

FINDINGS & RECOMMENDATIONS: SUBCOMMITTEE ON AIRPORTS SUMMER 2019 MEETING Atlantic City, NJ | July 30-31, 2019

The Subcommittee on Airports of the FAA's Research, Engineering, and Development Advisory Committee (REDAC) met on July 30-31, 2019, at the FAA's William J. Hughes Technical Center in Atlantic City, New Jersey. The Subcommittee had the opportunity to review the progress of the FAA's Airport Technologies Research Program and provide comments regarding the Program's priorities. This program encompasses a portfolio of 19 research project areas (RPAs) as shown below.

| Safety & Planning RPAs | | Pavement RPAs | |
|--|---------------------------------------|--|---|
| S1 | Airport Planning & Design | P1 | National Airport Pavement Testing Facility |
| S2 | Airport Safety Data Mining | P2 | National Airport Pavement Materials Research Center |
| S3 | Aircraft Rescue & Firefighting | P3 | Field Instrumentation & Testing |
| S4 | Wildlife Hazard Mitigation | P4 | Advanced Materials |
| S5 | Visual Guidance | P5 | Pavement Design & Evaluation |
| S6 | Runway Surface Safety Technology | P6 | Non-destructive Testing Technologies |
| S7 | Airport Safety & Surveillance Sensors | P7 | Software Program Development and Support |
| S9 | Airport Research Taxiway | P8 | Extended Pavement Life |
| S10 | UAS Integration at Airports | | |
| Airport Noise & Environmental RPAs* | | New/Enhanced Facilities | |
| N1 | National Noise Survey | Fire Safety Building Pavement Lab Extension Photo Laboratory | |
| N2 | DNL & Metrics Evaluation | | |
| N3 | Sleep Disturbance | | |
| N4 | Noise Mitigation | | |
| N5 | Operations | | |
| E1 | Environmental Tools and Guidance | | |
| * Airport noise and environmental RPAs are being co-managed by the FAA Offices of Airports and Energy & Environment. | | | |

The Subcommittee remains supportive of the Program's ongoing work and future research directions, which continue to emphasize foundational research to support (1) advisory circulars and design guidance promulgated by the FAA Office of Airports, (2) airport infrastructure enhancements currently eligible or prospectively eligible for federal grant funding under the Airport Improvement Program, and (3) U.S leadership in areas of airport safety, planning, and airport infrastructure.

The Subcommittee reviewed draft FAA responses to several cycles of its recommendations and agreed that these recommendations could be closed pending the FAA Administrator's approval of these responses. The Subcommittee strongly encourages the FAA to provide more timely review and finalization of its responses to our recommendations as unapproved drafts extend back over a year to the Subcommittee's Winter 2018 meeting.

Findings and Recommendations

The following findings and recommendations were developed during the Subcommittee's deliberations. The Subcommittee does not believe that any of these require consideration by the FAA Administrator.

FINDING 1: The Subcommittee reviewed the FAA Research Landscape, which was presented by Shelly Yak and Eric Neiderman and is supportive of this strategic approach to prioritizing FAA research and development activities. Subcommittee members view the Research Landscape as a key mechanism to identifying and motivating crosscutting research activities—those that involve multiple FAA lines of business and program areas. The Subcommittee believes that it—and other REDAC subcommittees—should continue to be involved with development of the Research Landscape and, more importantly, involved with translating the research needs articulated within it into meaningful research projects.

RECOMMENDATION 1: The Subcommittee recommends allocating time during each of its semi-annual meetings for discussion of the Research Landscape, with an eye towards providing recommendations and guidance regarding how the Airport Technology Research & Development Branch can move airport safety, planning, design, and engineering research priorities forward.

FINDING 2: The Subcommittee appreciates the work that the Airport Technology Research & Development Branch is doing regarding unmanned aircraft systems (UAS) focused both on (1) facilitating authorized UAS operations on and near airports for the benefit of airports and their users and (2) means, methods, and technologies to detect and mitigate threats posed by unauthorized UAS operations on or near airports. With respect to the latter topic, UAS disruptions at multiple airports worldwide (most compellingly at London Gatwick Airport in December 2018 and the fortunately unsuccessful UAS “protest” on the part of the Heathrow Pause activist organization) and UAS-enabled attacks on infrastructure (most notably the September 2019 attack on oil production facilities in Saudi Arabia) have raised significant concerns for airport operators across the U.S. Urgent action is needed to provide airport operators with better tools and guidance regarding how to address threats posed by unauthorized UAS operations.

RECOMMENDATION 2: Although UAS issues—especially those associated with unauthorized UAS activity on or near airports—cut across multiple FAA research programs as well as those of other federal agencies, the Subcommittee recognizes that the Airport Technology Research & Development Branch has a leading role in developing performance standards and use guidance for airport-deployable UAS detection systems if these systems will be eligible for FAA grant funding. We strongly recommend that the FAA expedite this UAS detection system research.

The Subcommittee also strongly supports ongoing research into airport UAS use cases and research & development activities by other FAA lines of business regarding UAS detection, tracking, interdiction, and traffic management.

FINDING 3: The Subcommittee—and the broader community of airport operators—continues to be extremely concerned about a broad range of issues associated with the use of per- and polyfluoroalkyl substances (PFAS) in aircraft fire fighting agents. PFAS are a class of fluorinated hydrocarbon molecules that have been linked to adverse health outcomes in humans.¹

In the airport context, PFAS are used in aqueous film-forming foam (AFFF) to suppress and extinguish aircraft fuel fires. Under current FAA regulations, certificated airports are required to use AFFF because of the high level of performance it provides (e.g., ease of dispensing via current ARFF equipment, fire knockdown times, fire burn-through times). This said, over the last

¹ <https://www.epa.gov/pfas/basic-information-pfas#health>

decade there have been numerous alternative foams that have come onto the market and are being used at airports around the world.

The Airport Technologies Research Program does have a research program currently underway to evaluate the performance of fluorine-free fire-fighting agents and Subcommittee members were provided with the opportunity to tour the new fire testing facility under construction at the FAA Technical Center during our Summer 2019 meeting.

RECOMMENDATION 3: The Subcommittee reiterates its recommendation that the FAA proceed with all due speed with defensible research into the performance and use of alternatives to AFFF in the civil aviation sector including completing and commissioning its new fire research facility at the Technical Center. We also request that the FAA provide updates prior to Subcommittee meetings if unexpected events or circumstances delay this research.

We also recommend that the FAA coordinate its firefighting agent testing research with subject-matter experts in industry, including representatives from the National Fire Protection Association (NFPA) and airport rescue and fire-fighting professionals. To this end, we suggest that the FAA consider establishing an expert advisory panel similar to expert panels that have been established for airfield pavement research and aircraft braking friction research. Doing so will help to ensure consensus regarding research approaches early, before resource-intensive data collection efforts commence.

Future Meetings

The Subcommittee's next meeting will take place at the FAA Technical Center in Atlantic City on March 3-4, 2019.