FINDINGS & RECOMMENDATIONS:
SUBCOMMITTEE ON AIRPORTS SUMMER 2020 MEETING
Virtual Meeting | August 26, 2020

The Subcommittee on Airports of the FAA's Research, Engineering, and Development Advisory Committee (REDAC) met virtually on August 26, 2020. 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	Airport Noise & Environmental RPAs*
S1 Airport Planning & Design S2 Airport Safety Data Mining S3 Aircraft Rescue & Firefighting S4 Wildlife Hazard Mitigation S5 Visual Guidance S6 Runway Surface Safety Technology S7 Airport Safety & Surveillance Sensors S9 Airport Research Taxiway S10 UAS Integration at Airports	P1 National Airport Pavement Testing Facility P2 National Airport Pavement Materials Research Center P3 Field Instrumentation & Testing P4 Advanced Materials P5 Pavement Design & Evaluation P6 Non-destructive Testing Technologies P7 Software Program Development and Support P8 Extended Pavement Life	N1 National Noise Survey N2 DNL & Metrics Evaluation N3 Sleep Disturbance N4 Noise Mitigation N5 Operations E1 Environmental Tools and Guidance

* The FAA Office of Airports and FAA Office of Energy & Environment co-manage the Airport Noise & Environmental RPAs.

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 had no open recommendations from prior meetings to review. We do note that we are currently awaiting FAA responses to the two recommendations we provided to the REDAC at its Spring 2020 meeting in May.

Observations and Commendations

The Subcommittee appreciated the FAA's update regarding how the COVID-19 pandemic has affected Program research in the spring and summer of 2020. The closure of the FAA Technical Center facilities and the extenuating impacts COVID-19 has had on Program contractors and university partners have had consequential impacts on key research projects, including projects that undertaken in response to research requested by Congress in the FAA Reauthorization Act of 2018.

We are particularly concerned about research regarding (1) unmanned aircraft system (UAS) use at airports, (2) UAS detection and mitigation systems, and (3) alternatives to aqueous film-forming foam (AFFF) used in aircraft rescue and fire-fighting (ARFF) applications.

The Subcommittee was pleased to learn that, despite COVID impacts, the FAA has moved forward with important elements of several ongoing research projects. These include preparation of broad agency announcements for vendors and airports for UAS detection and mitigation system evaluations, establishment of an industry expert group regarding alternative firefighting agents, and completion of several safety and pavement projects for which laboratory work had finished or was unnecessary.

As we noted in our May 2020 report, the Subcommittee recognizes that the impacts COVID-19 has had and will continue to have on the aviation industry are broad and severe. We also recognize that these impacts—and associated research needs to address them—may require both new research activities and reprioritization of current research priorities. The Subcommittee stands ready to assist the FAA with these efforts as the pandemic and our collective response efforts evolve and mature.

We commend the Program's research efforts to support statutory mandates in the FAA Reauthorization Act of 2018. These mandates include Sections 136 and 183 regarding the use of state highway pavement specifications for airfield pavements, Section 146 regarding the use of retroreflective glass beads for airfield marking conspicuity, and Section 525 regarding the use of geotextiles for airport pavement applications. Program research into these topics have enabled the FAA to revise its guidance to airports in all three areas.

The Subcommittee also commends the FAA for its release of Version 2.0 of FAARFIELD[1], the FAA's pavement thickness design software. The software was in need of the update to make it a more user-friendly and consistent with other engineering software in the public domain. The FAA released Version 2.0 of the software in June. It incorporates a new user interface, a new finite element computational library, an updated aircraft library, and incorporation of new International Civil Aviation Organization (ICAO) pavement assessment criteria. The Subcommittee looks forward to future FAARFIELD enhancements to address other key pavement design issues including top-down cracking failure criteria for rigid pavements and vertical strain in asphalt layers for flexible pavements.

Findings and Recommendations

The subcommittee has three sets of findings and recommendations from our Summer 2020 meeting. The first set—which deals with how COVID-19 affects research deadlines—may warrant consideration by the FAA Administrator.

FINDING 1: The Subcommittee recognizes that disruptions caused by the COVID-19 pandemic have delayed time-critical research activities, including those associated with provisions in the FAA Reauthorization Act of 2018. The Program's alternative firefighting agent research project is of particular concern because:

- The Project's findings are needed to support FAA action regarding Section 332 of the FAA Reauthorization Act of 2018. Section 332 permits use of non-fluorinated chemicals

[1] FAARFIELD = FAA Rigid and Flexible Iterative Elastic Layered Design.

for aircraft firefighting provided they meet applicable FAA and National Fire Protection Association (NFPA) performance standards.

- Airport operators are under considerable pressure from state and local governments and local communities to reduce or eliminate use of PFAS at airports.
- There are significant and growing concerns about the human health impacts and associated liability associated with PFAS contamination on and near airports.

The Subcommittee also recognizes the need for the FAA's efforts to be coordinated closely with complementary research efforts that have been underway within the U.S. Department of Defense.

RECOMMENDATION 1: The Subcommittee recommends that the FAA reassess research timelines in light of COVID-19 delays and prioritize those activities associated with Congressional deadlines. The Subcommittee also recommends that the FAA provide early indications of research activities that may not be completed in time to inform FAA actions regarding Congressional mandates. These evaluations should take into consideration time necessary for cross-agency collaboration and coordination.

FINDING 2: The Subcommittee generally supports the research into emerging pavement additives (e.g., carbon nanotubes mixed into cementitious materials to promote self-monitoring concrete pavements to see if damage in the micro-structure of pavements is occurring). While the Subcommittee realizes the useful potential of these additives, we note that consideration needs to be given to how these particles affect full-scale pavement construction.

RECOMMENDATION 2: The Subcommittee recommends the FAA consider evaluating emerging pavement additives in the National Airport Pavement Testing Facility test facility during future construction cycles. Additionally, the Subcommittee recommends that the construction of these test sections be monitored to determine any impact on the full-scale production of concrete placing, consolidating, and finishing using standard construction practices.

FINDING 3: The Subcommittee remains very interested in the Airport Technology Research Program's involvement in UAS research—both from the perspective of their beneficial use at and near Airports and from the perspective of managing the safety and security risks associated with unauthorized use of these and near airports. We also recognize the growing interest in advanced air mobility systems (AAM)—also known as urban air mobility systems. AAM, like UAS, represent a new class of aircraft that will need to share use of airspace on and near airports.

RECOMMENDATION 3: We continue to recommend that the Airport Technologies Research Program utilize the Subcommittee to provide airport stakeholder input and insight into its UAS and AAM research activities, as well as in crosscutting research undertaken elsewhere within FAA.

Next Meeting

The Subcommittee's next meeting will take place at the FAA Technical Center in Atlantic City on March 2-3, 2021.