Mr. Filler explained how he feels the Subcommittee can provide valuable input on hurdles and challenges the Airport Industry could face in the future and assist in providing guidance to the R & D program on how to get ahead of those problems/issues. He expressed his ideas on the need for the R & D program to exercise leadership in order to get "ahead of the curve" and stay "ahead of the curve". Mr. Filler stated that he believes this is a crucial part of the success of the R & D program and the Airport Industry as a whole. He informed the Subcommittee that this is the direction he would like to see during this REDAC Meeting.

Dr. Eric Neiderman, Manager, FAA Aviation Research Division, introduced himself and indicated that he had recently been confirmed as the permanent manager of the Division. Dr. Neiderman reiterated the points that Mr. Filler spoke on. He expressed the importance of specific research that is being done at the FAA Technical Center by the five Branches of the Aviation Research Division. Dr. Neiderman expressed that he would like to see more scientific rigor combined with responsiveness to issues and agreed with Mr. Filler on the need for exercising leadership. He stated that he would like to see convergence and synergy among all of the branches within his division and throughout the FAA. He stated he is looking to the Subcommittee to guide the portfolio of research. The Subcommittee agreed with both Mr. Filler and Dr. Neiderman on the need to look into the future in regards to pinpointing emerging/possible issues and the impact that would have on the Airport Industry.

Dr. Michel Hovan, Airports Technology R&D Branch Manager, spoke of the 2014 FAA Worldwide Technology Transfer Conference that took place a week prior to this meeting. Dr. Hovan expressed the fact that that was a good way to showcase the importance of the Airport Technology research program. Dr. Hovan went on to explain the new presentation process for this meeting. He stated more presentation changes will occur in the future in order to make the

meeting more efficient. Dr. Hovan gave an overview of the FY2013-2016 budget and stated the FY 2017-2019 budget will be decided upon in the fall

Mr. John Dermody, Manager, FAA Office of Airports Safety Standards Division, AAS-100, gave a brief synopsis of his role for the FAA. He gave an overview of the FY 2014-2015 budget and how it remains stable and stated his believes funding will be available for research planned. He spoke briefly on specific projects presently in progress on noise and the importance of this research. Mr. Dermody agreed with Mr. Filler, Dr. Neiderman, and Dr. Hovan's comments regarding education and outreach to get the purpose of the R & D program to the public. He would like the Subcommittee to strategize on ways to make that happen. Mr. Dermody concluded that the research is "on point" and in his opinion has become data based and safety driven. He stated he would like to discuss what the emerging issues are and have the Sub Committee find ways to possibly integrate them into research currently in progress.

Review of Recommendations

FAA updated the Subcommittee on the progress of the recommendations given in the April 2014 Meeting.

1. ***Braking Friction***
   Discussion- Subcommittee discussed the importance of this project as well as discussing concerns. It was decided that Project risks remain. In the April 2014 Meeting it was decided that a Risk Mitigation Plan needed to be defined and update on data collection from April would be provided.
   Conclusion- It was decided this recommendation would be closed and further discussion will be deferred until presentation is completed.

2. ***Trapezoidal Grooving***
   Discussion- During the April 2014 Meeting the Subcommittee discussed whether this project was under time constraints and the ability to resolve. It was discussed whether keep this recommendation open as is, revise and readdress, or close this recommendation out and create a new one.
   Conclusion- the Subcommittee decided to defer this discussion until after the presentation is completed.

Emerging Issues/Future Opportunities

Prior to the meeting the Subcommittee was asked to compile a list of what they view as emerging issues. The list contained twenty possible emerging issues, with one addendum made to the list. They were requested to discuss, categorize between strategic and tactical, prioritize and present the top five to the REDAC and Mr. Filler. The following Issues were discussed:

Issue #1: Improved Pavement Management Approaches (discussions for TRB/AOC)
The Subcommittee categorized this issue as tactical and commented it could be rolled up in the 40 yr. life research. A Subcommittee member added to this issue with concern those

Engineers in the field need to have full understanding in regards to where the standards are coming from and how they are developed before applying them. There needs to be a better avenue to correlate the information so there is a full understanding behind the standards before implementing them.

Issue #2: Next Generation Runway Status Lights (RWSL's)
Subcommittee categorized this issue as both strategic and tactical. The current Runway Status Lights program will be discontinued. It was discussed that funding is limited and is it possible to look for other avenues to implement such as through Safety Surface Teams or other NextGen programs.

Issue #3: Maintenance Technologies/Practices for Light Emitting Diodes (LED) Airfield Lighting
Subcommittee categorized this issue as tactical. The Subcommittee agreed there is a need for this research and added that some of this research has already been completed at certain airports across the country.

Issue#4: Commercial Spaceport Infrastructure and Operational Standards
The committee categorized this issue as both strategic and tactical. Such as, the issues of horizontal launch pads being constructed at airports and the impact that will have. Issues are already being addressed from a policy standpoint but what needs to be addressed as well is environmental impacts and how design standards will be affected including air traffic patterns. It was suggested the approach of discussion come from more of a strategic standpoint until more has been presented on this issue. The Subcommittee was informed that sites have been selected by the FAA for this research.

Issue #5: Portland Cement Concrete Paving Trends and Advancements
Subcommittee categorized this issue as tactical. It was discussed that what should be included in this research is looking back on materials, methods used, construction standards, and wear and tear over the years. This data should then be used as a comparison tool. It was questioned whether that could be accomplished and how. The Subcommittee was informed similar type of research was performed by the military and discontinued due to cost vs. benefit.

Issue #6: NextGen and Airport Noise
The Subcommittee categorized this issue as tactical with policy and strategic issues. It was discussed that there are currently projects in progress at this time touching on noise issues. The question was raised as to the need of more research. It was agreed this might be an issue that is needed to be determined if it's a general issue or more of a site specific issue.

Issue #7: Updating Exit Taxiway Location and Design Guidance
The Subcommittee categorized this issue as strategic and commented this should expand to assist with operations inside and outside the terminal. The question was raised on the cost benefit and concerns regarding customer service breakdown. It was determined further proper research is needed in preparation for NextGen.

Issue #10: Use of ASDE-X or Surface Multi-lateral System Data in Pavement Management and Evaluation
The Subcommittee categorized this issue as tactical.
Issue #13: Reassessment of Rationale for Airport Beacons
The Subcommittee categorized this issue as strategic. The Subcommittee discussed taking a look at research driven policies and researching performance characteristics of different aircraft/airports. The question raised was "Can there be a commonality with FAA, Manufacturers, and airports on developing plans. An extension of this would be Emerging Issues #4 (Commercial Spaceport Infrastructure and Operational Standards) and #9 (Use of Variable Message Airfield Signing).

Issue #15: Airport Data Management
The Subcommittee categorized this issue as strategic.
There are many sources for airspace data and there needs to be a look into integrations of all methods of data collection and management of the data bases. There are currently discussions taking place to determine what types of data should be included, how many data bases are needed and sharing of data. The Subcommittee was informed by November/December 2014 many improvements should be in place. The Subcommittee suggested building a Data Management Plan to include the cost, frequency of updating needs, and safety implications.

The Subcommittee decided to return to discussions on Emerging Issues on Day 2. Subcommittee was informed that if Emerging Issues were not readdressed at this meeting a conference call would be scheduled for the end of August or early September.

Presentations

Mr. Joe Breen- Aircraft Braking Friction Program, RPD 147
Discussion- Mr. Breen gave an overview of the Aircraft Braking Friction project and the challenges it produced. He addressed the concern that the Subcommittee voiced at the April meeting regarding the ability to perform the scheduled testing and collect data. Mr. Breen updated the Subcommittee by presenting the data that was collected as well as the testing performed in April. He explained the objectives for winter 2014-2015 and the purpose of the testing. Mr. Breen explained one of the project objectives is to support the development of a computer model with an algorithm that could relate onboard aircraft data to friction coefficient values (Mu's) developed during landings on contaminated surfaces. The Subcommittee asked if there is any other data available that relates to this study. The response was no there is not. Mr. Breen explained how the tests were performed and vehicles were used for the testing including the FAA's 727. After reviewing the findings that Mr. Breen has presented the Subcommittee concerns are the validity of the data collected due to the vast difference in variables during testing. Mr. Breen was asked to provide full graphics of variability of the testing preformed to the Subcommittee in time for the REDAC Meeting. Mr. Breen continued his presentation by stating the Objectives for Winter 2014/2015 along with the Project Schedule and Risk Assessment as requested by the Subcommittee in the spring 2014 Meeting.

Conclusion- the Subcommittee is pleased with data collected and progress of the project. A question of adequate funding was raised and it was explained major procurement was completed on the initial phase of this project. The Subcommittee stated they would like to see a broader plan going forward looking into the next two years. The need for full graphics of variability of the testing in time for REDAC was reiterated.

Lauren Vitagliano, Airport Noise, Safety Database, Others

Ms. Vitagliano began the presentation with an overview of current and proposed updates on the APPROACH HOLD (APCH) Signage and Marking project informing the Subcommittee that Phase 1-Phase 3 have been completed. She explained Phase 4 of the project will consist of signs being manufactured and then installed at Chicago O'Hare -(ORD), Cleveland Hopkins- (CLE) and Nashville- International Airports (BNA). Evaluations tentively beginning in September 2014 and Phase 4 completed with a final report in June 2015.

Airport Noise

Ms. Vitagliano gave an overview on Aircraft Noise and Annoyance Survey. She explained the purpose the research and how it is performed. Ms. Vitagliano explained the phases of the study and the goal, which is to create a new dose-response curve based on updated data collected by a national survey in a scientific, systematic way to represent the wide breadth of airports in the US. She highlighted accomplishments made since April 2014 including the project being briefed at the International Commission on the Biological Effects of Noise (ICBEN) in Japan and the Questionnaire being finalized. Ms. Vitagliano addressed next steps that included 1) approval by the Office of Management and Budget (OMB) by November 2014 and 2) starting survey distribution in January 2015 with completion of surveys being January 2016. A member of the Subcommittee raised a concern that it's important for Airport Operators to receive the results of the surveys.

Safety Database

Ms. Vitagliano began by giving a project description to the Subcommittee. She explained the potential airport risks and the criteria used to determine need for research. She informed the Subcommittee the database is ongoing and will be kept current with six months. Occurrences will be categorized into appropriate categories. Implementation Tasks will be tracked and the FAA will continue to work with sponsor to obtain permission to distribute non-public data (possible legal issue). The Subcommittee expressed concern with it not being released to airports. They also discussed if this information can possibly be used as a tool for the Surface Safety Initiative Team (SSIT) and the Comprehensive Airport Review and Assessment (CARA) Teams.

Conclusion- The Subcommittee agreed to close the recommendation from April 2014 to provide information to airports. The recommendation will be revised to include an appropriate FAA Point of Contact (POC) for data base information.

Problematic Taxiway Geometry

Ms. Vitagliano gave an update on the project including goals and Phases. She informed the Subcommittee Phase 1 and Phase 2 were been completed. She touched on Phase 3 and the

challenges with prioritization and explained that it is ongoing. Ms. Vitagliano gave an overview on the plotting of hotspots and problematic geometry points and results and explained the next step is for Regional sub- teams to validate FAA TC results with field study, then the FAA TC will revise database based on Regional sub-teams Input. Regional teams will then meet with Airport Operations to develop possible solutions starting with highest priority including costs in the solution plan.

The Subcommittee suggested informing FAA HQ that this information will be available soon.

Mr. Don Gallagher, Rumble Strips, Linear Light Sources, Overall Visual Guidance Program, Runway Incursion Prevention Project

Mr. Gallagher gave an overview and updates on the Visual Guidance/Runway Incursion Prevention Projects by outlining the purpose of the projects including the evaluation of Methylmethacrylate paint (MMA) and evaluation of Airport Pavement Linear Source Visual Aid.

He informed the Subcommittee Phase 1 and Phase 2 of the research is completed. Phase 3 will be divided into Task 1 and Task 2. Task 1 will take approximately four months to complete partnering with the FAA TC Simulation Facility, starting September 2014. Task 2 will take approximately six months to complete conducting a field study in partnership with PEGASAS Center of Excellence, starting in October 2014. Phase Three should be finalized in June 2015 with a Final Report to the Sponsor August 2015.

Mr. Gallagher presented definitions on Rumble Strips and the purpose of them. He informed the Subcommittee on June 25th 2014 rumble strips were installed on the ramp at Perdue University Airport and the details of the strips installed. Mr. Gallagher gave an overview of the testing documentation includes video, collection of accelerometer data and a qualitative assessment of the impact of the rumble strip configuration. He went onto inform the Subcommittee on July 16th 2014 milled (saw cut) rumble strip were installed at Purdue University with the details of the strips including length and width. Mr. Gallagher presented photos of the installation along with the Project Schedule to the Subcommittee.

Mr. Nick Subbotin, Baffle Efforts, Engineered Material Arresting Systems (EMAS)

Mr. Subbotin began his presentation by giving a brief overview and updates on the status of the projects mentioning that Protection Engineering Consultants (PEC) and Norsk Glasgjenvinning (NGG) are partners with FAA in the EMAS projects. PEC is submitting an EMAS design to FAA for use at US airports. Mr. Subbotin updated the Subcommittee on ESCO/Zodiac Aerospace. He stated they continue to pursue product enhancements through improved protective materials and explained the next steps for the project are determining the longevity of EMAS Bed.

The Subcommittee had questions on the material that is being tested in the EMAS Beds and safety issues related to debris and fragments being released on impact from an aircraft. Mr. Subbotin explained the picture presented to depict the material was deceiving because it was taken during the construction phase of the bed and the material used is compacted and poses no harm to passengers or first responders. He explained the bed meets FAA specifications. The Subcommittee requested a more accurate picture of the bed completed. Mr. Subbotin informed

the Subcommittee that a small bed has been tested in Norway and Midway-Chicago airport is interested in constructing a bed.

EMAS Signage

Mr. Subbotin gave an overview of the EMAS Marking/Signage project. He updated the Subcommittee that the original R & D is completed and a final report is in progress. He briefed the Subcommittee on findings and explained next steps are to include construction of temporary signs, FAA evaluations, subject and field evaluations and a new report.

Mr. Robert Bassey, Research Taxiway, Electrical Infrastructure Research Team (EIRT), Airport Construction Signs

Mr. Bassey began his presentation with a project summary, noting the Memorandum of Agreement between the FAA and DRBA 2010-2030, which grants the FAA the right to construct, operate and maintain research infrastructure at the Cape May County Airport (WWD).

He spoke of Cape May Research Taxiway project and gave an overview of the project objectives. He explained the FAA is working with the Army Corps of Engineers and they are managing the bid proposals and construction for this project. An estimate was received in February 2014 and a rebid with planned opening in October 2014. The estimated completion date for the Taxiway is Spring 2016. The Subcommittee asked what the purpose of this project is. Mr. Bassey explained this project is to provide an easy-to access outdoor test bed and will allow the FAA more flexibility with testing over a vast scope of projects from visual aides to pavements.

Electrical Infrastructure Research

Mr. Bassey continued his presentation explaining the scope of the EIRT Test Team is to test and characterize elements of representative architectures. He presented photos representing the equipment used, the architectures tested, as well as the work performed. Mr. Bassey gave an outline of the project by providing the Subcommittee with a Roadmap of Testing Phase and Sample Analysis Spreadsheet.

Airport Construction Signs

Mr. Bassey continued with and update on the Runway Construction Signs project.

He explained to the Subcommittee the feedback from pilots who participated in the surveys was the acronym “TORA” needed to be spelled out completely due to pilots being unsure of what the acronym “TORA” means. New signs were constructed and the project should be completed by the end of 2015 with a report released soon after. Based on the photographs used during Mr. Bassey’s presentation the Subcommittee raised questions regarding the ability of pilots being able to read the signs from the side view when approaching from an intersecting taxiway. It was suggested by the Subcommittee to consider installing the sign on an angle or using reflective tape at the bottom of the sign. Mr. Bassey took the suggestion and informed the Subcommittee he will bring the suggestion up in discussion.

The Subcommittee inquired about the Low Cost Surveillance project that Mr. Bassey had presented at the April 2014 meeting but did not present at this time. He informed the Subcommittee that a system has been installed at Raleigh-Durham Airport and the data collection and feedback thus far have been excellent.

Mr. Keith Bagot, Compressed Air Foam Technologies, Bio-fuel, Overall ARRF Program

Mr. Bagot gave the Subcommittee and update and status of Bio-fuel Fire Fighting Research. He informed the Subcommittee that as of 2014 ASTM has approved three biofuel processes for commercial aircraft and what those biofuels are. He informed the Subcommittee fires test took place at Tyndall Air Force Base at the end of July 2014 and the purpose of this test was to look at extinguishibility of the biofuels. Mr. Bagot gave an overview of the Biofuel Test Process and results of the Biofuel Firefighting Tests. He informed the Subcommittee of future work including working with Pegasus on characterizations of fuels and working on New Firefighting Systems for Class 4 & 5 ARRF vehicles. He went over the objectives for the project and informed the Subcommittee that they are in need of a new vehicle to replace the current ARRF vehicle. A market survey has been performed and a vehicle manufacturer has been identified and they are finalizing specification document for research vehicle and should be completed within a week of this meeting. Mr. Bagot explained the FAA is in the process of procuring a new vehicle by the end of September 2014. He then proceeded to give an overview of the specifications of the new vehicle. Mr. Bagot continued with presenting highlights of the Thermal Imaging and FLIR projects explaining they are working on developing a test make up for finding hot spots on both the inside and outside of an aircraft.

He informed the Subcommittee the L1011 aircraft presented during the presentation in April 2014 meeting has been moved to its new location and they will begin testing. Mr. Bagot informed the Subcommittee the Cut Rig Testing is completed and an analysis and report are in progress. Mr. Bagot concluded his presentation with and overview of ARRF Project Reports and Status of them. He highlighted the A380 Airbus Project and stated there is slow progression with this project. He was asked by the Subcommittee why is this project being held up and Mr. Bagot explained they are still awaiting information from Airbus. They are very reluctant to give information on how the aircraft is constructed. It is still a work in progress and things are moving a little faster than they were previously.

Mr. Jim Patterson, Wildlife Surveillance, Artificial Turf, Overall Wildlife Program

Mr. Patterson presented the Subcommittee with and outline and overview of the Wildlife Surveillance Project (WISC). He explained the goal of the project is to advance technological concepts for reducing bird strikes. Mr. Patterson stated the project schedule is compiled of three phases and Phase 1 was completed in April 2014. He informed the Subcommittee that all deliverables are proceeding on schedule.

Artificial Turf

Mr. Patterson continued with his presentation by giving an update on the Artificial Turf testing. He presented pictures of Turf Testing at Sanford Airport in Florida including test lane configurations and vehicles used to perform the tests. The testing was done With ARRF vehicle fully loaded and was completed on both wet and dry conditions. The findings were slight rippling in the turf when braking but the rippling went away once the tire was removed. The

next step is to see whether Jet Blast will affect the turf. Mr. Patterson presented the Artificial Durability phase of the testing and explained the turf was flooded and performed braking upon flooded, wet and dry conditions. The Braking Aircraft Testing (BAT) vehicle was dispatched to collect data simulating aircraft tire. The results have not been received at this time but they are looking for data/results from multiple runs. Mr. Patterson informed the Subcommittee the FAA has a new 4 year agreement with IAA, they are in year two of a four year agreement with the Smithsonian and they are working with the Center of Excellence for Airport Technology (CEAT) on new grant awards. Mr. Patterson concluded that the military has donated radar systems to the FAA for research. These radar systems are no longer in use by the military and they can be upgraded to be able to be used at select airports for the Wildlife Surveillance Research.

Discussion/Recommendations

The Subcommittee discussed the revisions needed to the Future/Emerging Issues and a revised hard copy will be made available on Day 2.

Aircraft Braking Friction

Discussion- the Subcommittee discussed how this project is aggressively pursued at the REDAC meeting. There was no need for formal recommendation at this time.
Conclusion- the Subcommittee would like a long term schedule for this project.

Airport Noise

Discussion- the Subcommittee discussed the importance of airports needing to be notified of the results of the Noise Survey and how to deliver the information to them.
Conclusion- No official recommendation was made.

Safety Database

Discussion- the Subcommittee agreed to close out the recommendation from the Spring 2014 meeting.
Conclusion- The plan is to revise the current recommendation. More discussion on this was deferred to Day 2.

EMAS

Discussion- no official recommendation was needed.
Conclusion- the Subcommittee suggested an internal recommendation for the FAA to follow up with the Subcommittee and update them on the findings in regards to safety concerns that were discussed

Day Two
Wednesday, August 13, 2014

Mr. Christopher Oswald began day two welcoming everyone back and briefly going over the agenda. He also informed the group that he will send out a revised copy of the Emerging Issues via email.

Mr. Jim Patterson, Airport Planning

Mr. Patterson began the presentation with an overview of outcomes, projects, and rationale. He gave a summary of the Airport Simulation Model Enhancements that were released the end of March 2014. Mr. Patterson informed the Subcommittee new version 4.3 will be released in September 2014 and it will include a friendlier method to input airspace speeds, final approach and runway utilization improvements and user friendly output statistics. He informed the Subcommittee the FAA is developing a process to incorporate the use of PDARS Data to be used to compute average speed and average altitude and it is over 90% completed. He explained the future plans forward to six months including obtaining of ASDE-X Data to be used, for example, to determine runaway utilization, runway loading, runways occupancy times. The Subcommittee was interested in discussing if the simulation model could be used as a tool for taxiway closures and could it be possible for use as a tool for airports in aiding the correction of problematic geometry? The Subcommittee also raised the concern of using the simulation model in this way does it cross the line from research to service. It was explained it has been used for Logan Airport as a tool for problematic geometry but the finding were not acceptable specifically to Air Traffic Control.

Airport Database

The subcommittee asked about the use of the Airport Simulation Model with real time data from airports. It was explained that the model does have the capability for that use. The Subcommittee tabled further discussion of the Simulation Model. The Subcommittee suggested determining broader research is needed to utilize the enhancements of the database for a future plan. Mr. Patterson explained the FAA is waiting on funding to be able to begin projects.

Mr. Jeff Gagnon, 2014 Pavement Projects +Plans for FY 2015

Mr. Gagnon began with an overview of the pavement projects as well as the FY2014-2016 budget. He informed the Subcommittee a new RPD has been added in order to update the website. He explained the conversion from more software based to being web based for integration purposes. Mr. Gagnon spoke about the FAA Transfer Conference that took place on August 5th –August 7th. There were 198 attendees, 17 universities, 14 countries and feedback from attendees was extremely positive. Mr. Gagnon touched on the continuing partnerships the FAA has with Airport Consultants Council (ACC), Asphalt Institute, American Association of Airport Executives (AAAE), American Concrete Pavement Association (ACPA, American Society of Civil Engineers (ASCE) and the work that is being done with them.

He updated the Subcommittee on conferences attended by the FAA were both nationwide and international. The Subcommittee had no questions or comments for Mr. Gagnon.

Dr. David Brill, 40 Year Design Life Initiatives/FAA PAVEAIR Implementation

Dr. Brill began his presentation informing the Subcommittee what has occurred since the April 2014 meeting. He gave an overview the funding for FY2014-2016 and noted an increase in funding for FY2016 for Integrated Design Procedure. Dr. Brill explained to the Subcommittee the goals for the project are FAA PAVEAIR Database Development (PA40) and performance/pavement life model development. He informed the Subcommittee the FAA is currently looking for Medium to Large hubs to perform research. Dr. Brill stated they are planning on dividing the research between new AIP funded projects and existing runways with approximately twenty years or more of service. The research is looking at both flexible and rigid runways. He proceeded to inform the Subcommittee this is a four year project that began in 2012 and years (phase) one and years (phase) two of data collection are completed with current efforts focusing on updating the databases.

Dr. Brill gave an overview presenting year (phase) one and year (phase) two locations as well as year (phase) three proposed locations. He gave a summary of the process of 40 year life data collection and FAA PAVEAIR implementation on that data. Dr. Brill explained all data collected for the 40 year project will be stored in a standalone FAA PAVEAIR (PA40) and he presented the enhancements that will be made for the PA40 Database. Dr. Brill gave a summary of challenges noting the oversight of looking at climatic zones in years one and two and reiterated the FAA is in the process of siting locations. He gave a summary of the data collection process from all airports including field data. He informed the Subcommittee that most of the field sample testing is done onsite at the FAA Laboratory and it nearly complete. Dr. Brill explained only eight of the twenty tests completed had to be done offsite. The results will be uploaded to PAVEAIR40 as soon as they are received. He spoke briefly on the FAA Transfer Conference which took place August 5-7 and informed the Subcommittee on papers presented at the conference and provided them with the information on retrieving the presentations if interested. Dr. Brill continued speaking of the overall trend and performance of the project findings is most of the distress on runways and materials is environmental and not load related. He presented the Subcommittee with a Project Schedule for 2014-2015 noting that the airport selection has been finalized and site visits are scheduled for fall 2014. Dr. Brill informed the Subcommittee that he expects to have summaries of Phase 3 date by November/December 2014.

Dr. Navneet Garg, Heavy Vehicle Simulator

Dr. Garg began his presentation by giving the Subcommittee an overview of the project including rational behind the research and the outcomes of the research. He also included specifications on the Heavy Vehicle Simulator (HVS) as well as a summary of the FY2014-FY2016 budget. He informed the Subcommittee the vehicle will be moving upon the completion of the new facility currently under construction. He explained the testing being performed with the vehicle including the differences in testing with the single wheel versus double wheel load.

Dr. Garg gave and overview of the instrumentation including layout and objectives. He went on to explain the tests performed are done with varying tire pressure, varying the temperature of pavement, varying speeds and varying wheel loads. Dr. Garg explained the use of and infra-red camera in detecting pavement temperatures and making sure the heat is evenly dispersed

throughout the entire surface. He presented the findings from the Strain Gage and Profile Measure tests. Dr. Garg expanded on future research Evaluating New Asphalt Technologies for Airfield Pavement. Dr. Garg informed the Subcommittee currently there is a lack of guidance, standards and specifications. He explained this project will be divided into three phases. Phase One will be to test materials in the lab. Phase Two will be a full scale APT with vehicle in facility and Phase Three will be Field evaluation. Dr. Garg explained the testing site is in construction cycle. He presented slides to the Subcommittee to support his explanation. He stated the purpose of this test was to evaluate performance of warm mix asphalt under aircraft wheel load then compare the results from tests already performed and use the report generated from past findings and apply to findings from testing by FAA.

Dr. Garg explained the future of pavements is "Green Technologies", recycled materials, Stone Matrix Asphalt. He expanded on this by stating there is a need to develop standards and look into the structural and environmental aspects. Dr. Garg informed the Subcommittee that at the present time there is no performance data available regarding these materials and the FAA has plans to research both and will include the Lifecycle Cost Analysis along with structural performance and will be ready by January –February 2015.

Mr. Murphy Flynn, Construction Update

Mr. Flynn began his presentation with and update and the completion of Construction Cycle 7 (CC7). He stated the challenges and construction resumed in April 2014. He presented photos of the CC7 construction to the Subcommittee. He gave an overview on the installation of Multi-Depth Deflectometers (MDD) and detailed the installation process. Mr. Flynn stated that project should be completed by January 2015.

Field Instrumentation

Mr. Flynn began with an update of the Field Instrumentation Projects. He informed the Subcommittee the projects in both Denver and Atlanta were discontinued due to the inability to collect new data. Mr. Flynn explained the Hawaii Airport project was discontinued due to the difficulty of working with the airport but Honolulu Airport has offered the FAA to work with them and they are also looking into Baltimore-Washington Airport.

Pavement Characterization

Mr. Flynn gave a photo overview of this project and went over the testing performed to include Dynamic Triaxial Test, Precision Unbound Material Analyzer, Asphalt Analyzer. He gave an overview on the results and the NEST with slide presentation.

The Subcommittee raised concerns regarding 40 year life project and that it has gotten away from looking at the characteristics to determining failure and it is parallel research is what is already being done. The Subcommittee raised concerns with Field Instrumentation stating the testing is consistently being performed at the same airports and it seems redundant and with the amount of airports research is being performed at that this is duplicating efforts.

Mr. Flynn explained the reason for the amount of airports is for different climate effects. The Subcommittee stressed that each airport has to have very specific objectives for research.

Dr. Garg gave the reason for choosing BWI is specifically due to concrete curling in a holding area and on asphalt runway. The Subcommittee requested specific objectives be prepared and ready for presentation by next meeting. The Subcommittee went on the question the length of time it takes to get results from instrumentation testing and how the data will be used. Dr. Garg explained the FAA looks critically at every project and will discontinue any project if information isn't seen as beneficial as it did in Atlanta and Denver. The Subcommittee agreed that for the capital expense of this project the data collected can be useful to research but wanted to stress that at some point decisions to discontinue have to be had. The Subcommittee questioned who decides when data is no longer useful and who will be using the data collected? The Subcommittee agreed and "exit/continuation strategy" needs to be defined. The Subcommittee requested a technical note be presented on projects as they are progressing, discontinued, or completed. Dr. Garg agreed to the Subcommittee request and Mr. Flynn informed the Subcommittee the information could also be found on the FAA website.

Mr. Joe Breen, Trapezoidal Grooves

Mr. Oswald began by reviewing concerns and recommendations for this project from April 2014. He stated the Subcommittee requested a Proposed Evaluation for Trapezoidal Grooving requested the FAA develop plans to address concerns for this project. Mr. John Dermody stated the FAA gave some background regarding concerns with trapezoidal vs. regular as well as depth of groove. He stated that FAA will be looking at wear of groove and the effect of groove shape on friction values. After comments from Mr. Oswald and Mr. Dermody the Subcommittee agreed to close the recommendations from Spring 2013, Fall 2013, and Spring 2014. Mr. Breen explained the FAA is researching on developing criteria and keeping the focus on finding the point on when repair is needed for trapezoidal grooving vs standard grooving.

Mr. Breen began his presentation by giving an overview of the testing conducted and results from the testing with braking. The tests were performed on grooved and non- grooved pavement and on wet and puddled conditions. The results were significantly different between grooved and non -grooved pavement. Mr. Breen presented the plan for the Dynamic Test Track Testing and presented graphs on the results to show that the results were comparable on wet pavement between grooved and non-grooved pavement. The subcommittee inquired if the FAA 727 (RD 40) can be used for this testing. Mr. Breen responded that it could. Mr. Breen continued by giving an overview of a future test to be performed over new and worn pavement along with braking friction on both. He explained the plan is to perform full scale testing with RAD 40 and that RAD 40 will not need any additional modifications or upgrades. Mr. Breen informed the Subcommittee the upgrades under way to the RD 40 braking system will result in a braking system configuration similar to most aircraft in service today. He explained testing will be performed onsite at the Atlantic City International Airport (ACY) The subcommittee raised a concern with the test track in regards to length and braking capability. Mr. Breen explained that: 1) he runway testing strip will be 6,000 ft. long, 2) the testing sections will each be 1,500 ft. long, and 3) the new anti-skid braking system will prevent the aircraft from slipping (skid factor will not be an issue). The Subcommittee asked what benefit do grooves provide in snowy conditions? Mr. Breen responded that he was not sure due to the fact that it hasn't been tested by the FAA. The Subcommittee asked if the braking system was nose gear or main gear. Mr. Breen explained it is main gear due to acceleration to 100mph. The Subcommittee made a comment that if this research is validated would FAA move to approve research in snow/slush.

Mr. Breen responded that a test performed in Quantico, VA found that snow and slush was easier for removal due to shape of groove being triangular as compared to rectangular. The Subcommittee made a comment regarding whether the cost benefit analysis would support continuing the research. The Subcommittee questioned if this testing would interfere with Braking Friction testing and Mr. Breen replied it would not due to testing being performed at different locations. Mr. Breen continued with presenting a Preliminary Test Plan and Data Analysis for test runs. The Subcommittee raised a question regarding keeping water level to a point where it's consistent. Mr. Breen stated it will be damned at a point on the testing area. He proceeded with a photo of Construction of Test Section on ACY Runway 4-22 and overview of testing and Proof of Concept overview.
The Subcommittee agreed to move forward with this project and discussed whether Proof of Concept is required. The Subcommittee inquired about time schedule and budget. The Subcommittee agreed to table budget discussions until next meeting and agreed to close out recommendation from spring 2014. The Subcommittee suggested Mr. Breen discuss funding and prioritizing project.

Mr. Al Larkin was on the agenda for NDT Update/Pavement Roughness Due to time constraints the Subcommittee agreed to revise agenda and remove Mr. Larkin from the presentation agenda.

Mr. Charles Ishee, Heated Pavements
Mr. Ishee began his presentation with an overview of the project. He gave an update on Binghamton Airport since the April 2014 meeting pointing out the FAA is waiting to get fall and winter data collection. Completion of the project is set for May 2015.

Mr. Ishee presented on working with PEGASAS and that the FAA is looking into the Financial and Energy viability of the project including identifying six airports and determining the best locations within each airports. Mr. Ishee proceeded explaining the FAA is looking at weather conditions, such as snowfall scenarios and energy requirements needed to melt snow at each possible location. The Subcommittee inquired if this was looking to replace all snow removal systems or is it to be used with systems already in use. Mr. Ishee responded that at the Des Moines- and St. Paul- airports it is used only at the gates and the airport's current snow removal system is used on runways and taxiways. Mr. Ishee was asked by the Subcommittee if the report takes into consideration the different aspects of the airport. Mr. Ishee stated that the report separates gates, runways, taxiways in their research and it was found the "biggest bang for your buck" was at the gates. He went onto give an overview of what energy requirements are needed for the heated pavements and the costs for airport delays per hour from a business traveler and personal traveler perspective compared to conventional energy requirements and costs for airport delays for conventional systems. Mr. Ishee presented an analysis on the airport cost of installation and maintaining including the energy costs versus conventional snow removal systems that are in currently in use. The Subcommittee questioned the validity of the results graph Mr. Ishee presented and suggested he revise the results graph to give a better explanation of cost benefit ratio. Mr. Ishee gave an overview of the findings from the project and explained the findings have shown this system would only be economical in geographical locations where there is not a significant amount of snowfall. He explained where it is found to

be most beneficial is at the gates not the runways. Mr. Ishee presented the case study and they are looking at the financial feasibility of installation of heated pavements. The FAA is working with Iowa State University and stated while they were performing the data collection they are separating the gates, taxiways, and runways within their collection but the main focus is on the gates. He explained other areas of interest to look at could be intersecting taxiways. Mr. Ishee stated the FAA is looking at other areas to research including the feasibility and cost as well as determining criteria for research. Mr. Ishee continued by presenting Task 2 of the project, looking at ways to repel water from pavement and different materials being researched to develop a coating for pavement with examples of those materials. He explained the next phase of the Heated Pavement project will be to look at advanced construction techniques. Changing the materials and looking at Conductive concrete for Airfields with heated pavements. Mr. Ishee proceeded with an overview of the FY2015 budget and stated that as data is collected they will address the benefit of this project and will eventually have a "go-no go" discussion.

Mr. Mike DiPilato, SRA International Inc., Safety Surface Initiatives Team (SSIT)

Mr. DiPilato began his presentation giving an overview of the SSIT and CARA Teams (Comprehensive Airport Review and Assessment Teams) and the organization of each team. He explained the purpose of the SSIT is to provide guidance and suggestions to the CARA Team and oversees the Alternatives Assessment Team. CARA Team's purpose is to identify operational shortfalls and after date review, document review and brainstorming draft CARP (Comprehensive Airport Review Plan). Mr. DiPilato presented the participating airports and presented to the Subcommittee CARPs for Boston and DFW Airports stating the shortfalls that were found at each. He proceeded with explaining SSIT next steps and presented a Project Schedule for the eight participating airports. The Subcommittee interjected with a concern that this project is crossing the line with research into providing a service. John Dermody stated he believes this project is research based but did agree with the Subcommittee that it could cross lines into service vs. research. Mr. DiPilato stressed the importance of this research and the positive impact is could have. He proceeded stating the research teams are identifying problems and issues that RSAT's are not identifying. The Subcommittee wondered why the RSATs's are not identifying these issues. John Dermody mentioned the possibility of looking into pulling the RSAT/SSIT/CARA Teams together with their different skill sets look for solutions. The Subcommittee suggested the need to go back to RSAT and fix the issues there rather than proceed with this project. John Dermody stated if RSAT did this type of work and needed solutions they would have had to compile teams such as SSIT/CARA to assist. The Subcommittee agreed RSAT looks at quick solutions and does not research to find alternatives or the ground root of issues. The Subcommittee raised concern of the risk of looking at the same issues as RSAT. They do not want the project to get out of the scope of research. The Subcommittee stated they see this as collaboration between team and operations and not as a long term project. The Subcommittee agrees the information is valuable but questioning the process as the project proceeds

Dr. Michel Hovan, Airports Technology R&D Branch Manager, Additional FY-2014 Projects

Dr. Hovan listed additional "pop-up" projects requested by FAA HQ for FY2014 to the Subcommittee. Three projects are under way and two others are being reviewed for technical and financial feasibility. It is expected that all projects can be conducted with FY-14 or FY-15 funds.

Discussions/Report/Recommendations

The Subcommittee continued their discussion on Emerging Issues. They discussed choosing 4-5 and defining why they are important and what research requirements will be needed. The Subcommittee agreed they have already identified emerging issues and the issue of Nano Technology being divided into two separate issues is due to it being a high research/high reward/low cost project. The Subcommittee agrees it's proactive but questioning whether it's legitimate it include in future research.

Issue #20- Autonomous Ground Service Equipment at Airports (NEW)
The Subcommittee discussed the current the ground vehicles used and talk of UAV being manually operated vs. remote and how that can affect AT Operations and the strategic issues that could possibly arise. The Subcommittee proceeded with discussing possible airport infrastructure issues as a result of climate change that need to be looked into and need to be approached in a systematic way. The Subcommittee discussed the issue of feasibility in this research as an example of runways that are below sea level and the ability to raise airport platforms. They agreed there are lots of costs associated with this and is it justified? The Subcommittee agrees that changes due to climate issues need to be looked at but first need to determine what issues are due to climate change and then identify what locations these issues occur. A member of the Subcommittee suggested looking at airports in flood plains. Mr. Oswald stated he would like to have a completed draft of the Emerging Issues by September 2014. He proceeded to ask for volunteers to coordinate a write up on each issue and then hold a 1.5 hour teleconference on September 2nd to finalize. Mr. Oswald informed the Subcommittee he will send out and invite via email for the teleconference and he would like a redraft of the issues by August 22, 2014. He will edit and send back to the Subcommittee by August 25, 2014 with final comments submitted to him by August 28, 2014. Mr. Dermody stated he would like to be invited to the teleconference.

The Subcommittee proceeded to review the Emerging Issues. Brief discussion took place and the following ones were agreed upon by members of Subcommittee.

Issue #9- cross off as emerging issue, overlays with Issue #14.

Issue #14- combine into overall vehicle category with Issue #4 in addition with UAV

Issue #6 (combined with #7) - Next Gen coming online can it be included in regular operations and could also include Issues #11 and #12. Combined with noise this could have significant impact on Noise Survey. Subcommittee feels needs broader long term discussion- concern to the issue still having relevance.

Issue #1- The Subcommittee discussed the issues of what to do with airports lacking space and capacity issues will be spilling over. The Subcommittee agreed there is a definite need for this research.

The Subcommittee discussed and decided on a new issue "Climate Change". For addendum purposes, this will be Issue #5. The Subcommittee will look at General Aviation Airports and if they have the ability to sustain themselves financially as well as what the future research will be including small airports as well. A member of the Subcommittee stated a policy issue of having too many airports. The Subcommittee agrees there is economic research needed in this area as well.

The Subcommittee reiterated in the rewrite it should state why the research is important and there is not a need to state the research that is needed at this time.

After further discussion Mr. Oswald stated he would have like to have redrafts by August 25, 2014 and he will have them back to Subcommittee by August 28, 2014 after editing and formatting. Mr. Oswald proceeded to inform Subcommittee he will send and invite to include dial in number for teleconference to be held on September 2, 2014.

Rewrite for Emerging Issues
Issue #1- Monte Symons and Gary Mitchell
Issue #4- Chris Oswald
Issue #6- James Wilding and Michael Gerrant
Issue #7- Chris Oswald
NEW Issue- Chris Oswald

Near Term Tactical Issues/ Research
The Subcommittee discussed other research ideas that they feel are important but did not get included in the Emerging Issues portion of the meeting. It was suggested by Dr. Cathy Bigelow to provide recommendations to issues that need to happen and include them for your FY 2017 portfolio concentrating on long term as tasked in this meeting. It was agreed to attach these issues as an addendum to the meeting minutes.

General Discussion about role of the REDAC

Dr. Cathy Bigelow explained to the Subcommittee that the purpose of REDAC is to guide and give advice on what research need to be performed in the future. If the suggestions are not going to be followed then a detailed explanation explaining that decision needs to be submitted. She added to keep in mind Spring Portfolios still have the opportunity to be changed once the discussion is had and agreed upon as to why it's being changed.

Mr. Chris Oswald informed the Subcommittee the current meeting format changes will continue to be discussed going forward and he reiterated concentrating on the Spring Portfolio and new ideas.

Dr. Michel Hovan explained to the Subcommittee the purpose of the presentations is to provide information to the Subcommittee so the Subcommittee is able to discuss the proper direction for the projects. The presentations will be delivered to members of the Subcommittee before the meeting in order to determine which projects need a "deep dive" and base the agenda on the

Subcommitee's need to be able to provide proper advice. Dr. Hovan stated that if a project does not have an update to present to the Subcommittee then no presentation should be needed.

Recommendations

40 year airport pavement life

Discussion- It was brought to the attention of the Subcommittee that the sub- group for the 40-year pavement life project has only met one time. Whether this is a critical issue or not is unclear but the Subcommittee feels it's important to be able to discuss issues, etc.

Conclusion- INTERNAL RECOMMENDATION - Schedule a new meeting to discuss issues. Working group to reconvene to give updates and keep group informed. The FAA stated it is willing make changes to address these issues.

Airport Safety Database

Discussion- the Subcommittee discussed the importance of relaying safety information to Airport Operators.

Conclusion- RECOMMENDATION – Identify a FAA Point of Contact to relay information and communicate with Airport Operators.

Aircraft Braking Friction

Discussion- Subcommittee is pleased and has a higher level of confidence in this project. They believe it has produced reasonable data with reasonable results. The Subcommittee has not made a formal recommendation at this time but has a finding that they would like to see and longer term plan developed for this project.

Conclusion-The Subcommittee agreed to close the recommendation from Spring 2014. NO RECOMMENDATION

Airport Data Noise Survey

Discussion – from Day 1

Conclusion- INTERNAL RECOMMENDATION - data collection should be made available to the airports that are participating in the survey.

EMAS

Discussion- no official recommendation was needed.

Conclusion- INTERNAL RECOMMENDATION - the Subcommittee suggested an internal recommendation for the FAA to follow up with the Subcommittee and update them on the findings in regards to safety concerns that were discussed

Wrap up

The Subcommittee decided the next meeting will be held on Tuesday, March 31, 2015 and April 1, 2015 in FAA Technical Center Director's Conference Room located in Building 300 at the William J. Hughes Technical Center.

The Summer/Fall Meeting will be held on August 25, 2014 and August 26, 2014 in the FAA Technical Center Director's Conference Room located at Building 300 at the William J Hughes Technical Center.

Research, Engineering and Development Advisory Committee
PPT Briefing to Sub-committee on Airports: August 12-13, 2014

FAA Technical Center Director's Conference Room

DAY 1 – August 12

8:30 am	Mr. Christopher Oswald *ACI-NA, Subcommittee Chairperson*	Introduction
8:45 am	Mr. Dennis Filler *Director, FAA WJH Technical Center, ANG-E*	Welcome/New REDAC Directions
9:00 am	Dr. Eric Neiderman *Manager, FAA Aviation Research Division, ANGE-2*	Aviation Research Division/Welcome
9:10 am	Mr. John Dermody *Manager, FAA Office of Airports* *Safety and Standards Division, AAS-100*	AAS-100AAS/Budget Update
9:20 am	Dr. Michel Hovan *Airports Technology R&D Branch Manager*	New presentation format
9:25 am	Subcommittee Members and Others	Review of REDAC Recommendations
9:45 am	Sub-committee Members	Emerging issues
10:30 am	**Break**	
10:45 am	Sub-committee Members	Future opportunities
11:30 am	Mr. Jim Patterson *Airport Safety R&D Section Manager*	2014 Safety Projects + Plans for FY-15
11:45 am- 12:30 pm		**Lunch (Cafeteria)**
12:30 pm	Mr. Joe Breen	Aircraft Braking Friction Program
1:00 pm	Mr. Joe Breen	Trapezoidal Grooves
1:30 pm	Ms. Lauren Vitagliano	Airport Noise Safety Database Approach Hold & RSA signs Others
2:00 pm	Mr. Don Gallagher	Rumble Strips Linear Light Sources Overall Visual Guidance Program
2:30 pm	Mr. Nick Subbotin	Baffle Efforts EMAS Overall Program

2:45 pm	**Break**	
3:00 pm	Mr. Keith Bagot	Compressed Air Foam Technologies Biofuel Overall ARRF Program
3:30 pm	Mr. Robert Bassey	Research Taxiway Electrical Infrastructure Research Team Airport Construction Sign
4:00 pm	Mr. Ryan King	Wildlife Surveillance Artificial Turf Overall Wildlife Program
4:15 pm	Ms. Holly Cyrus	Airport Planning SMMA Paint Markings
4:30 pm	Sub-Committee members	Discussion/Recommendations
4:45 pm	**Adjourn**	
6:30 pm	**Eric Neiderman's Beach House**	**Get together for refreshment and pizza**

DAY 2 –August 13

8:00 am	**Mr. Jeffrey Gagnon** *Airport Pavement R&D Section Manager*	**2014 Pavement Projects + Plans for FY-15**
8:15 am	Dr. David Brill	40 Year Design Life Initiatives
8:45 am	Dr. Navneet Garg	Heavy Vehicle Simulator
9:15 am	Mr. Murphy Flynn	Construction Update
9:45 am	Dr. Navneet Garg	Field Instrumentation Projects
10:15 am	**Break**	
10:30 am	Mr. Al Larkin	NDT Update Pavement Roughness Update
11:15 am	Mr. Charles Ishee	Heated Pavements
11:30 am	Dr. Michel Hovan	Additional FY-14 Projects
11:45 am	Mike DiPilato *SRA*	Safety Surface Initiatives Team
12:15 pm	**Lunch (Cafeteria)**	
12:45 pm	Discussions/Report/Recommendations	
2:30 pm	New Research Requirements for FY-2015 and FY-2016	
3:00 pm	**Adjourn**	