

Airport Safety Section Update

ANG-E261

Presented to: REDAC Airports Subcommittee

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Federal Aviation
Administration



Safety Projects & Plans

- **Resources**
- **R&D Project Overview**
- **Report Publications**



Airport Safety R&D

- **FAA – 10 (including Section Manager)**
 - Up 1 since Fall Meeting
 - Brought back Ryan King!



Airport Safety R&D

- **Safety Research covers numerous areas:**
 - Airport Planning and Design
 - Visual Guidance (Lighting Signs and Markings)
 - Runway Safety
 - Airport Rescue and Firefighting
 - Airport Safety Surveillance
 - Runway Friction
 - Wildlife
 - Airport Noise
 - Airport Environment
 - UAS at Airports



FY18 - Projects Underway

New Requests for Research for FY18 (8)

- **Develop improved dispersion modelling procedures to demonstrate compliance with EPA's new NO2 1-hour standard**
- **Refine methods to screen, scope, and conduct air quality analysis for NEPA review of airport improvements located in attainment areas of the United States**
- **Program Evaluation: FAA Sustainability Master Plan Pilot Program**
- **Mature Prototype of Environmental Geospatial Tool**
- **Simple Airport Capacity Model**
- **Runway Length Evaluation (Phase 4)**
- **Tree Growth Analytics**
- **Request for Additional Research and Development Support for TALPA Analysis**

FY18 - Projects Underway

Congressional – Tarmac Vehicle Safety

- **“The committee notes that there is no national standard that requires markings on airport vehicles and equipment that operate in busy night time conditions. The Committee directs the FAA to study one large hub airport, one medium hub airport, and one small hub airport to determine whether national standards for conspicuity of surface vehicles operating at airports are necessary. The FAA is directed to report to the House and Senate Committees on Appropriations its findings and recommendations within 1 year after enactment of this act.”**
- **Research was completed on time and delivered to HQ - June 2018**
- **Final report for public being prepared.**

Visual Guidance RPA S5 Updates

(Joseph Breen, Holly Cyrus, Michael DiPilato, & Nick Subbotin)

- **EIRT Testing on Vault-Centric & Fixture-Centric Infrastructure at FAA Research Taxiway is completed.**
 - Final Report in process
 - Final Report with specifications for FAA Engineering Brief due FY19
- **Lightning Protection Counterpoise for LED Lighting**
 - Final Report on Literature Review & Airports selected to validate Lit Review in process.
- **Paint Marking Durability Study**
 - ACY and EWR 1 year study is complete. Report in progress.
 - New Markings applied at PHX for 1 year study.

Visual Guidance RPA S5 Updates

- **Electroluminescent Lighting Technology (ELT) for use on Airport Vehicle Numbers**
 - Report in editing process
- **NAS Visual Aides**
 - Installed PAPI baffles at Roanoke, VA (ROA) & Hot Springs, AR (HOT)
 - In progress, determining if baffles can be installed on LED PAPI in the field.
- **Established Interagency Agreement with VOLPE. Planning to evaluating prototype LED high intensity runway edge lights (HIRL) with infrared (IR) and LED approach lights with IR at Joint Base Cape Cod in FY 19.**
 - Fixtures will be evaluated with a visible spectrum and enhanced flight vision systems cameras

Visual Guidance RPA S5 Updates

- **Wrong Surface Landings: Office of Airports Research Request - Using Airport Safety Database events**
 - Completed: Literature Review of FAA Standards Related to Wrong Surface Alignments
 - Completed: Analysis of Documented Wrong Surface Events Utilizing Airport Safety Database
 - FY19: Human Factors Case Study in the benefits of installing additional visual aides to improve situational awareness. Determine the high risk airports by evaluating the incidents vs the number of operations. A deeper dive at high risk airports.
- **Wrong Surface Landings: SRM Report – Using ATO CEDAR data events**
 - FY19: Research Study/Analysis to investigate the event data and identify contributing factors and common causes. Study will include examination of lighting systems, airport geometry, and other factors in preventing wrong surface landing events.

FAA Research Taxiway



FAA Research Taxiway: Research Plans

Safety Projects:

- **Completed**
 - Obstruction Light with IR Testing
- **Ongoing**
 - Electrical Infrastructure Testing – FY 18 Business Plan Milestone
 - Runway Surface Friction
- **Planned**
 - Future LED Research Efforts (e.g. solar airfield lighting, light output, etc.)
 - UAS Integration at Airports

Pavement Projects:

- **Ongoing**
 - Nondestructive Testing
 - Field and Laboratory Characterization of Pavement Materials
 - Long Term Aging Study of Various Paving Mixes

Wildlife Hazard Mitigation: Operational Activities

- **FAA National Wildlife Strike Database**
 - **207,430 reported strikes** from January 1, 1990 – April 30, 2018
 - Annual Analysis Reports: Wildlife Strikes to Civil Aircraft in the United States
 - 1990-2016 (Completed)
 - 1990-2017 (In-Progress)
- **Drafting new multi-year interagency agreements with the USDA and Smithsonian Institution's Feather Identification Laboratory**



Wildlife Hazard Mitigation: Research Activities

- **USDA Wildlife Services are Continuing to Research Activities on Wildlife Hazards to Aviation (e.g. Habitat Use, Non-Lethal Wildlife Control Methods, etc.)**
- **Wildlife Surveillance Concept (WiSC)**
 - Entering the Final Phase of the Planned Research Program.
 - FY 18 Deliverable: Assessment of Avian Threat Information by Pilots
 - Next steps: Testing in an “Operational Environment” with an Operating Radar (e.g. SEA) and Technology Transfer to ATO

Wildlife Hazard Mitigation: Research Activities

- CEAT
 - Looking at NEXRAD, specifically new dual polarization moments, to identify bird targets in the atmosphere.
 - Currently comparing performance of NEXRAD to performance of Dallas/Fort Worth International Airport's (DFW's) BSTAR Radar.
- Joint University Program (JUP) – Ohio University
 - Use ground based avian radar and target categorization to transmit bird information to ATC tower and aircraft.
 - JUP received ADS-B data for DFW and are comparing aircraft location to wildlife locations detected through BSTAR radar.



Rwy Surface Safety Tech S6 Update

(Joseph Breen, Nick Subbotin and Jonathan Torres)

- **TALPA - Received Research Request to conduct data analysis of 2017-18 FICON data.**
 - Received Southwest & United Airlines PIREPs!!! (thank you!)
- **EMAS**
 - No new public news about Zodiac Arresting Systems America (ZASA) exiting the EMAS market
 - Renewed CRDA with ATECH, Inc. on development of new EMAS design
 - Reviewed and commented on Draft EMAS Design Approval Report
 - Developing EMAS Sign R&D Project Plan for possible testing. TBD by Office of Airports.



Rwy Surface Safety Tech S6 Updates

- **FOD Detection Systems**

- FAA ATRD is working with Seattle-Tacoma International Airport on establishing a Memorandum of Agreement (MOA) in order to conduct a FOD study with their Xsight FOD detection system.



Report Publications

- **New reports published within last 12 mo: 13**
 - Safety 8
 - Pavement 5
- **New reports published since last REDAC: 7**
- **New reports in editing process/draft: 9**

Report Publications (Last 12 Mo.)

- DOT/FAA/TC-17/47 Energy and Financial Viability of Hydronic Heated Pavement Systems 11/2017
- DOT/FAA/TC-TN17/51 Elevated Runway Edge Light Fixture Intensity Measurement 11/2017
- DOT/FAA/TC-TN17/65 Human Factors Evaluation of Airfield Lighting Configuration and Intensity Control at Boston Logan International Airport 11/2017
- DOT/FAA/TC-17/69 Development of Infrared Specifications for Night Vision Goggle-Compatible Light- Emitting Diode L-810 and L-864 Obstruction Light Fixture 12/2017
- DOT/FAA/TC-18/2 Problematic Taxiway Geometry Study Overview 1/2018
- DOT/FAA/TC-18/8 Boeing 737-800 Final Surface Roughness Study Data Collection 1/2018
- DOT/FAA/TC-18/15 Investigation of ASTM E966 Adjustment Factors 3/2018
- DOT/FAA/TC-18/18 Development of Engineered Materials Arresting Systems From 1994 Through 2003 04/2018

Report Publications (Last 12 Mo.)

- DOT/FAA/TC-18/20 Evaluation of Franklin Paint Structured Methyl Methacrylate Markings at Lawrence G. Hanscom Field Airport and Manchester-Boston Regional Airport 05/2018
- DOT/FAA/TC-TN18/22 Performance Assessment of the Vestas Intellight X-Band System as an Aircraft Detection Lighting System (ADLS) 06/2018
- DOT/FAA/TC-18/25 Laboratory Performance Testing of Polymer-Modified Asphalt Mixtures for Airfields 06/2018
- DOT/FAA/TC-18/26: Laboratory Performance Testing of Warm-Mix Asphalt Mixtures for Airport Pavements 06/2018
- DOT/FAA/TC-18/27: Development of a Testing Program for the FAA's Accelerated Wheel Load Test Facility to Develop Specifications for the Use of Reclaimed Asphalt Pavement and Recycled Asphalt Shingles in new Asphalt Concrete Used on Airfield Pavements 06/18
- **All Reports available at:**
<http://www.airporttech.tc.faa.gov/safety/downloads/>

Thank You!

