REDAC Subcommittee on Airports
Spring Meeting 2015
March 31 – April 1
Meeting Minutes

Day One - Tuesday, March 31st

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.

Dr. Eric Neiderman, Manager, FAA Aviation Research Division, ANG-E2, introduced himself and thanked everyone for attending. Dr. Neiderman began by stating that it was asked for the focus of the last Subcommittee meeting to be on emerging issues. He reiterated that he would like the focus to stay on that path. He asked the Subcommittee to continue to look 5 – 10 years down the road. He would like to include NextGen and the possible impacts that it will have on the industry, both positive and negative. Dr. Neiderman also mentioned this to the other REDAC Subcommittees: Aircraft Safety, NAS Operations, Human Factors, Airports, and Environment and Energy. He would like the Subcommittee to look at the FY17 budget and make sure it has the right mix of research, that it is strategic, and that it is a "well rounded" portfolio. It should include short term and long term building blocks to define where R&D needs to go. Dr. Neiderman concluded by announcing Jim White's retirement after 47 years of Federal Service.

Mr. Dennis Filler, Technical Center Director, introduced himself and began by stating discussions for research are ongoing and gave credence to what has already been done. He asked the Subcommittee to look at the way things are changing; citing airframes and transportation as examples. He also acknowledged how technology is advancing and it needs to be looked at and adapted too. Mr. Filler acknowledged a challenge to research can be funding. A positive regarding this particular research program is that the funding allocation has not changed. He urged the need to make the administration understand the need for the research. Mr. Filler acknowledged the uncertainty for 2016 with Congress and how that might affect the program.

Mr. Christopher Oswald, ACI – NA, Subcommittee Chairperson, spoke briefly stating the research program has received $31 million and reiterated that money is set aside specifically for the purpose of research. He touched on Mr. Filler's point that there is no certainty in where funding will go in the future. Mr. Oswald advised the Subcommittee to be smart, think strategically, and exercise good stewardship when assessing the portfolio.

Jaime Figueroa, Manager FAA Research and Development Division, ANG – E4, Mr. Figueroa introduced himself and explained his role with the FAA. He stated it was his first REDAC Subcommittee Meeting. Mr. Oswald asked for Mr. Figueroa's assistance in offering ideas and prioritizing what is needed in research.

Dr. Michel Hovan, Airports Technology R&D Branch Manager, introduced himself and began by stating the objective for the meeting is to review the FY17 portfolio; he then provided a brief overview of the budget. Dr. Hovan indicated that he would like to introduce a new format to the meeting by focusing on big items where feedback and product updates are needed. He would

like to bypass the projects that are going well. Dr. Hovan stated he would like to keep the focus on emerging technologies and future opportunities when reviewing the budget.

Dr. Hovan gave a contract update stating the supporting contract with SRA International, Inc. expires on June 10, 2015. He informed the subcommittee the RFP was put out for bid in February with all proposals due on Monday, March 30, 2015. He is hoping to have a new selection made by mid-May 2015.

Dr. Hovan informed the Subcommittee of the retirement of the test pilot Steve Materio. He continued by giving an overview of the budget explaining from 2014-2015 the budget remained stable with no change in allocation and in 2016 there is a slight increase. Dr. Hovan stated that while looking at the 2017 budget he believes "work should drive the budget" not "the budget drive the work". Dr. Hovan informed the Subcommittee of a new FAA website that is still in development but is 95% completed. He explained when completed the website will be parallel with the division website. Dr. Hovan continued with FY16 Budget overview stating R&D is in a good place receiving 1% of the AIP budget and that is a special allocation. Dr. Hovan explained for Future Consideration he would like to regroup the RPD's changing the number scheme to RPA-S (S for Safety) and RPA-P (P for Pavements) and dividing them further into sub categories as well. He would also like to include Airport Environmental Research (RPA-E) and will work with Headquarters to see if this indeed feasible. Dr. Neiderman complimented Dr. Hovan and his branch for the work that is being done.

Dr. Mike McNerney, Deputy Manager, FAA Office of Airports Safety and Standards Division, AAS – 100, introduced himself and spoke on the retirement of Jim White. He went on to state how the FAA believes global safety has improved and international work is still in progress. Dr. McNerney informed the Subcommittee a new position has been created to keep track of all international responses. He stated the 2016 budget needs to have environmental issues included and the request for research to continue needs to be continuous. It was asked if there was a timeframe to replace Jim White and Dr. McNerney stated there is no definite timeframe.

Review of Recommendations **-** Mr. Oswald made sure everyone received a copy of the Meeting Agenda and suggested the Subcommittee explore other options for distribution of materials. It was suggested to upload materials such as agendas, meeting minutes, presentations to the REDAC website. It was decided there will be further discussion later in the meeting.

1. ***Safety Database***

   Discussion - The Fall 2014 REDAC meeting discussed the Safety Database Program. At that time the program was not fully initiated and it is expected to be going into Fall 2015. The concern is information going public before airports are informed of shortcomings. The Subcommittee feels that airports need sufficient notice to prepare, understand, and address issues.

   Conclusion- It was decided the FAA R&D Program provide a Point of Contact to address these issues. The FAA R&D Program has provided a POC and the Recommendation from Fall 2014 was closed. The Subcommittee discussed other issues with this project and questioned if it qualifies to fall under R&D. It was agreed that it needs further discussion on how to proceed.

2. ***Aircraft Braking Friction***

Discussion - The Subcommittee agreed to bypass this program discussion on Day One.

Conclusion - The Subcommittee decided to commit to doing a "deep dive" after the presentation on Day Two.

Emerging Issues and Future Opportunities

The Subcommittee began the discussion by referring to the list that was decided upon at the Fall 2014 meeting. Dr. Neiderman asked the Subcommittee to review the list and confirm it is in line with the 2017 portfolio and if the resources are in place to complete the research. He asked the Subcommittee to look at the issues and the technologies used. Mr. Oswald suggested in order making sure these issues align with the 2017 budget the Subcommittee will have review what was identified during the Fall 2014 meeting as the five most important issues.

Issue 1: UAS - The Subcommittee discussed this issue becoming more visible and it needs to be looked at from the airports perspective. The Subcommittee stated their concerns with suggestions on whether this issue is aligned with current research. It was expressed that the airports have valid concerns on this subject. The Subcommittee discussed the possible airspace and security issues and agreed that airport should have a role. The Subcommittee agreed UAS need definite focus and discussion. Dr. Neiderman informed the Subcommittee of the UAS research that has already been done and it is an opportunity to use that research and be able to take ideas to that program and gain more knowledge on the airport perspective. The subcommittee agreed it would be beneficial to request a teleconference meeting with all interested Subcommittee members to further the discussion.

Action - Schedule a web briefing with the NAS Integration Office in the next month or two. Invites to interested parties will be delivered via email.

Issue 2: Maintenance Technologies/Practices for LED Airfield Lighting System

Issue 3: Managing Airport Operations in a NextGen Environment

Issue 4: NextGen and Noise in the Airport Environs

Issue 5: Advanced Pavement Materials

The Subcommittee reviewed the discussions on these issues from the Fall 2014 REDAC Meeting and agreed no further action needs to me determined at this time. It was decided to further discuss how to prioritize and the issues on Day Two.

A.M. Break - 10:30a.m.-10:50a.m.

Mr. Jim Patterson, Airport Safety R&D Section Manager

2015 Safety Projects + Plans for FY16-17

Mr. Patterson provided an overview of what he would be presenting. He discussed the budget summary of safety related projects. Mr. Patterson explained the projects that are highlighted in red on his Budget Chart were new projects that had received funding. He went on to inform the Subcommittee of the safety resources used, including FAA staff in the Safety R&D Section, SRA International, Inc. as the prime support contractor, and all other subcontractors on the R&D contract. Mr. Patterson continued with highlighting major projects that are currently underway including LED Lighting and FOD Detection. He presented the Report Publications and offered to the Subcommittee to have them uploaded to the REDAC website for review. Mr. Patterson

informed the Subcommittee that Safety has averaged twelve published reports per year, including five that have been published since last REDAC meeting.

Mr. Ryan King, Overall Wildlife Program Updates

Mr. King began his presentation by explaining the Wildlife Hazard Mitigation Project. He informed the Subcommittee about the WiSC project and how the FAA Technical Center R&D has been working with ANG-C43 (NextGen Concept Socialization and Management) and how they are enhancing the research. Mr. King's presentation included a video of the work that has been completed in the simulation lab at the Technical Center. He explained to the Subcommittee for the test completed in the simulation lab they used Air Traffic Controllers and Pilots to be able to test the communication using the bird radar. Mr. King reviewed the WiSC plans for FY16-17 and noted participants in the plan such as CEAT - University of Illinois- Radar Deployment, C43, and MITRE-Benefits Case. The Subcommittee asked Mr. King if this research being planned is to be tested with ATC. Mr. King responded stating after the program has been perfected it is planned to be tested with ATC to see how it performs. Mr. King continued with his presentation explaining Bird Perception as another research tool being used with USDA/Perdue University. Mr. King then gave an overview of Bird Radars and reviewed the details regarding the acquisition of the AN/TPQ-49 radars from the United States Army. He continued by explaining Multi-Senor Integration and the possibility of taking individual sensors and integrating the information output into one system that would then inform ATC, Wildlife Control, Ops, and Security. Mr. Oswald interjected inquiring about the costs of this type of radar system. Mr. King responded the costs for a new system is around $400K including the software and pointed out that the IT support for the radar is based in Syracuse, New York. Mr. King was asked by the Subcommittee what the preliminary findings of the simulation lab work were. He responded stating the findings were extremely favorable from both the ATC participants as well as the pilots.

Mr. Robert Bassey, Research Taxiway, Low Cost Ground Surveillance Radar, Airport Construction Signs

Research Taxiway

Mr. Bassey explained the agreement with Cape May County Airport and provided an overview of the projects currently ongoing and planned for the future. Mr. Bassey informed the Subcommittee how it will benefit both the local airport and the FAA R&D program. He informed the Subcommittee this agreement grants the R&D program the right to construct operate and maintain research facilities on the premises. Mr. Bassey stated in on April 22, 2015 the U.S. Army Corp of Engineers will start accepting bid proposals for construction and are planning to award the contract by May 22, 2015, with construction beginning Summer 2015. He gave an overview of funding needs for FY2017 and explained the research needs. Mr. Bassey explained the work performed at the Cape May County Airport supports both the Pavement and Safety side of research. He went on to explain this agreement gives the research the opportunity to provide test results that can't be duplicated in a research laboratory. The subcommittee agreed there certain infrastructure issues that are better tested in the field rather than in a controlled environment such as a lab.

Runway Construction Signs

Mr. Bassey provided an overview of this project including the purpose of the research, airports that were chosen for the research, protocol of the projects, and the findings and preferred signs. He explained due to feedback from pilots on the first test performed with the "TORA" signs they have installed new signs at JFK Airport in September 2014. He informed the Subcommittee the feedback from the pilots was most did not know what the acronym TORA stood for so new signs were manufactured that have the acronym spelled out. Mr. Bassey informed the Subcommittee that the research is ongoing and gave an overview of the participation and findings to date. He stated the project will be completed in May 2015 with a final report submitted in July 2015 and will have the findings reflected in the Advisory Circular.

Low Cost Ground Surveillance Radar

Mr. Bassey gave a review of this project with an update including on the participating airports and data collected. He informed the Subcommittee the next steps of the project which includes the installation of equipment at Orlando International Airport in September of 2015. Mr. Bassey plans on completing the performance assessment along with system operation in December of 2016. Mr. Bassey highlighted the work performed with Center of Excellence at the University of Illinois. He spoke briefly on the possibility of being able to eventually integrate other radars used at airports into this system. Mr. Figueroa commented that the ATO is currently conducting Low Cost Ground Surveillance testing as well and it might be beneficial to contact them and possibly have access to equipment and data as well as being able to share what R&D has collected. Mr. Bassey responded that he is aware of the testing being completed and explained the differences in the research being performed. It was suggested by the Subcommittee to keep in mind while looking into integrating radars that each radar system has a specific purpose and provides valuable information for their specific use.

Conclusion – the Subcommittee would like to have Mr. Bassey move forward with Concept of Operations including what the end result of this research will be. The Subcommittee added developing standards acknowledging that the Proof of Concept has already been completed. Mr. Oswald suggested including a cost analysis as well.

Lunch Break - 12:00 p.m. - 12:40 p.m. - Presentations recommenced 12:45 p.m.

The Subcommittee discussed the next REDAC Subcommittee dates.

It was decided the next meeting will be held on Tuesday, August 25, 2015 & August 26, 2015. Day One will begin at 8:30 a.m. and adjourn at 4:30 p.m. Day Two will begin at 8:30 a.m. and adjourn at 3:00 p.m.

Ms. Lauren Vitagliano, Airport Noise Updates, Safety Database, Complex Taxiway Geometry

Airport Noise Update

Ms. Vitagliano gave an update on the project stating Phases 1 & 2 are complete and Phase 3 is in progress and expected to take a year for data collection. She went over highlights since the last meeting including survey package has been submitted to OMB last month. Ms. Vitagliano reviewed next steps for FY17 with OMB approval expected in May 2015, start distributing surveys in summer 2015 and have the surveys completed by summer 2016. She presented budget needs for FY17 and explained the funding request for $750K is due to the increase of data analysis that is expected.

Taxiway Geometry

Ms. Vitagliano gave a very brief overview of this project and the analysis of where incidents were occurring. She explained the results and how they were categorized and how "hot spots" were identified.

Safety Database

Ms. Vitagliano began this part of the presentation by giving an overview of the project and explained to the Subcommittee that this database is an internal tool and only accessible to FAA. She presented Next Steps for the project and reviewed the process for identifying problem locations. Ms. Vitagliano continued by presenting an update on the Runway Incursion Mitigation Program (RIM) and gave a brief overview of the purpose of the research. She explained in Phase One the results were a number of intersections at a number of airports are planned to receive priority focus. She informed the Subcommittee that the specific locations will not be released to the public and airport sponsors will be notified by their FAA RIM POC that they have been included in the RIM program. The Subcommittee voiced their concern explaining the airports should be notified of the issues that were identified before the information is released.

Mr. Don Gallagher, Rumble Strips Updates

Mr. Gallagher gave an overview of the Rumble Strips project and the motivation behind it. He highlighted the work being done with PEGASAS and informed the Subcommittee of the February 2015 inquiry about the project from Edwards Air Force Base. Mr. Gallagher presented the Summer 2014 findings and explained they were presented in January 2015 at the TRB Conference in Washington D.C. Mr. Gallagher presented a summary of the discussions with Edwards Air Force Base in February 2015. He informed the Subcommittee an Interim Report on Rumble Strips Placement at GA Airports was completed in February 2015. Mr. Gallagher presented and overview of the Transportation Conference and Expo held at Perdue University. He continued his presentation with findings that with testing Rumble Strips they found there are some winter ops considerations and determined they might not be ideal for airports in winter climates. Mr. Gallagher presented the FY16 budget and included Phase III in which airports will be chosen that are deemed "most feasible" for this type of research. He went onto inform the Subcommittee that construction for a Rumble Strip Test Bed will being in summer 2015 with a Technical Note/Final Report being submitted June 30, 2016. The Subcommittee commented that a concern they feel is the Rumble Strips being felt by passengers sitting in the rear of the aircraft. Mr. Gallagher agreed that could be an issue with the larger commercial aircraft but raised a point that it most likely would not be an issue in smaller aircraft.

Mr. Nick Subbotin, Arrestor Systems

Mr. Subbotin began his presentation by giving a brief overview the EMAS project and R&D activities. He informed the Subcommittee that an EMAS bed made of glasopor was installed at Chicago's Midway Airport in November 2014. He briefly reviewed the materials used in construction of the bed. The Subcommittee questioned if the material was approved for use by the FAA. Mr. Subbotin responded that it has been approved for use by the FAA but has not been approved by AIP because it's not an American made product. He further explained that the EMAS bed and construction was paid for by the City of Chicago and not with AIP funds. Mr. Subbotin presented the plans for testing evacuation slide durability and ongoing tests of EMAS markings. Mr. Subbotin informed the Subcommittee for the EMAS marking project FAA R&D worked with AAS-100 to create an Advisory Circular Engineering brief for retro reflective

markers around EMAS beds. He explained for the EMAS Signage project the FAA R&D is beginning the evaluation of several concept signs located at DRS and EMAS beds. Mr. Subbotin presented slides with pictures of examples of signs that will be used. He gave an overview of planned activities including the inspection of older EMAS beds at Fort Lauderdale International Airport and explained the purpose is to determine when to begin maintenance, etc. He went on to explain they would like to develop and policy for recommendations for airports on when to replace beds and requirements on new materials. The Subcommittee questioned whether EMAS Signage is a requirement and Mr. Subbotin responded stating EMAS Markings are required but EMAS Signage is not. The Subcommittee then asked if this research going to lead to an Advisory Circular requirement and Mr. Subbotin stated that would be a goal. He continued by reviewing the FY16 and FY17 Funding Requests.

P.M. Break -1:55 p.m. - 2:10 p.m. - Presentations recommenced at 2:10 p.m.

Mr. Keith Bagot, ARFF Program Updates

Mr. Bagot began his presentation with a review of objectives and review from the last REDAC Meeting, as well as new giving new information including new test platform, new firefighting systems and new vehicles. He informed the Subcommittee the R&D program ordered a new firefighting vehicle and it should be delivered in December 2015. Mr. Bagot explained the specifications on the vehicle were all decided upon by the R&D program and the systems can be upgraded to keep up with advancing technologies. Mr. Bagot also highlighted that this is the only vehicle of its kind in the United States. He continued by giving an overview of the FY17 Budget explaining the increase is due to the planned building of a Fire Test Retrofit building. Mr. Bagot informed the Subcommittee it will allow testing to be done with various agents in a controlled environment. Mr. Bagot updated the Subcommittee on the L1011 Aircraft and informed them that the lower level cargo modifications are complete. He also informed the Subcommittee the clean agent testing is in progress and a final report will be completed late spring 2015. Mr. Bagot updated the Subcommittee on biofuel firefighting research and the work being done with PEGASAS.

PEGASAS addressed the Subcommittee informing them of a one day conference being held at Perdue University on Thursday, May 28, 2015 encompassing all examples of what is being explained by Mr. Bagot and there is no registration fee. Mr. Bagot continued by informing the Subcommittee of published reports since the last REDAC meeting and of reports currently in process.

Mr. Mike DiPilato, Safety Surface Initiatives Team Updates

Mr. DiPilato began his presentation by giving a review of the SSIT program including, its organizational chart and the airports involved in the project. He reviewed the CARA Teams and CARP report and their purpose within the project. Mr. DiPilato explained the AABC (Alternative Analysis and Benefits Case Team) and their purpose within the project. He proceeded with providing history and gave updates on Logan Airport, Dallas Fort Worth International Airport, San Diego International Airport, and Reno/Tahoe International Airport. The Subcommittee voiced a concern that the information that was collected from Logan has gone into a “black box” and the AAABC Team and would like to be notified of the report contents before it goes to Washington. Mr. DiPilato offered to give the Subcommittee a POC for this information.

Mr. Kent Duffy, FACT 3 Reports, Runway Simulator, Airport Planning

FACT 3 Reports

Mr. Duffy began his presentation by giving an overview of what the FACT 3 report is, explaining it is created for GAP identification and capacity capabilities for airports. He explained how the report is compiled and how forecasting done. Mr. Duffy explained that the FACT 3 Report used data from 2011 and used two modeling approaches including improvements with NextGen. He explained how scenarios are used to determine which airports will have capacity issues and which will not. Mr. Duffy continued by giving and update on FACT 3 Improvements stating improvements on Ft. Lauderdale are completed, Chicago O'Hare will have two completed by fall 2015 and another two completed by 2020, and Philadelphia International Airport will have 2 completed by 2020 and another completed in 2030.

Runway Simulator

Mr. Duffy began by giving an overview of the project and how it used as a tool to calculate sustainable hourly runway capacity. He went on to explain the model levels and gave a brief history on the simulator. Mr. Duffy stated the simulator is used to analyze the runway system capacity for complex Airport Operations and ATC Procedures. It assists with looking at departure runways and is useful in assessing departures fixes. Mr. Duffy informed the Subcommittee the simulator is available for use and anyone interested must be licensed and trained. To date there is 315 interested in becoming licensed and trained and they come from Airports, consultants, airlines, and universities. The training is a three day program and is held in D.C. or McLean.

Dr. Michel Hovan interjected explaining the next presentations are informational presentations for new research that was added to the portfolio with one million dollars in funding for FY2016.

Ms. Lauren Vitagliano, FY16-FY17 Airport Environmental Research

Ms. Vitagliano began by giving an overview of the Airport Environmental Research. She gave explanations of what the research needs are and what research has been done prior including the research completed by AEE. Ms. Vitagliano presented a possible FY16 Research overview and explained that the funding for this research was allotted due to the fact that Office of Environment and Energy's funding is depleted and they want this work to continue. It was agreed that this work is already being completed by one of the Centers of Excellence. Ms.Vitagliano explained R&D's role will be controlling the money and project management and the technical side will be completed by AEE. She continued by presenting Ground Emissions Research and explained the research completed by MIT Center of Excellence at LaGuardia International Airport and their findings. The Subcommittee discussed the different areas for research on this topic and if it support airport needs and safety implications. The Subcommittee suggested exploring developing a scale on what the percentage of emissions reduction is going to be planned through this research, emphasizing the importance of having a baseline to look to and compare with. The Subcommittee agreed there needs to be much more conversation on this topic.

Mr. Ralph Nicosia-Rusin - FY17 and beyond, Emerging, Future Research

Mr. Nicosia-Rusin began by giving an overview and description of the Emerging Future Research plan. He included the FY17 budget and explained the funding and how the research will fit in. He continued by stating the focus of airport planning should be on the passenger. Mr.

Nicosia-Resin explained to the Subcommittee that there needs to be a change in the way forecasting is performed. He presented Safety Enhancements and presented slides during his presentation to reflect his statements. Dr. Michel Hovan asked the Subcommittee if they thought the presentations were on target with what research is demanding. Dr. Hovan stated that the list of research presented might have to be reviewed more closely and be prioritized according to urgency. The Subcommittee responded stating some of the research topics seemed to be more process orientated than research orientated while agreeing with Mr. Nicosia-Resin that reinventing the way forecasting is performed could be a positive change and deserves more consideration but agreed it is more of a process issue. Dr. Hovan stated these presentations were not necessarily needing to fit in to FY17 budget but more so for the 2018 and beyond budgets. He wanted the Subcommittee to get a "heads up" on what was being requested by APP. The Subcommittee raised a concern that the funding allocated for this new research was not sufficient to perform the research that was presented and suggested taking a closer look at a later time.

Mr. Oswald requested the Subcommittee members review the emerging issues list from the fall 2014 meeting and prioritize them by low, medium, or high priority issues to discuss at the end of day two. The Subcommittee agreed Day Two will begin at 8:30 a.m.

Day One - Meeting Adjourned 5:00p.m.

Day Two - Wednesday, April 1, 2015 - Meeting commenced at 8:50a.m.

Mr. Christopher Oswald began day two welcoming everyone back and briefly going over the agenda. Introductions were made by the attendees who were not present on Day One.

Mr. Joe Breen, Trapezoidal Grooves

Mr. Breen began his presentation by giving a review of the background of the project and AAS-100 research requests. He presented slides to the Subcommittee explaining what is being tested is the comparison of FAA Standard Grooving and Trapezoidal-Shaped Runway Grooving. Mr. Breen informed the Subcommittee testing with the aircraft and the NAPTF vehicle is already in progress. He continued his presentation with diagrams showing the different grooves and the results collection to date. Mr. Breen took a moment to introduce the new Test Pilot for the aircraft, Mr. Larry VanHoy, subconsultant to SRA International, Inc. He gave a brief overview of Mr. VanHoy's expertise and explained he will be an asset to the project. Mr. Breen was asked if the groove testing will be performed on both concrete and asphalt. Mr. Breen responded by stating testing on CC6 was concrete, CC7 was asphalt and they are waiting on data from CC6 to determine the testing needs for CC8. Mr. Breen continued by briefing the Subcommittee on ACY Runway 4-22 and the testing that will be performed. He informed the Subcommittee there is a meeting with ACY (Atlantic City International Airport) on April 8, 2015 where they will inform ACY of testing plans. Mr. Breen presented an overview of past full scale testing and data collected. He explained the runway for this testing will be 1500 feet long. The Subcommittee questioned what speeds the tests will be performed at and if the length of the runway is sufficient for response and braking time. Mr. Breen responded the rests will be performed between speeds of 30-100mph and he is confident the aircraft will have plenty of time for response and braking. Mr. Breen informed the Subcommittee of the upgrades made to the aircraft braking system that will allow for better results. Mr. Breen stated the objective of this testing is to determine the life of the groove. He stated generally speaking a grove lasts 8 years and that is relative to quality of pavement mix designs which is relative to quality of the grooves. The Subcommittee questioned how many passes are completed for this testing. Mr. Jeffrey Gagnon, Airport Pavement R&D Section Manager, responded by stating they test the pavement until it fails. Mr. Breen explained they are also looking into rubber build up on Trapezoidal Grooves vs. FAA Standard Grooves. Mr. Breen continued his presentation with Future Plans including, after gaining permission from ACY for Runway 4-22 they will begin construction of grooves and after awarding contract and hope to have construction completed and read for testing to begin by August 2015.

After completion of Mr. Breen's presentation, Dr. Hovan explained to the Subcommittee that the Aircraft Braking Friction Program has been included in the REDAC briefings many times. He informed the Subcommittee the project has been delayed due to factors that are outlined in Mr. Breen's presentation including the retirement of the previous test pilot. Dr. Hovan explained he believes this project will be successful and it does add value, despite the delays. He explained to the Subcommittee how he asked Mr. Breen to "go back to basics for this presentation.

Mr. Joe Breen, Aircraft Braking Friction Program

Mr. Breen began his presentation with giving a background of the project, noting it was initiated due to response to a NTSB Safety Recommendation. He continued by stating the challenges of the project to the Subcommittee. He informed the Subcommittee the project is working with an aircraft braking consultant and how he has stated commercial aircraft are not constructed to be optimal when used on non-friction surfaces. The Subcommittee questioned if that statement was

industry accepted or an opinion. Mr. Breen stated he has heard that sentiment from many sources. He went onto explain aircraft braking is 95% effective in dry conditions, 90% in snow, slush, and ice. Mr. Breen presented graphs explaining the Mu Slip Curve and the variables involved when determining. He reviewed the test parameters and presented the research objectives. Mr. Breen informed the Subcommittee about the new Anti-Skid Braking System and the capabilities it will give the aircraft. Mr. Breen reviewed the testing already performed along with reviewing the data that was collected. He cited the braking testing that was completed in April 2014 on manufactured snow and highlighted that it is the first test of its kind. Mr. Breen stated the objective of this project is to eventually create an algorithm to be used in the calculation of braking friction on commercial aircraft. He continued by presenting a project schedule and included the completion of the nose gear braking tests. Mr. Breen explained they were unable to get main gear braking tests on snow this past winter season due the retiring of their Test Pilot. He also explained that in doing a complete safety assessment on the aircraft they found the fire systems were not functioning and they are in the process of getting both the fire detection and fire suppression systems working properly. Mr. Breen assured the Subcommittee that none of the delays have caused any problem to the current testing schedule. He informed the Subcommittee the Anti-Skid Braking System will be installed by June 10, 2015 and testing will begin immediately with dry and wet pavements. Mr. Breen is stated he is expecting to retrieve a lot of date and have an algorithm completed by the end of 2016. Mr. Breen proceeded by adding four additional items beyond the FY17 schedule in the next steps portion of his presentation. He stated he would like to include the algorithm on a computer in commercial aircraft to test it and retrieve the data. Mr. Breen highlighted project accomplishments and funding requirements. He stated the capital investment has already been made and funding requirements are reflecting maintenance and testing requirements.

The Subcommittee responded to the presentation stating that they believe there is great value to this testing but the challenges have prohibited data collection. The Subcommittee agrees the end value proposition is critical to airports but the questions are “Is this right research?”, “Is there a different way?” The Subcommittee agreed this research is invaluable and gives it full support. They agree it’s a well laid out program and some on the Subcommittee believe it could be the “star project.” Mr. Oswald suggested Mr. Breen provide a report of the estimated total cost of the project to the end, including unforeseen costs that come up. Dr. Hovan interjected stating he thinks the approach should be “work driving the budget, not the budget driving the work.” Dr. Hovan stated he does not believe this project will go over budget and it is linked to a bigger picture. He suggests keeping focus on the technical side of this project. Dr. Hovan explained the research that is performed is in response to headquarters and they should be further engaged to make sure R&D is doing what is needed technically and to make sure R&D is on the right path. Dr. Hovan continued by stating he agrees this has been a difficult project citing the age of the plane as one obstacle. He further stated if what is needed technically is there and the research requirement is still there and the correct approach is being taken then this project will be successful. The Subcommittee responded by suggesting getting an independent review of the project approach to confirm if this approach is the correct one. Mr. Breen continued his presentation with a schedule for data collection. It was reiterated there was no data collection this past winter but it will be included in the next winter season. Mr. Breen informed the Subcommittee the Fire Bottles will be operational prior to June 2015.

Conclusion – the Subcommittee asked Mr. Breen to compile a revised schedule including explaining why there was no data collection this past winter season and how it did not have an

impact of on the overall project schedule as well as a summary of the financial costs thru the end of the project.

A.M. Break - 10:45a.m. -10:55a.m. - Presentations recommenced at 11:00 a.m.

Mr. Jeffrey Gagnon, Airport Pavement R&D Section Manager, 2015 Pavement Projects + Plans for FY16-17

Mr. Gagnon began with an overview of the 2015 pavement project including what will be presented to the Subcommittee. He highlighted partnering with American Society of Civil Engineers for the next Technology Transfer Conference. Mr. Gagnon continued by giving an overview of the FY17 budget as well as reviewing Industry Support Workshops, International Workshops and Continuing Efforts. He also highlighted the new NAPMRC building and gave and update on the NAPTF vehicle informing the Subcommittee the vehicle will be out of commission until mid- May 2015 to replace 15 year old wheel sets. Mr. Gagnon gave a recap on Site Instrumentation and informed the Subcommittee the work being done at LaGuardia International Airport, JFK International Airport, and Newark International Airports is still in progress while the work at Atlanta International Airport has been decommissioned. He also cited BWI and stated R&D is pursuing that location.

Dr. David Brill, 40 year Design Life Initiatives Updates

Dr. Brill began his presentation with an overview of the budget for FY15 – 17 explaining the decrease in funding requirements for FY17 are due to the completion of the collection of field data by that time. He reviewed the objective of the project is to be able to double pavement life to 40 years including a review of budget needs. Dr. Brill informed the Subcommittee this is a four year project that is now in year 3 and they will continue with the collection of field data through next year. Dr. Brill reviewed the airport locations for data collection and the two types of data collection are Airport Data and Field Data. He explained the PA40 and gave a review of the data collection being downloaded. He gave an overview of the PA40 Organizational Concept and the current work that is being performed. Dr. Brill continued by reviewing Laboratory Field Sample Testing along with presenting a summary of lab tests and showing examples of the materials tested. Dr. Brill conclude by informing the Subcommittee the Subject Matter Expert Group has met twice since Fall 2014 meeting.

Dr. Navneet Garg, National Airport Pavement Materials and Research Center

Dr. Garg began his presentation by highlighting the NAPMRC and explained the increase in funding for FY17 is for data analysis and operational costs. He proceeded with a review of the HVS-A and Test Strips testing including a review of details of the testing and data collected.

Dr. Garg also gave an overview of core testing performed in the laboratory and supplied a chart listing the organization for future research. Dr. Garg highlighted the test cycles (TC-1 & TC-2) to be completed in the new facility.

Mr. Murphy Flynn, New R&D Facilities

Mr. Flynn began his presentation with giving an overview of the NAPMRC, Building 298 construction and progress. He gave an overview of the FAA R&D buildings and the purpose they have for their specific projects. Mr. Flynn stated there have been pavement delays in the NAPMRC building and the contract for paving has been extended until May 22, 2015. Mr. Flynn supplied pictures of the construction cycles of the NAPMRC. Mr. Flynn continued his

presentation by including projects that would benefit from having new/additional facilities and supplied a summary of locations. The Subcommittee questioned where the funding for the new facilities comes from and Dr. Hovan responded the funding comes out of the research budget. Mr. Flynn explained the new facilities and maintaining Building 296 which is 15 years old is why the funding requirement increased for FY2017.

Lunch Break - 12:20p.m.-12:40p.m.

Dr. Navneet Garg, Field Instrumentation Projects

Dr. Garg began by giving an overview of Field Instrumentation Projects and budget citing LaGuardia International, JFK International, and Newark International as airports where data collection is ongoing. He explained the Stain Gages project and the installation process and locations within the runways at the participating airports. Dr. Garg provided results of the different data collection and explained the objectives of the project are to study curling in slabs, measure total strain and load induced strain in slabs under multi-gear aircraft such as A-380, B-777, and B-747 for example. He further explained the layout and full instrumentation plan at JFK International Airport.

Mr. Al Larkin, NDT Update

Mr. Larkin began his presentation with an overview of the NDT Program Plan and FY17 budget. He explained how the NDT vehicle was used in data collection for Cape May County Airport Runway project and included pictures of the different angles of images taken. Mr. Larkin presented a comparison chart to show the different imaging taken a different speeds and explained how R&D is collecting 2D and 3D images and is hoping to develop software that will identify anomalies within the pavement. Mr. Larkin continued by explaining the new technologies for profiling and the use of GPR (Ground Penetrating Radar) and how it's the first time used in field data collection. The Subcommittee questioned if Mr. Larkin found the GPR useful. Mr. Larkin responded stating it has only been used in three locations and R&D hasn't had the opportunity to use it fully. What he believes based on results he has seen from other test he thinks it will be useful. He also acknowledges it can be hard to detect difference in base/surface layer with the GPR. Mr. Larkin continued explaining the testing performed for CC7 was initiated because there is currently no existing standard for airport pavement texture. He informed the Subcommittee the Advisory Circular has a recommendation and the purpose of CC7 testing is to measure how close CC7 is to the recommendation, and how the texture values change with respect to traffic. Mr. Larkin concluded his presentation informing the Subcommittee of proposed research inquiry from the NY/NJ Port Authority about pavement texture values before and after runway rubber removal. He informed the Subcommittee the FAA R&D program will propose to participate in this research.

Mr. Charles Ishee, Heated Pavements

Mr. Ishee began his presentation by reviewing the funding for FY 15-17 and giving an overview of the Heated Pavements project including outcomes and rationale behind the project. He highlighted the current projects for Heated Pavements and the participating universities. Mr. Ishee updated the Subcommittee on the Greater Binghamton Airport location and informing the Subcommittee a Formal Report on winter performance will be submitted to R&D by May 2015.

Mr. Ishee gave and overview of the system installed at the Greater Binghamton Airport and how it is utilized by heating the pavement in the winter months and cooling it in the summer months. He further explained that the research on this system at this location will be ongoing for at least two more years. Mr. Ishee explained the process for data collection by the airport and presented a sample via graph slide to the Subcommittee. Mr. Ishee informed the subcommittee the airport was required to install a kiosk explaining the installation and purpose of the system for the general public. Mr. Ishee explained the overview summary including energy savings is due to R&D by the end of summer 2015. Mr. Ishee explained the process for determine energy and financial viability and the Cost/Benefit Ratio. He stated the Cost/Benefit ratio would be lower at airports with little or no snowfall and higher at airports with high rates of snowfall but they have found the amount of snowfall does not affect the cost/benefit ratio. Mr. Ishee added the possible cost benefit in regards to Safety and having this system could possibly cut down on employee injuries. He continued by stating that the true savings would most likely be passed onto the airlines and the passengers with the airports and FAA incurring the costs. Mr. Ishee informed the Subcommittee discussions with airports regarding snow removal on runways is not an issue but the gates are the issue. Mr. Ishee proceeded by informing the Subcommittee natural gas has the highest cost benefit ratio. When performing the comparison geothermal, electric and gas were all taken into account as well as current prices. Mr. Ishee continued by presenting Nano Structured Super hydrophobic Coatings and explained the purpose of the coating is that snow and sleet will not adhere to it. He reviewed different materials being tested for the Subcommittee and stated the objective and processes for the different research. He continued by giving a summary of the FY15 Plan as well as introducing future heated pavement projects including the FY16 plan including the use of the NAPTF and NAPMRC facilities. Mr. Ishee concluded his presentation with and overview of the FY17 Plan to include finding an airport to participate in the construction and testing of heated pavement technologies.

Conclusion - The Subcommittee suggested moving forward finding a participating airport.

The Discussions/Report/Recommendations portion of the meeting commenced at 1:30 p.m.

The Subcommittee started discussing the FY16-17 Airport Environmental Research and FY17 and beyond, Emerging, Future Issues Research Presentations and whether these are process or research topics and whether the funding is appropriate to cover the needs of the projects.

Conclusion - the Subcommittee agreed to revisit these projects in August in more detail specifically funding for Runway Simulator vs Airport Planning. The Subcommittee planned to schedule a webinar to gain further understanding for those on the Subcommittee who are interested. Mr. Oswald informed the Subcommittee he will invite via email.

Aircraft Braking Friction Program

The Subcommittee agreed this project is producing positive output

Conclusion – the Subcommittee supports proceeding with the project.

Action – arrange for the sister project from FAA give briefing at the next meeting and Mr. Breen supply a revised schedule with explanations why testing was not completed this past winter season and why it did not impact the testing schedule.

Overall Wildlife Program

The Subcommittee briefly discussed the Wildlife project and agreed it is progressing positively

Conclusion – the Subcommittee supports proceeding with this project.

Low Cost Ground Surveillance Radar

Conclusion – moving forward with Concept of Operations including what the end result of this research will be.

Safety Database

The Subcommittee discussed the implications of data being released.

Conclusion – Provide a POC as well as refer to AIS first recommendation has been closed.

Safety Surface Initiatives Team

Conclusion – the Subcommittee agreed airports need to be aware of the content of reports.

National Airport Pavement Materials and Research Center (NAPMRC)

Conclusion – the Subcommittee agreed clearer objectives are needed for TCI and TC2.

Heated Pavements

Conclusion – the Subcommittee suggested moving forward finding a participating airport.

The Subcommittee agreed on the 2017 budget.

It was discussed that in the future the Subcommittee will receive the agenda and presentations two weeks in advance of the Subcommittee meeting. These materials will be posted on the REDEAC website.

The Subcommittee agreed updated finding and meeting minutes must be submitted by Friday, April 10, 2015.

Mr. Oswald reiterated he will send an email invite for the UAS web brief interest.

Meeting Adjourned 2:47 p.m.

Research, Engineering and Development Advisory Committee
PPT Briefing to Sub-committee on Airports: March 31 – April 1 - 2015

FAA Technical Center Director's Conference Room

DAY 1 – March 31, 2015

8:30 am	Mr. Christopher Oswald *ACI-NA, Subcommittee Chairperson*	Introduction
8:45 am	Dennis Filler, *Technical Center Director* Dr. Eric Neiderman, *Manager, FAA Aviation Research Division, ANG-E2* Jaime Figueroa *Manager, FAA Research and Development Division, ANG-E4*	Technical Center and Aviation Research Division Updates
9:00 am	Dr. Michel Hovan *Airports Technology R&D Branch Manager*	Objectives of this meeting (FY-17 Budget) Contract update Budget FY-15-16-17 Airport Environmental Research (FY-16)
9:15 am	Dr. Mike McNerney *Deputy Manager, FAA Office of Airports* *Safety and Standards Division, AAS-100*	AAS-100AAS/HQ Update
9:25 am	Subcommittee Members and Others	Review of REDAC Recommendation
9:30 am	Mr. Christopher Oswald and Sub-committee Members	Emerging and Future opportunities
10:30 am	**Break**	
10:45 am	Mr. Jim Patterson *Airport Safety R&D Section Manager*	2015 Safety Projects + Plans for FY-16-17
11:15 am	Mr. Ryan King	Overall Wildlife Program (updates)
11:30 am	Mr. Robert Bassey	Research Taxiway Low Cost Ground Surveillance Radar Airport Construction Sign

12:00 - 12:45 pm Lunch (Cafeteria)

12:45 pm	Ms. Lauren Vitagliano	Airport Noise (updates) Safety Database Complex Taxiway Geometry
1:15 pm	Mr. Don Gallagher	Rumble Strips (Updates)

1:30 pm	Mr. Nick Subbotin	Arrestor Systems
2:00 pm	**Break**	
2:15 pm	Mr. Keith Bagot	ARRF Program Updates
2:30 pm	Mike DiPilato *SRA*	Safety Surface Initiatives Team (Updates)
2:45 pm	Mr. Kent Duffy	FACT 3 Reports, Runway Simulator Airport Planning
3:30 pm	Ms. Lauren Vitagliano Ralph Nicosia-Rusin	FY-16-17 Airport Environmental Research (New) FY7 and beyond – Emerging – Future Research
4:15 pm	Sub-Committee members	Recommendations of the day
4:30 pm	**Adjourn**	

DAY 2 –April 1

8:30 am	Mr. Joe Breen	Trapezoidal Grooves
9:00 am	Mr. Joe Breen	Aircraft Braking Friction Program
10:00 am	**Break**	
10:15 AM	**Mr. Jeffrey Gagnon** *Airport Pavement R&D Section Manager*	**2015 Pavement Projects + Plans for FY-16-17**
10:30 am	Dr. David Brill	40 Year Design Life Initiatives (Updates)
10:50 am	Dr. Navneet Garg	National Airport Pavement Materials and Research Center
11:10 am	Mr. Murphy Flynn	New R&D Facilities
11:30 am	Dr. Navneet Garg	Field Instrumentation Projects
12:00 pm	**Lunch (Cafeteria)**	
1:00 pm	Mr. Al Larkin	NDT Update
1:15 pm	Dr. Charles Ishee	Heated Pavements
1:30 pm	Discussions/Report/Recommendations	
2:30 pm	**Adjourn**	

REDAC
Subcommittee on Airports

In Attendance, March 31, 2015

Ryan Rutter, FAA
Navneet Garg, FAA
Jeff Gagnon, FAA
Al Larkin, FAA
David R. Brill, FAA
Charles A. Ishee, FAA
Al Pollard, REDAC
Gary L. Mitchell, ACPA
Monte Symons, Montista Consultant
Michael Roginski, BOEING
Chris Oswald, ACI-NA
Michel Hovan, FAA
Eric Neiderman, FAA
Rick Kessel, ALPA
Jaime Figueroa, FAA
Jeffery Wait, APLA
Eduardo Juranovic, BOEING
Jim Patterson, FAA
Robert Bassey, FAA
Holy Cyrus, FAA
Xiaogong Lee, FAA
Keith Bagot, FAA
Mike McNerney, FAA
Don Gallagher, FAA
Siddhartha Majumdar, UIUC
Qingge Jia, FAA
David Mayer, UIUC
Peter Sparacino, FAA
Lauren Vitagliano, FAA
Nick Subbotin, FAA
Ryan King, FAA
Bill Allen, SRA International
Erin Heffron, SRA International
Jennifer Klass, SRA International
Flavio Leo, Massport
Gregg Clime, FAA
Kent Duffy, FAA

Chinita Roundtree-Coleman, FAA
Dennis Filler, FAA
William Crossley, Pegasus/Purdue
Darcy Bullock, Pegasus/Purdue

In Attendance, April 1, 2015

James Zargan, SRA International
Hector Daiutolo, SRA International
Ryan King, FAA
Joe Breen, FAA
Xiaogong Lee, FAA
Rob Pavers, SRA International
Injun Song, SRA International
Nick Subbotin, FAA
Jennifer Klass, SRA International
Peter Sparacino, FAA
Chinita Roundtree-Coleman, FAA
Erin Heffron, SRA International
Mike Dipilato, SRA International
Larry VanHoy, LUHAVIATION
Darcy Bullock, Pegasus/Purdue
Yelda Turkan, Iowa State University
Kim Kurtis, Pegagus/Georgia Tech
Paul Tan, FAA
Halil Ceylon, Rowan University
William Crossley, Pegasus/Purdue
Katrina Warren, Engineered Arresting Systems
Nick Olmsted, Pats Aircraft
Dan Zollinger, Pegasus/Texas A&M University
Jerry Connelly, SRA International
Jim Parsons, ARA
Rich Speir, ARA
Bill Allen, SRA International
Ryan Rutter, FAA
Jeff Gagnon, FAA
Mike Gernant, PANYNJ
Al Pollard, Martin State Airport
Monte Symons, Montista Consultant
Gary L. Mitchell, ACPA
Michael Roginski, BOEING
Flavio Leo, Massport

Chris Oswald, ACI-NA
Michel Hovan, FAA
Ralph Nicosio, FAA
Rick Kessel, ALPA
Jeff Wait, ALPA
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Qingge Jia, FAA