

FEDERAL AVIATION ADMINISTRATION
Research, Engineering and Development Advisory Committee
Subcommittee on Aircraft Safety (SAS)
2021 Spring Meeting Minutes
February 23-24, 2021

The 2021 Spring Research, Engineering and Development Advisory Committee (REDAC) Subcommittee on Aircraft Safety (SAS) meeting was held virtually on February 23-24, 2021. Attendee sign-in sheets are attached in Appendix I. The meeting agenda is attached in Appendix II. This document summarizes discussions and activities that occurred during the meeting. The meeting resulted in three findings and three 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 REDAC website.

Day 1 – February 23, 2021

Introduction/Opening

The SAS Designated Federal Official (DFO) Eric Neiderman, Technical Center Director Shelley Yak, and Subcommittee Chair Terry McVenes jointly kicked off the meeting with brief opening remarks.

SAS Chair Report on Full REDAC Meeting

SAS Chair McVenes reported on the October 7, 2020 full REDAC meeting. He mentioned that the focus of the meeting was on COVID-19's impact on the FAA's research program and on the Subcommittee reports. Mr. McVenes also presented a summary of F&Rs from all subcommittees from their last meeting.

Review of recently signed MOA between ANG and AVS

Mike Paglione of ANG briefed the attendees on the Memorandum of Agreement (MOA) between the Office of Aviation Safety (AVS) and the Office of NextGen (ANG). On January 21, 2021, Associate Administrator for Aviation Safety Ali Bahrami and Assistant Administrator for NextGen Pamela Whitley signed a MOA between their two organizations on the FAA's Aviation Safety Research and Development (R&D) Program. The MOA defines the roles and responsibility of research sponsoring and performing organizations at high-level and provides success criteria for the FAA's R&D program. McVenes requested an update on the MOA and as to how it works in the next SAS meeting.

Discussion on possible changes to the industry due to COVID-19 (i.e. new normal)

Participants discussed the effect of COVID-19 on the aviation industry. Impacts on airline and airport operations may include some concerns about maintaining proficiency; being able to handle hiring and training if recovery occurs too fast; passenger confidence; the challenge of

retrofitting aircraft with sanitation stations and equipment, lockdown treatment of crews at international destinations; and a shift towards freight.

Discuss Aviation Industry Direction and Challenges – R&D Landscapes

Broadly, the R&D Landscapes provide an effective means for communicating research needs among stakeholders as well as for targeted research planning. The Landscapes document is considered a continuing process that needs to be continuously updated as the aviation ecosystem evolves. Participants discussed potential updates to the Landscape document. The potential updates included Artificial Intelligence, Machine Learning, 5G impact on using frequency spectrum, the remote pilot concept, and Windowless Cockpits.

FAA Human Factors and Systems Safety Activities Related to the Aircraft Certification, Safety, and Accountability Legislation

Kathy Abbott, FAA's Chief Scientific and Technical Advisor, briefed participants on the Boeing B-737 Max recommendation status. The FAA is fully committed to addressing all of the recommendations received from expert reviews related to the 737 MAX and Aircraft Certification processes. They will be implemented in conjunction with provisions laid out in the Aircraft Certification, Safety, and Accountability (ACSA) Act. Dr. Abbott also briefly described the ACSA Act that includes Sections titled as "Prohibition on Issuing New Type Certificates or Amended Type Certificates without addressing Pilot Response Time", "HF Education Program", "Transport Airplane Manufacturers Consider HF", "Human Factors Research", and "Center for Excellence: Automated System and Human Factors".

Fatigue related projects and Fatigue Management Working Group (FMWG) briefing

Tom Nesthus of the FAA Civil Aerospace Medical Institute (CAMI) presented an update on fatigue related projects and Fatigue Management Working Group (FMWG). Dr. Nesthus mentioned that the FAA will continue data collection and entry into the FAA Fatigue Risk Management System (FRMS) database; and will evaluate data and formulate human factors research questions to improve understanding of flight crewmember fatigue during operations that exceed the limitations of 14 CFR Part 117 regulations. The FAA will also conduct an operational study to understand pilot performance and human factors issues caused by high frequency, multiple segment, short haul flights that do not exceed the limitations of 14 CFR Part 117. This study will provide the FAA with operational short-haul fatigue data that does not currently exist. Dr. Nesthus also mentioned that the FAA plans to study fatigue risks in Long Haul and Ultra-Long-Range Flight Operations in FY23.

Dr. Nesthus mentioned that the FMWG's purpose is to formalize communication across types of operations with consideration for stakeholder concerns and priorities for aviation fatigue research, prioritize fatigue research recommendations and capitalizing on overlapping opportunities, in-house assets, pooling of resources, and industry collaboration. The FMWG meets annually with all stakeholders to re-assess priorities and research gaps relating to fatigue.

Impact of COVID-19 on CAMI Research and Development

Stacey Zinke of FAA's Civil Aerospace Medical Institute (CAMI) briefed participants on the impact of COVID-19 on CAMI research. CAMI provided aeromedical and physiological subject matter expertise on

face masks and coverings, subject matter expertise support for use of anti-malarial medications as a prophylaxis treatment for COVID-19 to a supervisory pilot, and provided guidance and recommendations for the safely transporting large quantities of dry ice on aircraft to support the safe transport and handling of vaccines. Other support includes loaning Genomics research equipment in support of developing COVID-19 Tests, and allowing blood collection supplies to be used by Harvard's Brigham & Women's Hospital for COVID-19 Testing to support the fight against COVID-19.

Update on Unmanned Aircraft System (UAS) Research

Bill Oehlschlager of FAA's NextGen Office briefed participants on UAS research and presented UAS integration operational capabilities, i.e., Expanded Operations, Small UAS Package Delivery Operations, Integrated Operations, Routine/Scheduled Operations, Large Carrier Cargo Operations, and Passenger Transport Operations. He also provided a list of research projects within each operational capability.

Air Force, Industry and FAA Collaboration

Nathan Diller of the US Air Force briefed participants on Air Force research activities.

Emerging Technologies

Wes Ryan of FAA's Aircraft Certification Office briefed participants on emerging technologies and concepts of operations, including greater personalization of aviation services such as package delivery and advanced air mobility concepts, as well as growing trust and reliance on automated systems. He mentioned that New Supersonic Aircraft, Electric Aircraft, New Materials/Manufacturing Techniques, Highly Automated Systems (Manned and Unmanned), New Operational Concepts and Expected Human Pilot Roles, and Artificial Intelligence/Machine Learning Concepts (Aircraft and Infrastructure Related Functions) are examples of what is being proposed for the certification. Ryan spoke about the challenge of technology maturation and safely moving from technical demonstration to civil trustworthiness. He also described a risk-based approach for innovation and certification.

Day 2 – February, 2021

FAA Budget Update

Elizabeth Delarosby, Manager of RE&D Financial Management, presented the FAA FY21 R,E&D budget. The FAA FY21 R,E&D request was \$170M while the enacted budget is at \$198M. Delarosby presented highlights of the enacted FY21 budget including conference language on Advanced Materials/Structural Safety, Unmanned Aircraft System Research, Community and Technical College Centers of Excellence (COE) in Small UAS Technology Training Program, and Environmental Sustainability. The established target levels for FY23, FY24, FY25, FY26, and FY27 are to be determined. Attendees discussed the robustness of the FAA prioritization process in the context of the fixed-level annual budget for the next several years.

Delarosby mentioned that the current FAA Authorization signed by the President on Oct 5, 2018 extends the FAA authorization through 2023.

Update on FY2023 Research Portfolio/Revised Process

Mark Orr, FAA AVS RE&D Manager, provided an update on the portfolio development process for FY23. Orr described the Research, Engineering, and Development Management Team (REDMT) charter and the REDMT's roles and responsibilities. He also provided a list of FY23 research Budget Line Items (BLI), including Fire Research and Safety, Propulsion and Fuel Systems, Advanced Materials/Structural Safety, Aircraft Icing/Digital System Safety, Continued Airworthiness, Flight deck/Maintenance/System Integration Human Factors, System Safety Management/Terminal Area Safety, Aeromedical Research, Unmanned Aircraft System research, and Air Fuels for General Aviation. He also described 5-year plans for each BLI.

Review of FY2023 Portfolio

Neiderman and Orr presented the FY22 research portfolio and provided answer to attendees' questions. This session lasted for about two and half hours.

Closeout Discussion

Neiderman and McVenes led the close-out discussion for the meeting. Attendees decided to hold the Summer/Fall meeting on August 10-11, 2021 and the Winter/Spring meeting on March 1-2, 2022. The location for both meetings is TBD.

Appendix 1

Attendee Sign-In Sheets

Dan Brock (FAA)	Eric Neiderman (FAA)	Srini Mandalapu (FAA)
Rany Azzi (FAA)	Mike Paglione (FAA)	Dave Atwood (FAA)
Sabrina Saunders-Hodge (FAA)	Hossein Eghbali (FAA)	Mark Orr (FAA)
Mary A Schooley (FAA)	Ezgi Oztekin (FAA)	Frank Wondolowski (FAA)
John Steventon	Chinita Roundtree-Coleman (FAA)	Alanna Randazzo (FAA)
Angela Campbell (FAA)	Don Kauffman (SAS, Honeywell)	Manny Rios (FAA)
Robert Ochs (FAA)	Chuck Perala	Ahmet Oztekin (FAA)
David Brandt (FAA)	Jim Mangie (SAS, Delta)	Terry McVenes (SAS Chair, RTCA)
Beth Delarosby (FAA)	Chris Heck (SAS, ALPA)	Bryan Lesko (SAS, ALPA)
Vasudeva Kolli (FAA)	Steve Summer (FAA)	Shelley Yak (FAA)
Doug Rodzon (FAA)	Phil Kemp (FAA)	John Crowley (SAS, US Military)
Wes Ryan (FAA)	Clark Davenport	Rich Golden (FAA contractor)
Caprice Brown (FAA)	Jon Schleifer (FAA)	Bob Ellis (FAA)
Lynn Pham (FAA)	Tara Holmes (FAA)	Carla Hackworth (FAA)
Kathy Abbott (FAA)	Tong Vu (FAA)	Paula Martinez (FAA)
Cliff Johnson (FAA)	Doneliya Deneva (FAA)	Colleen Donovan
Jacob Powers (FAA)	Carrie Bell	Laura Bachurski
Dave Polland (SAS, Boeing)	Lauren Thomas	Thomas Nesthus (FAA)
Stacey Zinke-McKee (FAA)	Michael Gorelik (FAA)	Tim Marker (FAA)
Dan Cordasco (FAA)	John Mixon (FAA)	Scott Nicholson
Akbar Sultan (SAS, NASA)	Kevin Gildea	Hilary Uyhelji
Monique Moore (FAA)	Eddie Austrian	Rick Deweese
Anthony Tvaryanas (FAA)	Eddie Miller	Susan M Jay
Robert J McGuire (FAA)	Isidore Venetus (FAA)	William Oehlschlager (FAA)
Huasheng Li (FAA)	Ayesha khatun	Joseph Pelletiere
Ken Alexander (FAA)	Natallia Safronava (FAA)	John Fisher (FAA)
Jorge Fernandez (FAA)	George Romanski (FAA)	John Bakuckas (FAA)
Louise Speitel	Kevin Stonaker (FAA)	Deepak Kamath (FAA)
Muharrem Mane (PEGASAS COE)	Ashley Awwad (FAA)	Nathan Diller (US Air Force)
Scott Nicholson (FAA)	Lauren Thomas	Cindy Ashforth (FAA)
Terry King (FAA)	Joey Jaworski	Paul Tan (FAA)
Jeff Warner (FAA)	David Galella (FAA)	John Peace (FAA)
John Doyle (FAA)	Mary A Schooley	Matt Teyssier
Dan Dellmyer (FAA)	Somil Shah (FAA)	Michael Walz (FAA)
Stephanie DiVito (FAA)	Tim Mouzakis (FAA)	Martin Crane (FAA)
Walter Sippel	Edward Weinstein (FAA)	Thomas Flournoy (FAA)
Kyle Copeland (FAA)	Traci Stadtmueller (FAA)	Cristina Tan (FAA)
Yongzhe Tian (FAA)	Natallia Safronava (FAA)	Chris Dumont (FAA)
Joey Jaworski	Alan Strom (FAA)	Timothy G Smith (FAA)
Boyd K Rodeman (FAA)	Melissa Beben	Rick Deweese
David Weed	Scott LeMay (FAA)	Bill Mills
Ian Hellstrom	Amanda Taylor	Levi Breeding
David Moorcroft	Chuck DeJohn	Bill Kaliardos
Carrie Bell (FAA)	Philip Haberlen	

**2021 Spring REDAC SAS Meeting
Agenda
February 23 – 24, 2021**

Location: Virtual meeting

Zoom: <https://faavideo.zoomgov.com/j/16180887053>

PASSWORD: 067806

February 23 (Tuesday)		
Time	Topic	Presenter(s)
0815 - 0830		Arrival to virtual meeting
0830 – 0845	Opening Remarks	Shelley Yak
0845 - 0900	Opening remarks/Purpose of the Meeting	Eric Neiderman
0900 - 0915	SAS Chair Opening & Report on REDAC Meeting	Terry McVenes
0915 - 0945	New MOA briefing	Eric Neiderman, Mike Paglione, Mark Orr, Anthony Tvaryanas
0945 - 1000	Comfort Break	
1000 - 1045	Discuss possible changes to the industry due to COVID-19 (i.e. new normal)	All members - members come prepared to discuss (homework)
1045 - 1130	Discuss Aviation Industry Direction and Challenges	All members - members come prepared to discuss (homework)
1130 - 1145	Overview of August 2020 F&Rs	Eric Neiderman/Terry McVenes
1145 - 1215	F&R action: <ul style="list-style-type: none"> FAA Human Factors and Systems Safety Activities Related to the Aircraft Certification, Safety, and Accountability Legislation 	Kathy Abbott
1215 - 1300	Lunch	
1300 – 1345	F&R action: <ul style="list-style-type: none"> Fatigue related projects Fatigue Management Working Group briefing 	Tom Nesthus
1345 - 1415	F&R action: <ul style="list-style-type: none"> Impact of COVID-19 on R&D research Research on continued commercial passenger operations during pandemics 	Eric Neiderman, Stacey Zinke
1415 -1430	Comfort Break	
1430 - 1500	Update on UAS Research	William Oehlschlager
1500 - 1530	Air force, Industry and FAA collaboration	Nathan Diller from Air Force
1530 – 1600	Emerging technologies	Wes Ryan
1600 – 1630	First Day Review – Homework Assignments	
1630	Adjourn	

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February 24 (Wednesday)		
Time	Topics	Presenter(s)
0745 - 0800		Arrival to virtual meeting
0800 - 0830	Review of homework from first day	All
0830 - 0900	FAA Budget Update	Beth Delarosby
0900 - 0930	Update on FY2023 research portfolio/revised process	Mark Orr
0930 - 0945	Comfort break	
0945 - 1000	Introduction to the review of FY2023 portfolio	Eric Neiderman/ Mark Orr
1000 - 1045	Domain: Aircraft Safety Assurance <ul style="list-style-type: none"> • Fire and Safety Research • Propulsion and Fuel Systems (including Aircraft Catastrophic Failure) • Advanced Materials/Structural Safety • Continued Airworthiness (Structures) • Continued Airworthiness (Systems) 	Mark Orr/ Eric Neiderman
1045 - 1100	Domain: Digital Systems and Technologies <ul style="list-style-type: none"> • Digital System Safety 	Mark Orr/ Eric Neiderman
1100 - 1115	Comfort break	
1115 - 1130	Domain: Environment and Weather Impact Mitigation <ul style="list-style-type: none"> • Aircraft Icing • Alternative Fuels for General Aviation 	Mark Orr/ Eric Neiderman
1130 - 1150	Domain: Human and Aeromedical Factors <ul style="list-style-type: none"> • Aeromedical Research • Flight deck/Maintenance/System Integration Human Factors 	Mark Orr/ Eric Neiderman
1150 - 1230	Domain: Aviation Performance and Planning <ul style="list-style-type: none"> • System Safety Management/Terminal Area Safety • Unmanned Aircraft Systems 	Mark Orr/ Eric Neiderman
1230 - 1300	SAS F&R discussions and feedback/Closing remarks	Terry McVenes/ Eric Neiderman /Mark Orr
1300	Adjourn	