

FEDERAL AVIATION ADMINISTRATION
Research, Engineering and Development Advisory Committee
Subcommittee on Aircraft Safety (SAS)
2024 Fall Meeting Minutes
September 17-18, 2024

The 2024 Fall Research, Engineering and Development Advisory Committee (REDAC) Subcommittee on Aircraft Safety (SAS) meeting was held at FAA Headquarters on September 17-18, 2024. Attendee sign-in sheets are attached in Appendix I and the meeting agenda is attached in Appendix II. This document summarizes discussions and activities occurring during the meeting. The meeting resulted in 1 finding and 2 recommendations (F&Rs), which have been included as part of the official REDAC Chair's submission to the FAA. All presentation materials are available and can be downloaded from the FAA's REDAC website at <http://www.faa.gov/go/redac>.

Day 1 – September 17, 2024

Introduction/Opening

The SAS Designated Federal Official (DFO) Mike Paglione, FAA William J. Hughes Technical Center Deputy Director Eric Neiderman, and Subcommittee Chair Christopher Dyer of Pratt & Whitney jointly kicked off the meeting with brief opening remarks. Dr. Neiderman provided opening remarks, described the purpose of the meeting, as well as an overview of the 2-day meeting agenda. Mike Paglione provided his opening remarks along with meeting logistics. SAS Chair Chris Dyer provided his opening remarks, focusing on the recent strategic thrusts and full committee report-out.

FAA Budget Update

Ms. Tennille Blackwell, Deputy of the Capital Program Formulation Branch, presented the budget overview including the status and progress of the FY25 request, supplemental (IRA), and active funds.

Review of Draft FAA response to SAS F&Rs from the 2024 Spring Meeting

Mike Paglione, DFO, led the review of the draft FAA response to SAS F&Rs from the 2024 Spring Meeting. The FAA responses were acceptable to the SAS members.

Industry Briefing – SMS/QMS

SAS Chair Chris Dyer and Dave Polland of Boeing Aerospace presented an industry perspective for Safety Management System applied in a design and manufacturing environment. Safety Risk Assessments included many aspects such as; building flow days, key performance indicators, integrated risk model, operating rhythm surveillance, change packages for design build audits.

Industry Briefing – AI/ML applications

Akbar Sultan, Director of Airspace Operations and Safety Program, presented NASA's vision of a future operational environment where AI/ML enables new capacities. Data sharing, verification and validation of autonomous systems, system level contingency and uncertainty management. Example - NASA sustainability exercise at Dallas Love Field digital flow management enables fuel savings due to weather takeoff delays.

David Polland of Boeing Aerospace presented an industry approach to enable safety and quality through AI/ML. examples are; in-flight re-fueling, autonomous inspections, runway enhancements, product development and in-service safety issues.

R&D Strategic Thrust (Out brief of the August Meeting)

Bruce DeCleene, Director, Office of Senior Technical Experts, provided a quick summary of the R&D Strategic Thrust workshop. Thoughts from the workshop included organization, current new thrusts, Human Factors. SAS Chair Chris Dyer noted that the workshop would have benefited from more industry participation. Bruce expects the final debrief from the meeting to be shared at the full REDAC.

FAA/SAS Researcher Briefs

The below research areas were shared with the subcommittee:

- System Safety Management/Terminal Area Safety
- Flight deck/Maintenance/System Integration Human Factors
- Aeromedical Research/System Failures
- Unmanned Aircraft Systems
- Digital System Safety
- Advanced Materials/Structural Safety

Principal research personnel associated with each area presented to all attendees and a Q&A session was held for each. Copies of the presentations are available at <http://www.faa.gov/go/redac>.

First Day Review – Homework Assignments

SAS Members provided feedback on Day 1. SAS Chair Chris Dyer noted how the subcommittee has been addressing previous F&R during this meeting.

Day 2 – September 18, 2024

The meeting continued with a review of homework from Day 1.

Hydrogen Roadmap

Dr. Catalin Fotache, Chief Scientist and Technical Advisor for Propulsion Systems, presented FAA's roadmap for safe use of hydrogen on an airplane. The final roadmap is still in FAA review, but Dr. Catalin Fotache was able to share its purpose, objectives, safety hazards, CAA regulatory gaps, and research needs.

New Process Review

Mark Orr, AVS research and development, shared process updates with the subcommittee. This included explanation of changes in program management and goals, research plan lifecycle, and prioritization.

Review of Planned Research by Research Domain

- Aircraft Safety Assurance
 - Advanced Materials/Structural Safety
 - Continued Airworthiness

- Fire Safety and Research
- Propulsion and Fuel Systems
- Environmental and Weather Mitigation
 - Aircraft Icing
 - Alternative Fuels for General Aviation
- Digital Systems Technologies
 - Digital System Safety
 - Information/Cybersecurity
- Human and Aeromedical Factors
 - Aeromedical Research
 - Flightdeck/Maintenance/System Integration Human Factors
- Aerospace Performance and Planning
 - System Safety Management/Terminal Area Safety
 - Unmanned Aircraft Systems Research
- Congressionally Directed FY24 Appropriation
 - Aviation Accessibility Research
 - Aircraft Radio Altimeter Development, Testing, and Certification

Mike Paglione, DFO, introduced this topic, and Mark Orr, AVS research and development, lead the dialogue of the planned research. The shared resource is available at <http://www.faa.gov/go/redac>.

Automation Roadmap

Bruce DeCleene, Director, Office of Senior Technical Experts, presented FAA's autonomy roadmap is broken down by the aircraft system, the human user, and the operating environment. Tasks can be automated through control or information. Flight engineers have been replaced by automation; however, crew workload has not decreased with automation. Timeframe and operations for certification readiness are constructed from the levels of complexity.

Aircraft Radio Altimeter Development

Rob Steinle, Chief Scientist and Technical Advisor for High Energy Electromagnetic Effects, shared the research program's objectives and milestones.

Aircraft Accessibility

Joseph A, Pellettiere, Chief Scientist and Technical Advisor for Crash Dynamics, presented the project overview, regulatory challenges, status and future milestones for wheelchair feasibility.

SAS Summer/Fall 2024 F&R Discussions and Feedback/Closing Remarks

Mike Paglione, DFO, and SAS Chair Chris Dyer lead the conclusion for the meeting. Attendees decided to hold the Winter/Spring meeting in Washington DC on March 18 through 19, and the Summer/Fall meeting at the FAA William J. Hughes Technical Center on July 29 through 30