FEDERAL AVIATION ADMINISTRATION
Research, Engineering and Development Advisory Committee
Subcommittee on Aircraft Safety (SAS)
2024 Spring Meeting Minutes
March 12 - March 13, 2024

The 2024 Spring Research, Engineering and Development Advisory Committee (REDAC) Subcommittee on Aircraft Safety (SAS) meeting was held at FAA Headquarters in Washington, DC on March 12 and March 1, 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 four findings and four 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 through the FAA's REDAC website at http://www.faa.gov/go/redac.

Day 1 – March 12, 2024

Introduction/Opening

FAA William J. Hughes Technical Center Deputy Director Dr. Eric Neiderman, the Acting SAS Designated Federal Official (DFO) Mr. Dave Atwood, and SAS Chair Mr. Chris Dyer, Vice President of Product Safety, Certification & Validation of Pratt & Whitney jointly kicked off the meeting with opening remarks. Dr. Neiderman gave an update on the FAA's reauthorization status and provided an overview of how National Airspace System (NAS) Operations are becoming more diverse with new entrants. He also discussed expanding the REDAC membership.

Atwood described the purpose of the SAS meeting and gave an overview of the 2-day meeting agenda. Dyer reported out on the REDAC full committee meeting held on 10/04/2023, lessons learned and trends in aviation.

Overview of SAS Findings and Recommendations (F&Rs) from August 2023 meeting

Dave Atwood (FAA) and Bruce DeCleene (FAA) reviewed FAA responses to the 4 findings and recommendations from the August 2023 SAS meeting. The SAS members agreed that the FAA responses have addressed their recommendations. Discussion focused on reduced crew operations (how to deal with further introduction of automation in the cockpit) and bleed air contaminant (last F&R) – Bob Ireland to provide further insight and research on this. SAS will provide FAA recommendation/guidance on this.

AVS Cyber Security Strategy

Bruce DeCleene presented an overview of the FAA's cyber security strategy and how it is still maturing. He described how the strategy is currently focused on the aircraft and operator perspective within the AVS portfolio with respect to cyber. DeCleene is looking for REDAC SAS to recommend what is unique to aviation with respect to cyber? Discussed scope and priorities of FAA cybersecurity research and highlighted how GPS disruption has presented a problem worldwide and how a potential cyber attack on the telecommunications industry could have impact on the aviation and UAS community as well.

Update on Aviation Safety R&D strategy

DeCleene introduced the FAA's R&D strategy. He addressed "why are we doing this" as well as some "common misconceptions." Discussed Research Thrusts: 1) Operational Safety, 2) Safety Analytics & Risk Synthesis, 3) Future of Oversight, 4) Emerging Entrants, 5) Sustainable flight, 6) Public Health Preparedness, 7) Increasing Automation & Complexity, 8) Digital Engineering, 9) Artificial Intelligence, 10) Structure/Materials/Manufacturing. These strategic research thrusts represent shared interests of aviation community, not just FAA-sponsored research. Requests REDAC SAS feedback on the Research Thrusts and feasibility of working with FAA to update Research Thrust document prior to the Fall Meeting. He concluded with an overview of certification readiness (aircraft, pilot and operator certification) – discovery, application, normalization. A suggestion was made to add "international harmonization" after normalization.

FAA Budget Update

Tennille Blackwell (FAA) provided budget update on FY22 – 24 planned vs actuals. It was noted that the Grants line item jumped from $2 million in FY23 to $20 million in FY24 and then back down to $2 million in FY25 – Chris Dyer inquired about FAA's plan to spend this and why the one year spike in FY24? The Radio Altimeter line item was also discussed and what the FAA's plan for it was. Blackwell concluded with an overview of the FY25 Request, FY26 Planned Request and out-year targets for FY27 – FY30.

Introduction to research portfolio

Mark Orr (FAA) introduced the FAA's new R&D process and how it is moving from a budget-based model to one that is project-based. He outlined the approach of collecting research ideas from a broader audience within FAA, with a focus on the lifecycle of a project – from ideation to completion.

The FAA plans to use SAS members' comments and industry perspectives received during this session along with other information to update its research portfolio.

FAA/SAS Dialog

Mark Orr (FAA) led the review of the research forecast dialog. During this session, attendees continued the dialog to better understand SAS research forecast inputs from the August 2023 meeting. The SAS research forecast inputs include SAS comments on Fire Safety and Research; Propulsion and Fuel Systems; Advanced Materials and Structural Safety; Continued Airworthiness; Digital System Safety; Information/Cybersecurity; Aircraft Icing; Alternative Fuels for General Aviation. General feedback was provided from SAS that the publishing of "lessons learned" should not be considered research.

SAS F&R discussions and feedback (Day 1)

SAS members discussed potential recommendation to ask industry to help develop a Strategic Thrust for Cyber Security for the FAA. SAS commented that they did not hear the safety continuum mentioned within the Strategic Thrusts – FAA explained that it is built into the full Strategic Thrust document. It was noted that a marker be put in for Bleed Air Contaminant – SAS will provide a more specific ask/recommendation on this. SAS was not satisfied with Advanced Materials training materials

development and surveying workforce development (Grants), etc. – communicated a desire to make it more "research-focused."

First Day Review – Homework Assignments

Chris Dyer and Dave Atwood reviewed homework assignments at conclusion of Day 1. Atwood took action to have Bruce DeCleene's Strategic Thrust document released through the proper channels and also to provide insight into the FAA's Grants budget line item.

Day 2 – March 13, 2024

Review of Homework from first day

Dave Atwood reviewed homework assignments from Day 1.

Research Forecast Dialog with SAS members (continued from Day 1)

During this session, attendees continued the dialog to better understand SAS research forecast inputs. On Day 2, the focus was on Aeromedical Research; Flight Deck/Maintenance/System Integration Human Factors; Accessibility; System Safety Management/Terminal Area Safety (SAS requests consideration of ADS-B-in with respect to Wake Turbulence project – A11H.SSM.36), (much discussion focused on A11H.SSM.32 – SAS recommends TLS based on fleet-wide estimate); Unmanned Aircraft Systems (incorporate simulations to predict post-108 operations).

The FAA plans to use SAS members' comments and industry perspectives received during this session along with other information to update its research portfolio.

PEGASAS Presentation

Bill Crossley (Perdue University) briefed an overview of the Partnership to Enhance General Aviation Safety, Accessibility & Sustainability (PEGASAS) Center of Excellence (COE) work. He highlighted a number of successful projects conducted: rumble strips for GA aircraft to prevent runway incursions, heated airport pavements, rotorcraft ASIAS, Weather Technology in the Cockpit (WTIC) – 37 supported projects in total.

PEGASAS Presentation part II: future opportunities to support the FAA and discussions with SAS members

Bill Crossley identified research areas that PEGASAS could assist FAA with in the future. These included: optimization of vertiport charging delivery, impact of low state of charge and energy reserves for electric and hybrid-electric aircraft, utilization of VR simulations to train future pilots for Advance Air Mobility (AAM) aircraft, 3D modeling of weather in urban environments and real time communication, UTM system stability in dense AAM environment, leverage safety studies of helicopter operations to inform AAM/UAM operations, demand-studies for urban and regional ops / impact of corridors on demand and throughput of UAM, etc., design of novel AAM aircraft and impacts on certification/community acceptance/etc., cyber attack of autopilot system/autonomous flight, among others.

Grants Office

Darryl Groves (FAA) presented overview of the FAA COE's. There are currently five active COE's: Joint Center for Advanced Materials and Structures (JAMS), Alternative Jet Fuels and Environment (AJFE), General Aviation (GA), Technical Training and Human Performance (TTHP), Unmanned Aircraft Systems (UAS). Discussed the eligibility requirements and selection process for academic institutions. SAS inquired as to the number of BLI's that are currently utilizing the COE's – FAA took action to provide response.

Digital Twin

Chris Dyer (Pratt & Whitney), Dr. Steve Cook (Northrop Grumman), and Daniel Seal (Boeing) presented a briefing on Digital Twins from an industry perspective. The briefing focused on Airworthiness digital futures and certification opportunities, examples of digital transformation in aircraft engine manufacturing and an overview of Boeing's Model-Based Engineering Diamond and framework for digital transformation.

F&R Discussion

The following were discussed as potential F&R's: pilot incapacitation in relation to single pilot operations – link between research on crew operations and pilot incapacitation; bleed air contaminants; cockpit standard design OEM; simplified vehicle operations; leveraging COE's. SAS members took action to submit formalized F&R's to the FAA.

Closeout Discussion

Atwood and Dyer led the close-out discussion, including potential findings and recommendations in the areas discussed above. Attendees decided to hold the Summer/Fall meeting on August 13 -14, 2024 at the FAA William J. Hughes Technical Center. The purpose of the meeting is Strategic Guidance for the FAA Portfolio for FY 2027 and to hold the Winter/Spring meeting at to-be-determined location on March 18-19, 2025.

Appendix I

Attendee Sign-In Sheets (Day 1)

Attendee Sign-In Sheets (Day 2)

Appendix II

2024 Spring REDAC SAS Meeting
Agenda
March 12-13, 2024

Location: Building 10A FAA HQ, Conference Room 209A, Washington, DC
Zoom: Click to Join: https://faavideo.zoomgov.com/j/1604847758
Passcode: REDACSAS
Phone Audio Only: 1-888-924-3239; enter Meeting ID: 160 484 7758; Passcode: REDACSAS

March 12 (Tuesday)		
0800 - 0815		Arrival to virtual meeting/ Conf. room
0815 - 0830	Opening Remarks	Eric Neiderman (WJHTC Deputy Director)
0830 - 0845	Opening remarks/Purpose of the Meeting	Dave Atwood (Acting FAA DFO)
0845 - 0900	SAS Chair Opening & Report on REDAC Meeting	Chris Dyer (SAS Chair)
0900 - 0930	Overview of August 2023 F&Rs	Dave Atwood/Bruce DeCleene
0930 - 1015	AVS Cyber Security Strategy	Bruce DeCleene
1015 - 1030	Comfort Break	
1030 - 1100	Update on Aviation Safety R&D strategy	Bruce DeCleene
1100- 1130	FAA Budget Update	Tennille Blackwell/Tom Kelly
1130 - 1145	Introduction to research portfolio	Mark Orr/ Dave Atwood
1145 - 1300	Lunch Break	
1300 - 1420	Domain: Aircraft Safety Assurance • Fire and Safety Research • Propulsion and Fuel Systems • Advanced Materials/Structural Safety • Continued Airworthiness	FAA/SAS dialog
1420 - 1500	Domain: Digital Systems and Technologies • Digital System Safety • Information/Cybersecurity	FAA/SAS dialog
1500 - 1515	Comfort Break	
1515 - 1600	Domain: Environment and Weather Impact Mitigation • Aircraft Icing • Alternative Fuels for General Aviation	FAA/SAS dialog
1600 - 1630	SAS F&R discussions and feedback (Day 1)	SAS members
1630 - 1645	First Day Review – Homework Assignments	Chris Dyer/Dave Atwood
1645	Adjourn	

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Phone Audio Only: 1-888-924-3239; enter Meeting ID: 161 284 3080; Passcode: REDACSAS

March 13 (Wednesday)

0800 - 0815		Arrival to virtual meeting/ Conf. room
0815 - 0830	Review of homework from first day	All
0830 - 0930	Domain: Human and Aeromedical Factors • Aeromedical Research • Flight deck/Maintenance/System Integration Human Factors • Accessibility	FAA/SAS dialog
0930 - 1015	Domain: Aviation Performance and Planning • System Safety Management/Terminal Area Safety • Unmanned Aircraft Systems	FAA/SAS dialog
1015 - 1030	Comfort Break	
1030 - 1115	PEGASAS Presentation part I: reintroduce the CoE for GA, review of capabilities and previous projects	Bill Crossley (PEGASAS director), supported by PEGASAS site directors
1115 - 1145	PEGASAS Presentation part II: future opportunities to support the FAA and discussions with SAS members	Bill Crossley (PEGASAS director), supported by PEGASAS site directors
1145 - 1300	Lunch Break	
1300 - 1415	Grant Office- Overview of Aviation Safety Center of Excellence Programs	Daryl Groves
1415 - 1430	Comfort Break	
1430 - 1530	SAS Briefing on Digital Twins	Chris Dyer
1530 -1600	SAS F&R discussions and feedback (Day 2)	SAS members
1600 -1630	Closing remarks	Chris Dyer/Dave Atwood
1630	Adjourn	