

**REDAC Subcommittee on Airports
Summer/Fall Meeting 2016
August 16 – 17
FAA - William J. Hughes Technical Center
Technical Center Director's Conference Room**

Submitted By: M. Hovan

*Day One
Tuesday, August 16th*

Introductions

The meeting formally began at 9:05a.m with opening remarks by Mr. Christopher Oswald, Airports Subcommittee Chairperson. Mr. Oswald welcomed everyone and thanked them for attending. Mr. Oswald stated that some things would be different from the last meeting, including covering the projects at a Research Project Area (RPA) level as an example. He informed attendees to email him if they had any questions about the RPAs. Mr. Oswald said he preferred to adhere to the agenda to ensure there was enough time to discuss Future Research needs at the conclusion of day one presentations. He added that he liked to track recommendations as the meeting progressed. Introductions were made by members of the Subcommittee and attendees around the room.

Mr. Eric Neiderman, Manager, Aviation Research Division, Mr. Neiderman welcomed everyone. He informed attendees that Ms. Shelley Yak sent her regrets for not being there. Mr. Neiderman introduced his new boss, Deputy Director, Jaime Figueroa, adding that with his experience, it will be a nice complement to Ms. Yak. He stated he was excited about the new approach to project RPAs. Mr. Neiderman explained the Aircraft Safety (SAS) REDAC Subcommittee was always asking to see “the loaf of bread” and that the up level agenda would present a better picture. Mr. Neiderman informed attendees that “Thunder over the Boardwalk” was taking place on Wednesday, August 17th, and the Thunderbirds were flying at 3:30p.m., if anyone was interested.

Mr. Jaime Figueroa, Deputy Director, began by stating Ms. Yak attended all REDAC Subcommittee meetings and was still committed to attending them. He said that they have reflected upon the statements from the last round of meetings, and Ms. Yak would like to engage the Subcommittee and share feedback. Mr. Figueroa said that this was important work and the findings and recommendations from the Subcommittee were very valuable and were being considered and discussed through many levels of the agency. He explained that this was also valuable in learning what other agencies are doing. Mr. Figueroa went onto explaining as a result of the last meeting that the Research Division has been in coordination with the Air Force in Ohio. He said that it was important to explain what the “whole loaf” looked like in terms of the research and the research plan. Mr. Figueroa explained the National Aviation Research Plan (NARP) is used across the agency and was being looked at to make it more useful as well as, better articulate research goals and better communicate what was being done. He mentioned there was an effort underway to revise the NARP for 2018, to better align it with higher level

strategic documents. Mr. Figueroa relayed the most common question he has heard from the external review of R&D, which was, “How do you govern the R&D process?” He explained Ms. Yak’s observations regarding the different REDAC meetings, that as they are all diverse in nature, every Subcommittee operates differently. Mr. Figueroa stated that Ms. Yak expressed the need for the Subcommittee to exchange findings and recommendations as soon as possible in order to have ample time to discuss presentations, stimulate questions, and formulate thoughts. Mr. Figueroa also relayed Ms. Yak’s suggestion to make sure the presenters are present during the findings and recommendations portion of the discussions as it would be beneficial to have them available to answer any questions that arise. Mr. Oswald stated the Subcommittee has wondered at what level are the recommendations most helpful – future, strategic level, project level, RPA level, and where the focus should be aimed. Mr. Figueroa said that the answer was all of the above. He explained that “Big Buckets” encapsulated all of the research but were catching the big things. He stated R&D needed to know where help was needed and what the thoughts were. Mr. Figueroa continued to explain that he had spoken with Dr. Michel Hovan and Mr. John Dermody about involving the Project Managers to be aware of what their thoughts were. He explained the big things can be written down whereas; the small things can be addressed at the moment. Mr. Figueroa stated the importance of knowing any challenges that were foreseen before a meeting should be brought up in advance. He said the presentations should be about the big picture including research goals and conversion to RPAs, and making sure if the research was aligned properly.

Ms. Chinita Roundtree-Coleman, Research, Engineering and Advisory Committee, Ms. Roundtree-Coleman began her presentation by explaining the roles and responsibilities of the REDAC Subcommittee. She stated the Subcommittee was to report all output, including membership and compile a report after all rounds to provide advanced recommendations to ensure research was coordinated. She explained the Summer/Fall 2016 Meeting will be engaging the FY19 Portfolio and the Winter/Spring 2017 Meeting was a follow up, and where additional recommendations can be added as well as selected “deep dives”. Ms. Roundtree-Coleman explained the purpose of the Subcommittee was to shape everything up and provide leadership. She also stated the Subcommittee was obligated to develop a set of findings and recommendations and provide a report for the full REDAC meeting. She continued by stating Mr. John Dermody and Dr. Michel Hovan provide co-support to Mr. Oswald by helping establish an agenda, finalizing recommendations, and assist with providing advance materials, or providing a site to find the read materials in advance. She explained minutes taken at each meeting are required to be provided to the public. Ms. Roundtree-Coleman continued defining findings and recommendations. She explained that findings were observations that provided the backdrops to the recommendations. She explained that Recommendations told the FAA what the Subcommittee would like the FAA to do, to consider, etc. She further explained that the FAA only responds to what is written in the recommendations. Ms. Roundtree-Coleman said that when the Subcommittee writes the recommendation to the FAA, they need to make sure it is actionable, and as clear as possible. The Subcommittee interjected stating there were unique aspects to this Subcommittee due to the diverse expertise, and there had always been attention to Headquarters and what Mr. Dermody needed. The Subcommittee stated a concern that what gets presented is what has already been accomplished and what is already funded. The Subcommittee stated what we should be seeing is what is planning to be done. Mr. Dermody

agreed stating that is what is being planned for future meetings. Mr. Oswald interjected stating the subcommittee was trying to help prioritize and decide what to put on the table.

Dr. Michel Hovan, Manager Airports Technology Research Branch, Dr. Hovan informed attendees he supplied an internal budget document template for Fiscal Years 16, 17, and 18. Dr. Hovan explained the two year cycle for 16 and 17 are real. He added the FY-18 budget and beyond needed more refinement and believed FY-19 and beyond would most likely replicate FY-18. Dr. Hovan expressed this was not an easy exercise, citing the change from RPDs to RPAs. Dr. Hovan mentioned the RPAs activities cover multiple projects and it was easier to explain airport research at the program level. Hovan stated that telling Congress what research we plan on doing was a requirement, but there were “pop up” projects that have to be absorbed in these annual budgets in the year of execution. He explained in preparing the budget, he spoke to every one of his project managers to discuss what had been done, what was being planned, where it was now and where the project was going. Dr. Hovan stated he felt the work should drive the budget, not inversely.

Mr. John Dermody, Deputy Director, FAA Office of Airports Safety and Standards, Mr. Dermody began by stating that the needs for research at times stemmed from headquarters to industry and sometimes it came from industry to headquarters. He stated R&D at the Technical Center was the research venue and R&D needed to look at where it was now and look to where it was going. He highlighted that Jim Patterson, FAA Safety Area Program Manager, came up with a resolution to and issue of birds running into towers. Mr. Dermody informed the Subcommittee that Mr. Patterson conducted thorough research and found the solution to deter the birds from being attracted to the tower. He informed the Subcommittee that Mr. Patterson will be recognized at a ceremony at Headquarters on Thursday, August 18th. Mr. Dermody continued citing the work being done on Engineered Materials Arresting System (EMAS) longevity by Mr. Nick Subbotin and the importance of keeping it where it needed to be. Mr. Dermody explained the importance of the Extended Pavement Life project, which is the research on the life cycle cost of pavement. He explained how that research will affect Airport Planning and Design. Mr. Dermody mentioned Ms. Lauren Collins and her great work with the Airport Safety Database and how the research has helped identify geometry issues and helped mitigate runway incursions. He stated that this had been two years of great work and needed to continue. Mr. Dermody explained that there needed to be a focus on environmental research and where the research needs to be focused. He continued by speaking on LED Research and he saw this as a priority in the industry and for the FAA. Mr. Dermody talked about how Office of Airports had been very involved in UAS research but no one is zero people are solely dedicated to UAS Research. He informed the Subcommittee of Mr. Jim Patterson’s work leading the UAS Research effort, and doing a great job. He explained this work will benefit Next Gen, UAS-FAA, and Office of Airports. Mr. Dermody informed the Subcommittee that he felt R&D needed to be working closely with Center of Excellence (COE) and Assure, looking at combining project funding and dedicate the funding to those needs once they have been determined. Mr. Dermody stated that headquarters saw the great work that was being done at the Technical Center and the use of the talent here. He stated the FAA was looking for feedback and input from the Subcommittee and there was great opportunity moving forward.

Review of REDAC Recommendations – Mr. Jim Patterson presented the open recommendations to the Subcommittee.

Fall 2015

RPA Classification – the Subcommittee agreed to close.

Variability Concrete/Asphalt Mix Design – the Subcommittee agreed to close this and pull it into the Future Projects discussion.

Concepts of Operations for LCGSS – the Subcommittee agreed to close

Overload Criteria Flexible Pavements – the Subcommittee agreed to close

Jim Patterson, Airport Safety Research Section Manager, ANG-E261 Update, Mr. Patterson began his presentation by reviewing the budget for FY16-18. He informed the Subcommittee that R&D was looking for a new full time employee and the job posting closed Monday, August 15th. Mr. Patterson explained the new position will support Environmental and Safety efforts. Mr. Patterson informed the Subcommittee that he received a new request for research in July of 2016 for Feasibility of the Illumination Identification Number for Airport Ground Vehicles and stated there was a major proposal underway. He continued reviewing the report publications since the last meeting including Wildlife Surveillance Concept, Evaluation of Enhanced Visual Cues for Runway Approach and Runway Safety Areas, and Performance Assessment of the Terma Obstruction Light Control System as and Aircraft Detection Lighting System. The Subcommittee asked if everyone's activity result was in a report. Mr. Patterson explained in general that every request from headquarters will result in a report.

Lauren Collins, RPA S1 - Airport Planning and Design, RPA S2 - Airport Safety Data Mining, RPA S8 - Noise Program, Ms. Collins began her presentation by giving an overview of the activities and budget for the Airport Planning and Design Project. She informed the Subcommittee of two new projects within airport planning which were Runway Exit Design Interactive Model (REDIM) and Runway Length Tool. Ms. Collins explained the reason for the REDIM project was a request from Mike Hines and Kent Duffy's office to have updates to the system. She informed the Subcommittee that this was a two year project and was covered under the old FY16 RPD funding. Ms. Collins continued speaking on the Runway Length Project and explained that it was a time intensive, three phase project. She explained the reason it was time intensive was because of lack of data available. She stated R&D was taking this over for Phase 2 and Phase 3, due to Phase 1 being completed by MITRE. Ms. Collins explained this project is funded with FY16 funding under the old Airport Design RPD and will take 18 months to complete. Ms. Collins continued speaking on the Runway Incursion Management (RIM) project. She presented examples of what headquarters access and airport sponsor access would look like and the procedure for gaining those accesses. The Subcommittee suggested setting up a webinar when it became available to assist with usage. Mr. John Dermody explained there

were already training sessions held with FAA employees, and once it was up and running there was a plan to do that for the external users as well. The Subcommittee also suggested setting up an industry outreach meeting to get the point of view from the industry.

Ms. Collins continued on with the Trapezoidal Grooving Project, explaining Phase 1 was almost complete and FAA R&D was looking to start Phase 2 in FY17, however, awaiting Atlantic City International Airport (ACY) approval. She explained the airport was evaluating the current runway surface to make sure the work won't cause any other significant damage, so that upon completion, the airport will still have a usable runway. Ms. Collins went over FY17 Projects citing a request for research for small airport tree growth from the North West Region. Mr. Dermody explained the need for growth predictions and how small airports were struggling with vegetation management. He explained a need for a tool that can screen surfaces and be used in planning. The Subcommittee stated there was a standard growth rate and that information was available. The Subcommittee also commented there might be a need to have a tool that is region specific.

Ms. Collins continued informing the Subcommittee that Taxiway Deviation project was coming to a close, explaining the capital improvement fixes were chosen and was looking at using group FAA's Airport and Airspace Simulation Model (SIMMOD) for ongoing research, stating the system was at Boston now collecting data. She explained the next step was comparing it against the normal FOD practice and performing an additional study at additional airports and then developing a cost/benefit analysis. Ms. Collins stated the Boston Data collected did not support the cost/benefit, but in Seattle they had their own system and a good candidate for data collection, as well as Miami. It will fall under RPA Airport Safety. Ms. Collins informed the Subcommittee as of March 2016, Air Traffic Quality Assurance (ATQA) database will no longer share data. The Subcommittee discussed the future needs regarding the database and data mining relating to Safety during construction and construction reporting. The Subcommittee discussed the consensus coming from the community of pilots, Air Traffic Control, and Airport Operators. Ms. Collins stated there were 60,000 records in the database and they have completed 12,000

Ms. Collins proceeded with updating the Subcommittee on the National Noise Survey explaining that it was the most robust Noise Survey ever done in the United States. She said it should be completed by November 2016. Ms. Collins states the FY17 plan is to create a National Survey Expert Panel, Establish a new DNL Metric, and Sleep Disturbance Study. The Subcommittee asked who was planned for the expert panel. Ms. Collins replied Worldwide Acoustic Experts and stated headquarters had already identified a few. The Subcommittee raised concerns of moving forward and the financial and political implications this could have.

Mr. Ryan King, RPA S4, Wildlife Hazard Mitigation, Mr. King began his presentation giving an overview and review of the project, stating the budget from FY16-18 is steadily decreasing. He presented the breakdown of activities and the collaborative agreements with different agencies and contractors. He continued explaining "Pop Up" requests he received in agriculture research. Mr. King explained the changes to data collection and data analysis is made to the architectural design database to make it more user-friendly. He added the data is open to the public, but is not validated yet, and PII is not included. Mr. King added the Raw Data is open to the USDA and Smithsonian and they are able to see Personally Identifiable Information (PII). Mr. King proceeded with reviewing the technology used and the systems used to identify and to

deter. He reviewed the grants and vendor contracts. Mr. King informed the Subcommittee there was Bird Detection Radar System (BSTAR) system installed at Boston Logan Airport, but it cannot be used due to using LBand, but R&D is continuing to collect data from Seattle. Mr. King stated the feedback R&D was receiving was that the Bird Radar was complex and there was a need to figure out how to integrate it into existing operations. The Subcommittee suggested looking into UAS Technology that doesn't require the LBand. Mr. King responded that they were looking at Xband, SBand, and other technologies as well. Dr. Hovan interjected stating that R&D did not develop radar technologies, and that R&D tested ways to use the current systems. Mr. King said that the Wildlife Surveillance Concept was proactive beyond FY18. He explained the research was on how to protect the approach and departure corridors where R&D was working with ANG-264 on a Concept of Operations. Mr. King explained that they were also working on a Data Transmission study for getting the information to the pilot. The Subcommittee asked if there was a thought about trying to put something on an aircraft as a deterrent. Mr. King responded they were looking into lights and how birds perceive light, but it was very complicated. He stated USDA had published two papers in peer review journals looking at different species of birds and how they are attracted to aircraft, and they have found that it was easier to look at how to deter the birds. Mr. King stated the WiSC project looked into that, but there was a lot of room for improvement. He stated the goal would be to lessen ATC workload and make an alert in a timely manner. The Subcommittee asked if this was just for airborne wildlife or could it pertain to turtles, deer, etc. Mr. King responded yes it could be used for ground animals, but it would depend on what system was being used, because radar generally will not catch ground animals.

Lunch Break-12:30p.m. – 1:30p.m.

The Subcommittee agreed the dates for the Winter/Spring Meeting will be March 14-15, 2017, and will follow a similar format as far as start and stop times. The Subcommittee agreed the next summer/fall meeting will be August 15-16, 2017 with the same start and stop times. However, the location for both future meetings will be determined at a later time.

Robert Bassey, RPA S5, Visual Guidance, Mr. Bassey began his presentation with an update on activities, stating there was a large effort in LED Lighting for signs, markings, visual aids (Baffle). He added the Pop Up project In-Pavement Light Fixtures to his project descriptions. Mr. Bassey reviewed the budget for FY16-FY18 stating the increase for FY18 was due to research requirements. Mr. Bassey continued reviewing the LED X projects and results of the testing done by PEGASUS, Perdue University, and Ohio State University. Mr. Bassey continued by explaining the LED Electrical Infrastructure Research Team project. He reviewed the architecture that was tested and the testing procedures. Mr. Bassey reviewed and presented project milestones to the Subcommittee and stated that a final report was due in September 2017. Mr. Bassey continued by giving an overview of the Pop Up project In Pavement Light Fixtures. He explained the current light fixtures that were being tested as well as various others in the plan. Mr. Bassey stated testing strategy Phase 1 will be laboratory testing fixture assemblies and clamping loads, and the next step will be field testing in the National Airport Pavement Test (NAPTF) Facility under certain wheel loads. Mr. Bassey continued presenting the Project Schedule and Objectives including developing prototypes. He explained that Phase One timeline was waiting on industry responses, and selected eight out of twelve offers. Phase

2 was a more detailed proposal delivered in technical summary, and should be completed by 3/19/17. Mr. Basseby continued stating Phase 2 proposals have been reviewed and R&D had identified one stand-alone proposal.

The Subcommittee discussed the status of the Approach Hold Signage project, and the EMAS Signage project. Ms. Lauren Collins gave an update stating the research portion of the Approach Hold Signage project was completed, with the results showing favorable on runways. Mr. Nick Subbotin informed the Subcommittee the first phase report on EMAS Signage will be delivered to D.C. in two weeks, then Phase 2 will be developed but the research was ongoing at this point. The Subcommittee continued with a discussion regarding billboard lighting and the possible research opportunity. It was determined that it was something to consider, although the concerns were jurisdiction and research vs. policy aspect. The Subcommittee agreed to commit to a deeper dive for Approach Hold Signage, EMAS Signage, and the discussion of Billboard Lighting Distraction for the March 2017 Meeting.

Joe Breen, RPA S6.1 - Aircraft Braking, RPA S6.2 – Airport Winter Safety and Operations, Mr. Breen began his presentation reviewing the objectives of the projects for the Subcommittee. He cited an accomplishment for April 2016 which was a Technical Report on the testing on manufactured snow that will be published when editing was completed. Mr. Breen presented pictures of the testing that took place as well as reviewing the testing details and results. He informed the Subcommittee that all testing took place using the main gear braking system. He showed the results using both the Programmable Braking System and the Anti-Skid Braking System. Mr. Breen presented the Future Work that is being planned at ACY. The Subcommittee asked what the temperature was during testing. Mr. Breen replied the temperature was around 35 degrees celsius. The Subcommittee asked if there were sensors to capture ground temperature and Mr. Breen stated yes there were. Mr. Breen gave a brief overview of the research need, and funding for FY2016-2018, stating the funding stayed pretty stable. He reviewed the Cooperative Research Development Agreement (CRDA) ESCO Zodiac Aerospace and the BAT Vehicle Testing that was completed in conjunction with the 727 testing. Mr. Breen explained the purpose was to collect more comparable data between programmable braking systems and anti-skid braking systems. The Subcommittee asked if performing tests this way allowed the collection of enough data to reflect the most critical of conditions. Mr. Breen responded that performing testing this way provided a correlation between normal and critical conditions. The Subcommittee asked how many anti braking systems there were. Mr. Breen responded that there are quite a few manufacturers, all having similar characteristics. The Subcommittee asked if there was a plan to incorporate other systems. Mr. Breen stated yes and the plan was to eventually add them to the 727 as well as in flight aircraft. Mr. Breen added that in consulting he found there were very little criteria in terms of manufacturing of the braking systems. He added the Advisory Circular recently revised how friction was reported in regards to how pilots perceive that information, and it might be possible to use that data to disseminate and evaluate. The Subcommittee discussed the concerns of this project stating the limited window available to act in regards to the weather and the overall general level of readiness with the aircraft. Dr. Michel Hovan interjected explaining to the Subcommittee that he spoke with Mr. Breen about creating a Working Group to evaluate the project and see if it was on the right track. Dr. Hovan stated this project will take more than one year, possibly even three to five years to complete. Dr. Hovan explained the purpose of this was to develop an algorithm

Runway Coding System in regards to conditions. The Subcommittee stated that there needed to be some concurrence within the industry and what was happening in R&D. The Subcommittee stated while they agree the research was progressing, the remaining questions were, “Do parameters exist, and if they can be used as part of an algorithm?”, “Was the information readily available, and can the information be tested, verified and validated?” The Subcommittee strongly supported the idea of the expert panel, and suggested that it should be a combination of industry and academia personnel. The Subcommittee also suggested keeping it to five to eight people total. The Subcommittee agreed to the findings for this project is #1. To compile a report to include the data that has already been collected for the working group to use as a reference point. #2. To keep this project progressing. Mr. Breen continued with Winter Safety and Operations stating the objectives and recent accomplishments of the Trapezoidal Grooving project, including the evaluating of the runway for test bed and design. Mr. Breen stated they were hoping to begin moving forward with the runway project by October 2016. Mr. Breen reviewed the Quantico project for the Subcommittee stating the reason Quantico was chosen was due to the combination of FAA standard grooving and Trapezoidal grooving available. Mr. Breen reviewed the results of the testing for the Subcommittee stating the result being the friction level was consistent between the two, but there was more rubber build up within the FAA Standard Grooving.

Mr. Nick Subbotin, RPA S6.3 - EMAS, Mr. Subbotin began his presentation by giving an overview of the project to include the FY16-18 budget commenting the budget remains level throughout the length of the project. He stated FY2016 Accomplishments were the EMAS Inspection and Maintenance Program Assessment Report and new EMAS Material Fire Test Report. He gave a review of the new EMAS Possibilities with Zodiac Arresting Systems America (CRDA since 1994), Runway Safe stating the CRDA was in progress and pending, and Atech, Inc. (CRDA June 2016). Mr. Subbotin informed the Subcommittee that there had been collaborative reports submitted to the FAA Airports Engineering on EMAS Inspection and Maintenance Program Assessment and EMAS Fire Tests. Mr. Subbotin told the Subcommittee there were ongoing plans for a new test bed at the Technical Center. He explained that he had been working with AAS-100 on developing an EMAS Longevity R&D Plan. Mr. Subbotin explained there was a lot that goes into the overall performance of the bed, from materials used, installation, weather, and runway design. He stated that they were trying to take a holistic approach to gain some clarity and make a proper determination on what proper criteria should be. Mr. Subbotin continued by stating that there could be general criteria but with site specific requirements, adding the data was still young and in process.

Robert Bassey, RPA S7 - Innovative Sensor Technologies, Mr. Bassey began his presentation by reviewing the needs for research and reviewing the FY16-FY18 budget. He informed the Subcommittee, based off of their recommendation, a Concept of Operations was compiled and the document can be made available if needed. Mr. Bassey explained addressing the needs of airports was not a “one size fits all” methodology. It was airport specific because it had to take into account competing systems, what the airport already had in place, and costs. He explained R&D was looking into airports that already had systems in place, and stated the emphasis for airports had been driven by security needs vs safety needs. Mr. Bassey stated R&D is taking a bottoms up approach and trying to determine what technologies are needed and keeping it low cost at the same time. Mr. Bassey explained they are also looking into using the existing

technology such as FOD, Wildlife Surveillance, and possibly UAS systems. Mr. Bassey continued giving an update on AEROMacs and brief review of the background of the project, stating the benefits of the system was that the frequency was not available for public use, and the system had enough capacity to meet the traffic requirements of most airports. Mr. Bassey added that it was also able to be accessed on any airport surface, making it time saving, and more efficient for airport operations and security. Mr. Bassey informed the group that R&D was looking to install a system at Boston Logan Airport that will consist of 54 gate calls with distributed channels across runway and taxiways and gives a 3D coverage view of the airport. Mr. Bassey informed the Subcommittee R&D was in the vendor selection process now and a selection will be made in one to two weeks and hoping to have the system installed up and running within six months.

Mr. Ryan King, Environment and Energy Research, Airport Environmental Research, Mr. King began his presentation and explained how this was a collaborative effort between the Technical Center R&D, Office of Airports, and AEE. Mr. King stated the challenges were looking at how aviation impacts climate, environment, and vice versa. He stated Ms. Lauren Collins had initiated pulling projects together since the spring meeting. Mr. King reviewed the FY16-FY18 Budget and stated that the one million dollar budget will remain throughout. Mr. King continued by presenting the Topic Areas for FY17 and review of the discussed topics from the March 2016 Spring Meeting. He stated this was all preliminary and a best estimate of the work that will be done. Mr. King explained the positive steps since the Spring Meeting are the development of five projects, identifying where to get the funding, and identifying contractors. The Subcommittee asked why the terminology of this project was different. Mr. King stated it was because of the way it was grouped. Mr. Jim Patterson interjected stating that the grouping and subgrouping can be reviewed and they can see if they can make it more consistent with the other RPAs. Mr. King began reviewing the Noise dispersion activity. The Subcommittee asked why Noise wasn't work rolled into the Environmental RPA. Mr. King responded and explained after FY18 some of the Noise will be pulled into another Noise RPA. Mr. King explained there had been interesting dialogue with how to implement this research and about what needed to be done. He stated these are just building blocks and it was largely under AEE and now they are relying on R&D for research. The Subcommittee stated there had been a huge involvement in Noise and asked if that was heavily passed through. Mr. King responded yes it had been largely, but R&D had been brought in and CSRA had played a large role.

Recommendations of the Day

The Subcommittee discussed the Pavement Variability Data and decided to push the topic until after the Pavement Presentations on Day Two.

- Action Item #1 – Clarify what FAA doesn't want to provide for RIM Database.
- Action Item #2 – Set up a webinar for use of RIM Tool when it's available.
- Action Item #3 – Include discussion on signage projects Approach Hold Signs/EMAS Signage,
Deep dives for next meeting
- Action Item #4 – Provide activity breakdown for Environmental RPA

- Action Item #5 – Deeper Dive into Noise – provide array of research that is currently underway

Within Airport Technologies and Energy and Environmental Research

- Action Item #6 – Quick briefing from ACRP or quick report with updates (Mr. Oswald and Mr.

Dermody will work on this)

Recommendations:

- Aircraft Braking – Start exploration of creating a Working Group for Aircraft Braking Friction
- Aircraft Braking – continue Aircraft Braking Friction Research.

Future Needs

UAS – effects on airport operations, airport use. Support, surveillance, deterrence and detection technology, deployment guidance, and Wildlife Management; regulatory what is reasonable.

Safety Database – Safety data in an era of SMS. Airports metrics on what will the FAA expect from airports. How/who will manage data. Requirements/specifications for SMS Software solutions

Drainable Bases- how does this fit into design specifications

Fines (clays) - requirements difficult to meet/where should tests be performed/are maximum quantities reasonable. Fines standard needs to be re-examined.

LED Research – need to expand program to include problems/issues; assigning research

Fly Ash – substitute/alternative means to mitigate ASR and/or replace fly ash.

Full Depth Reclamation – of in-place asphalt. What are the design requirements/specifications?

Geotextile – use in subgrade structure. Benefit/cost assessment

Aircraft Rescue Firefighting – ARFF Classification Review – are current classification schemes robust enough or do they realistically account for recent expected, future developments in aircraft design.

Airport Noise – are advances in aircraft and engine technology being taken into consideration

Integration of Commercial Space – smart airports roles of technology for way finding, passenger processing, system efficiency as goal, use of data

The Subcommittee discussed in advance of the next meeting they hold a telecon to discuss and choose three to four of the above topics to refine and for consideration going into FY19, and have them prepared for discussion for the March 2017 meeting, with a presentation prepared to August 2017 meeting. The Subcommittee agreed with preparing the topics to include research objectives, anticipated outcomes, and anticipated level of effort and who needed to be involved. Mr. Oswald stated he will incorporate the list into a briefing memo and schedule an interim webinar in the fall. Dr. Hovan stated for the March 2017 meeting the focus needed to be on the FY19 Budget, due to the budget narrative being due July 2017. Mr. Oswald informed the Subcommittee he will prepare materials for a late fall web conference and distribute to all members. The Subcommittee suggested organizing by Pavements/Safety to keep consistent with RPA organization.

Meeting adjourned 5:20p.m.

Day Two

Wednesday, August 17, 2016

Mr. Jeff Gagnon, Overview of Pavement RPAs, Mr. Gagnon began by giving a brief overview of the pavement projects and plans. He stated he was working with the FAA legal team regarding sponsoring the 2017 ASCE Conference on August 27-30. Mr. Gagnon presented the Budget Summary for the first five RPAs of 2016, stating the project managers will deliver a budget briefing for overall line items. Mr. Gagnon explained the FAA R&D is trying to fund the new facility projects internally. Mr. Gagnon announced a new employee Richard J. Yi to replace Mr. Charles Ishee and Mr. Yi will start on 8/22/2016. Mr. Gagnon continued by informing the Subcommittee of Report Publications and the issues with sponsoring the 2017 American Society of Civil Engineers (ASCE) Conference. He explained to the Subcommittee he, Jim Patterson, and Keith Bagot were all on committees and they continue to support the ASCE by sending employees, providing papers, and presentations. He further explained the FAA provides policies to this organization and that was why sponsoring it could be a conflict of interest. Mr. Oswald stated that Subcommittee cross promotion was easy to accomplish, and offered the Subcommittee's assistance if it was needed. Mr. Gagnon concluded his presentation with presenting the drafts that were currently under review.

Mr. Ryan Rutter, RPA P1 - NAPTF, Mr. Rutter began his presentation by giving a brief overview of the facility and FY16 Accomplishments. He informed the Subcommittee CC7 South Side testing will be completed by end of 2016, adding that North Side trafficking was completed. Mr. Rutter continued stating Phase 1 –CC8 testing had started and have 600 passes completed. The design and construction of Phase 5 of Reflective Cracking will wrap up by the end of September 2016. Mr. Rutter explained R&D was developing a Standard Operating Procedures (SOP) for the facility to streamline processes and make it more efficient. Mr. Rutter informed four wheel sets on the NAPTF Vehicle have been replaced and there were seven more wheel sets left to change, and new control systems have been installed. Mr. Rutter reviewed the FY17-FY18 budget explaining the increase was due to construction and maintenance, adding the funding covers all construction for NAPTF as well as Reflective Cracking. He stated 2017 was the largest increase because that was when everything was expected to happen. Mr. Rutter stated CSRA provides the overall support for all facility efforts. He explained CSRA was

preparing a building/power study and it will be addressed within the 2017-2018 funding. The Subcommittee asked if there was anything in regards to future projects. Mr. Murphy Flynn interjected explaining R&D does not have the specifics for CC9 laid out at this time, but CC8 construction will begin this fall. The Subcommittee asked if CC8 was concrete. Mr. Flynn concurred that it will be concrete, and stated that more information on CC8 will be following in a later presentation.

Dr. Navneet Garg, Full Scale Testing Perpetual Pavements Update, Dr. Garg began his presentation by reviewing the primary objectives, stating it was looking at the shift factor between pavements to establish fatigue model. Dr. Garg reviewed testing details including wheel loads of 5,000 lbs. per wheel. He stated the data collected was straight edge, rut depth, and strain gage data. Dr. Garg reviewed the results and stated the better life came from the pavement with Drainable Bases and the ruts are coming from the subbases. Dr. Garg stated R&D needed a way to quantify data, so they looked at the crack length and the crack area. The Subcommittee asked how large the test section was. Dr. Garg replied it was forty feet long and twelve feet wide with thicknesses ranging from 8 inches to 15 inches. Dr. Garg stated the 12 and 15 inch thick pavement showed no signs of cracking and the 10 – 12 inch thick pavement fatigue was eliminated. Dr. Garg continued with Strain Gage testing stating Rutgers University was using the data collected to improve the 3D model. Dr. Garg presented a Perpetual Pavement Graph and detailed the results and the wheel loads used. The Subcommittee agreed with the findings stating airports with thicker pavements didn't see fatigue cracking. Dr. Garg continued referring to the Drainable Base testing explaining the FAA did not have specifications for Drainable Bases and reiterated the improvement related to them.

Dr. David Brill, RPA 1 - Reflective Cracking Update, Dr. Brill began his presentation by reviewing the background of the projects stating that the need for the research was that there was no adequate predictive model for Reflective Cracking, so the objective was to develop a reliable performance model. Dr. Brill presented the R&D Test Plan for Reflective Cracking showing the reconstruction and instrumentation layout. Dr. Brill reviewed the test overview to date stating it began in 2012 and R&D is planning for Phase 5. The Subcommittee asked if there was any vertical movement with this testing. Dr. Brill stated it was just horizontal movement, however, the testing performed outdoors by the HVS-A will cover that portion. Dr. Brill reviewed the schedule stating paving should be taking place late September – October 2016. Dr. Brill proceeded with presenting Future Research which includes more full scale test data and an expected product.

Dr. Navneet Garg, RPA P2 - NAPMRC, Dr. Garg began his presentation by giving an overview of the project. He explained there was no funding for FY16 for construction and maintenance costs due to no construction taking place and the facility being brand new. He explained for FY17-FY18 R&D will be building new test sections, and increased testing scope based on REDAC Recommendations. Dr. Garg informed the Subcommittee outdoor testing will be completed next week and at that point the testing will move indoors where the tire pressure will be increased to test pavement reaction. Dr. Garg presented the Aircraft Gross Weigh Trends and presented pictures of the outdoor and indoor test lanes, as well as the test cycle. Dr. Garg explained the full scale testing will be looking at the pavement response then take that information into traffic testing to study the failure mechanism. Dr. Garg proceeded with

presenting the different testing being performed on the Hot and Warm Mix Asphalts and stated R&D was looking for how many passes did it take to get one inch rutting and not looking at upheaval. Dr. Garg added that part of the Extended Pavement Life project was to redefine pavement failure. He presented a picture showing the one inch of rutting after 800 passes. Dr. Garg continued citing the work Texas A&M University was performing, and highlighting completed work by Rutgers University. He presented the next cycle of testing and Future Research.

Dr. Navneet Garg, RPA P3 – Field Instrumentation Dr. Garg continued his presentation with reviewing the Field Instrumentation project. He gave an overview of the budget and informed the Subcommittee, which the FAA was speaking with airports about installing gages. He stated the funding covers installation, materials, testing, and data analysis. Dr. Garg informed the Subcommittee JFK and Newark Airports the instrumentation was completed and installation at Boston Logan and Philadelphia will be completed soon. Dr. Garg reviewed the project objectives as well as presented current implementation project, stating JFK was concrete, Newark was asphalt, Boston was asphalt, and Philadelphia was both concrete and asphalt. Dr. Garg presented the sensor layout for Boston and Philadelphia.

A.M. Break - 10:30a.m. – 10:40a.m.

The Subcommittee agreed to review the morning presentations.

Actions

Field Instrumentation –Work with the Subcommittee to compile a list of airports for Field Instrumentation project.

Recommendations

Reflective Cracking – Compile a plan to include vertical loading. Data analysis results need to be incorporated into pavement design models.

Presentations

Mr. Murphy Flynn, RPA P4- Advanced Materials, Mr. Flynn began his presentation by reviewing the research need, the research goals, and the FY16 budget. He stated the work that had been performed by Rutgers University Grant and PEGASUS. Mr. Flynn stated a report on Warm Mix Asphalts on Airfields was completed by CSRA/ARA. Mr. Flynn continued by explaining FY16 Funding blanks are because of realignment and transition, and the FY17-FY18 increase due to advanced testing. Mr. Flynn gave an overview of the Operations of the Pavements Labs stating all personnel are trained. He stated the Lab supports projects such as Extended Pavement Life, Field Instrumentation and Advanced Testing. Mr. Flynn presented the Rutgers and UC Davis Testing and reviewed the results. Mr. Flynn presented a graph explaining the high numbers were bad, and pointed out that this was just a small snapshot of the report and the entire report was in the review process, but he can make it available to the Subcommittee following the review process. Mr. Flynn continued presenting the UC Davis Study and presented the details of the testing, explaining the RAP was recycled asphalt pavement and the RAC was recycled shingles. He stated the RAP mixes came from various parts of the country. Mr. Flynn presented the key findings that the Binder in RAS may not fully mix; benefit of

polymodified may be mitigated vs RAP. Mr. Flynn continued by reviewing Geosynthetic Research ERDC, explaining Phase 1 Army Corps of Engineer report is due to the FAA by the end of summer 2016.

Mr. Ben Mahaffey, Heated Pavements, Mr. Mahaffey began his presentations stating he would give a brief update on the progress of the projects as well as address any comments. He stated the geothermal pavement project Binghamton Airport had drafted a report and it will be followed up with new grant data and data collection analysis. Mr. Mahaffey explained he will be forwarding the PEGASUS report to Binghamton to include in their draft report. Mr. Mahaffey presented the work being performed by Iowa State, and added the University of Nebraska delivered a report that was under review and being discussed internally. Mr. Mahaffey stated the Binghamton grant was a three year grant that will be funded year to year. Mr. Mahaffey informed the Subcommittee a report was submitted June 2016 and the new grant was awarded August 2016, and the work being performed will be to establish a data access system to make data accessible to all researchers. The Subcommittee asked what the feedback was regarding the system. Mr. Mahaffey stated the feedback had been positive. Mr. Mahaffey continued with Phase Change Materials working in collaboration with Purdue University, based on feedback from the last REDAC Meeting more detail about this project was requested. He informed the Subcommittee, the Concrete Slab Testing had been completed and a draft report will be finalized. He reviewed the airports selected and presented photos of the testing that was performed at Purdue. Mr. Mahaffey explained the process of adding PCCP to the mixture and presented photos of the encapsulation. Mr. Mahaffey informed the Subcommittee the research had been extended to 7/2017 with a Draft Report due on that date. The Subcommittee asked how the reaction to the encapsulation was. Mr. Mahaffey stated the feedback was positive and forward thinking. Mr. Mahaffey concluded his presentation with future projects including Electrically Conductive Asphalt Concrete for Heated Airfield Pavements.

Dr. David Brill, RPA P5 - Pavement Design and Evaluation, Dr. Brill began his presentation reviewing FAARFIELD 1.4 and presenting the changes to FAARFIELD . He explained there were a lot of internal changes that had made it better, and presented examples of the new changes. Dr. Brill gave an overview of the Legacy Fortran Libraries and proceeded by explaining the long term objectives of FAARFIELD. He stated that it will be a modern replacement for Legacy Fortran and Nike 3D, but it will not cease the function of those programs. Dr. Brill spoke of further improvements including a grant to Iowa State to develop an application for FAARFIELD 2. He informed the Subcommittee, that this was in the first year of a three year project. The Subcommittee asked about the cost of the upgrades from Fortran. Dr. Brill responded he estimated two programmers for one year.

The Subcommittee agreed to discuss the presentations.

Field Instrumentation – the Subcommittee discussed what the purpose of the project was, and questioned how long it will take to get meaningful data, due to the lack of airport participation. Mr. Flynn stated out of the data collected it was used within one year and he explained that every instrumentation project has a defined purpose specific to the location of the project. The Subcommittee questioned if the funding was appropriate for the collection of meaningful data. Mr. Flynn stated 900K funds a couple projects a year. He explained the current projects were

stemming from airport issues, but some airports don't like to share that information. Mr. Flynn stated that this project could improve quality of pavement design, construction specifications. Mr. Oswald commented he had a meeting in Montreal, and Mike O'Donnell will be attending. Mr. Oswald informed the Subcommittee he will speak on this and encourage a conference call to assist in pooling more resources.

Lunch Break – 12:15p.m. – 1:00p.m.

Mr. Albert Larkin, RPA P6 – NDT Technologies, Mr. Larkin began his presentation by reviewing the project goals, need for research and the accomplishments, and budget. He stated there was a Preliminary Pavement Roughness Index due in May 2016, but has been delayed by CSRA to the end of the calendar year. Mr. Larkin presented the work performed at Wright Patterson Air Force Base in Ohio including the Research Plan and the technologies used. Mr. Larkin continued updating the Subcommittee on the status of Non-FWD Technology Research including pictures of the equipment used. The Subcommittee asked if there had been any thought to PSPA for use in pavement evaluation. Mr. Larkin explained the last contract had that included as part of NDT, however, this contract did not, but it was included in CC8 as well as LWD. Mr. Larkin informed the Subcommittee pavement evaluation uses existing funds for repair and maintenance of the NDT equipment. He explained this was an opportunity to improve pavement groove analysis software to be able to capture data from a larger surface area. Mr. Larkin continued by presenting pictures of the NDT Data Collection Equipment, explaining the CC7 NDT Data Collection was the most robust data collection on a construction cycle than that has ever been performed. He explained CSRA had a deliverable to look at each technology used individually and see if there were any similarities. Mr. Larkin presented CC7 Data Analysis and CC7 results using Ground Penetrating Radar (GPR). Mr. Larkin continued by presenting new projects such as Pavement Roughness Index done in service data simulator, he explained this was modeled over highway example and pilots were asked to identify 80 different scenarios made up of 40 runways, and 40 taxiways. Mr. Larkin explained the results were similar to what Boeing found in a similiar study, and stated this information will be included in the Development of a new airport pavement roughness index. Mr. Larkin explained alternative profiling technologies for airport pavement acceptance and presented a map of the profiled sites from Wright Patterson Air Force Base, and explained the objectives and results. Mr. Larkin continued with reviewing the data analysis procedure and presenting pictures of the profiling equipment. He stated all sites selected were in service pavements and he would like to find new pavement to perform research for remaining airport pavement life. Mr. Larkin concluded his presentation by briefing the Subcommittee on testing performed in Texas with the DOT's Total Pavement Acceptance Device, and informed the Subcommittee that he is waiting on a report to see if it can be used to calculate remaining pavement life.

Mr. Qingge Jia, RPA P7 – Software Program Development and Support, Mr. Jia began his presentation by reviewing the need for research, goals, and FY16 funding. He stated R&D had created a lot of software and collected a lot of data and it had become a big job. Mr. Jia stated things have to be constantly updated to keep current and fulfill FAA's security requirements. Mr. Jai reviewed the FAA PAVEAIR upgrade and software integration. He explained with the integration the programs will be able to communicate with each other. Mr. Jia stated the

software changes rapidly and it must be updated to meet FAA requirements. Mr. Jia stated the status of PAVEAIR there were several airports that already use the system as is and would like to use it for Pavement Evaluation. Mr. Jia reviewed the planned updates and reviewed the ANG-E260 website, stating it included 600 pages, papers are downloaded, and data was downloaded. Mr. Jia informed the Subcommittee it received 400K visits per month. The Subcommittee asked who would use this site. Mr. Jia responded that it would be Airports. He explained they can download the software and modify it to suite them. The Subcommittee asked if airport data can be uploaded. Mr. Jia responded yes if they give us permission. The Subcommittee asked about the life cycle cost of analysis updating. Mr. Jia responded they have not addressed that up to this point.

Dr. David Brill, RPA P8 – Extended Pavement Life, Dr. Brill began his presentation by reviewing the need for research, goal and FY16 accomplishments including the completion of field data collection at Tucson and Kansas City. He stated there have been delays in the PA40 Website and was hoping it will be at 100% next week, explaining it will be used for runway data collection as long term database for medium to large hub airports. Dr. Brill reviewed the pavement life model and performance predictor's models and presented pictures of the data collection including Longitudinal, SurPro, and FAA Profile Data. Dr. Brill presented the PA40 Database Welcome Page, along with what the completion looked like as of August 16, 2016. He explained the green represented what had been added, the pink were areas that still need to be populated and gray was not applicable, as well as updating runway list and information. Dr. Brill explained this year R&D had been working to update the traffic data as well and pull from ASDE-X, PDARS, threaded track data, and MITRE Corp. Dr. Brill stated this was where all the data will be stored and the objective was to develop a new performance standard to update the current standard.

Mr. Murphy Flynn, RPA P9 – New Facilities 2017 and beyond, Mr. Flynn began by reviewing the approval process and informing the Subcommittee the first step was completed. He presented a map showing the location of the new facilities, adding the R&D Program was forward thinking in the original plan and had utilities run at that time to build a campus concept in the future. Mr. Flynn stated this will house NextGen Lab, Warehouse, and Photometric Lab. He stated R&D is in the design phase and are going to utilize Corps of Engineers at the FAA.

Recommendations

Field Instrumentation – provide a very specific invitation to airports to share data to include what the research needs of the FAA in regards to the Extended Pavement Life Project.

The Subcommittee agreed the actions require more internal work. Mr. Oswald stated he will work on summarizing and get to Subcommittee members by August 31st. Ms. Roundtree-Coleman stated she will need them by the first week in September. Mr. Oswald reiterated the need for a teleconference or webinar to review and finalize the Future Needs for the next meeting, and he informed the Subcommittee members that will be held in late fall 2016, and he will provide the read ahead materials. Dr. Michel Hovan stated that he would like feedback on the new meeting format. The Subcommittee commented on the costs of the activities that should be broken down, not just the overall cost of the total RPA as well as stating how long the

project was estimated to take. The Subcommittee also suggested covering projects that have new details, costs, and industry partners, so not to focus on repeat information.

Meeting adjourned at 2:35p.m.

In Attendance

August 16, 2016

Barry Hammer, FAA
Stephen Barker, FAA
Mike Maas, ALPA
Lauren Collin, FAA
Ryan King, FAA
William Crossley, Pegasas
Erin DeBarth, CSRA
Khalil Kodsí, FAA
Nick Subbotin, FAA
Don Gallagher, FAA
Michael D. Collins, CSRA
Holly Cyrus, FAA
Harry Part, CSRA
Eric Plylen, CSRA
Jim White, ARA
Robert Basseý, FAA
Chuck Agova, FAA
Katrina Warren, Zodiac Arresting Systems
Jim Patterson, FAA
Barb Busier, XNA
Sarah Brammell, Env. Resource Solutions
Scott Marsh PANYNJ
Shailesh Gongal, MASSPORT
John R. Dermody, FAA
Chris Oswald, ACI-NA
Michel Hovan, FAA
Eric Neiderman, FAA
Jaime Figueroa, FAA
Gary L. Mitchel, ACPA
Monte Symons
Sarah Hubbard, Purdue
Eduardo Juranovic, Boeing
Jeff Gagnon, FAA
Chris Seher, ARA

Rich Speir, ARA
Tim Parsons, ARA
Scott Morrell, ARA
Greg Cline, FAA
Mike Hones, FAA
David R. Brill, FAA
Chinita Roundtree-Coleman, FAA
Courtney Randik, FAA
Melissa Sabatine, AAAE

August 17, 2016

Gary L. Mitchell, ACPA
Monte Symons
Sarah Hubbard, Purdue
Eduardo Juranovic, BOEING
Barb Busier, XNA
Scott Marsh, PANYNJ
John White, ALPA
Chris Oswald, ACI-NA
Barry Hammer, FAA
Stephen Barker, FAA
Mike Maas, ALPA
Murphy Flynn, FAA
Benjamin Mahaffay, FAA
William Crossley, Pegasas/Purdue
Erin DelBarth, CSRA
Michael D. Collins, CSRA
Harry Part, CSRA
Khalil Kodsi, FAA
David R. Brill, FAA
Jim Parsons, ARA
Al Larkin, FAA
Chuck Agova, FAA
Melissa Sabatine, AAAE
Rich Speir, ARA
Scott Murrell, ARA
Greg Cline, FAA
Navneet Garg, FAA
Qingge Jia, FAA
Ryan Rutter, FAA
Michel Hovan, FAA
Shailesh Gongal, MASSPORT
John R. Dermody, FAA

Sarah Brammel, ERS, Inc.

Chinita Roundtree-Coleman, FAA

Research, Engineering and Development Advisory Committee PPT Briefing to Sub-committee on Airports: August 16 – 17 - 2016

Technical Center Director's Conference Room

DAY 1 – August 16, 2016

Time	Presenter	Topic
9:00 am	Christopher Oswald <i>ACI-NA, Subcommittee Chairperson</i>	Introduction
9:10 am	Eric Neiderman <i>Manager, Aviation Research Division</i>	Aviation Research Division/Welcome
9:15 am	Chinita Roundtree-Coleman <i>Research, Engineering and Advisory Committee</i>	REDAC process overview
9:25 am	Michel Hovan <i>Manager, Airports Technology Research Branch</i>	Overview of Research Program Areas (RPA's)
9:35 am	John Dermody <i>Deputy Director FAA Office of Airports Safety and Standards</i>	HQ Update
9:45 am	Subcommittee Members and Others	Review of REDAC Recommendations
10:15 am	Jim Patterson <i>Airport Safety R&D Section Manager</i>	Overview of Safety RPA's
10:30 am	Break	
10:45 am	Lauren Collins	RPA S1- Airport Planning RPA S2 - Airport Safety Data Mining RPA S8 - Noise Program
11:30 am	Lunch	
12:30 pm	Ryan King	RPA S4 - Wildlife Hazard Mitigation
1:00 pm	Robert Bassey	RPA S5 - Visual Guidance
1:30 pm	Joe Breen/Nick Subbotin	RPA S6 - Runway Surface Safety Technology
2:00 pm	Robert Bassey	RPA S7 - Airport Safety and Surveillance Sensors
2:30 pm	Ryan King/Jim Hileman	RPA E1 - Airport Environmental Research
3:00 pm	Break	
3:15 pm	Sub-Committee members	Recommendation(s) of the day
4:00 pm	Future Needs	
5:00 pm	Adjourn	

DAY 2 –August 17

Time	Presenter	Topic
8:30 am	Jeffrey Gagnon	Overview of Pavement RPA's
8:45 am	Ryan Rutter	RPA P1 - NAPTF
9:15 am	Navneet Garg	RPA P2 - NAPMRC
10:00 am	Navneet Garg	RPA P3 - Field Instrumentation and Testing
10:30 am	Break Murphy	
10:45 am	Flynn	
		RPA P4 - Advanced Materials
11:15 am	David Brill	RPA P5 - Pavement Design and Evaluation
12:00 am	Lunch	
1:00 pm	Albert Larkin	RPA P6 - NDT Technologies
1:45 pm	Qingge Jia	RPA P7 - Software Program Development and Support
2:00 pm	Dave Brill	RPA P8 - Extended Pavement Life
2:30 pm	Murphy Flynn	RPA P9 – New R&D Facilities
2:45 pm	REDAC Recommendation(s)	
3:30 pm	Adjourn	