Research, Engineering, and Development Advisory Committee (REDAC)
National Airspace System (NAS) Operations Subcommittee | MINUTES

Session: *Summer/Fall 2024*
Dates: *September 4-5, 2024* (2 days)
Location: *Hybrid Meeting (In-Person & Zoom)*
FAA Building 10A, Orville Wright Building, Washington, D.C.
Conference Room 8B
Purpose: *Review of FY24-26 Proposed Portfolio; Provide Guidance and Recommendations; Informational Briefings or Updates*
Facilitator: *Kristina Carr, Designated Federal Officer (DFO)*
Chairperson: *Jim Kuchar*
Note Takers: *Jim Kuchar*
Upcoming Meetings: *March 11 – 12, 2025 (Winter/Spring 2025)*
September 9-10, 2025 (Summer/Fall 2025)

Day 1 – September 4, 2024

Welcome / Review of Actions

Presenters: *Jim Kuchar / Kristina Carr*
Summary: Dr. James Kuchar and Ms. Kristina Carr (Designated Federal Officer) welcomed the NAS Operations subcommittee members and FAA participants to the meeting. Ms. Carr reviewed the two-day meeting agenda and the status of action items. Dr. Kuchar noted that all of the subcommittee's recommendations from the Spring 2024 meeting had been addressed and responded to in a positive way by the FAA.

Presentation: 1. Director Remarks

Presenter: *Eric Neiderman (on behalf of Shelley Yak)*
Summary:

Mr. Eric Neiderman welcomed the subcommittee and provided a brief review of several topics including the FAA's budget which was was signed in March 2024 and the reauthorization passed in May 2024. He then reviewed topics in the reauthorization act that were specifically relevant to the NAS Operations subcommittee. Mr. Neiderman commented that the FAA's NextGen program will be sunsetting at the end of calendar year 2025 and provided an overview of the DOT Strategic Plan 2022-2026 including strategic goals and grand challenges. Next, Mr. Neiderman introduced the new DOT Scientific Integrity Policy including a new Scientific Integrity Committee and mentioned that REDAC revitalization is continuing through expanding committee membership. New members have been approved by DOT and FAA and are currently under review at White House.

Presentation: 2. Budget Briefing

Presenter: *Tennille Blackwell*
Summary: Ms. Tennille Blackwell reviewed FAA RE&D FY2022-2026 budget including changes from OMB and differences between the budget request and House and Senate marks.

Presentation: 3. Enterprise Concept Development
Presenter: *Hamza Abshir*

Summary: Mr. Hamza Abshir reviewed the Enterprise Concept Development portfolio including Responsible AI Framework Analysis and Smart Airports. Dr. Bruce Holmes asked whether the smart airport activity includes remote tower research and development. Mr. Abshir noted that including remote tower work in this portfolio is yet to be decided. The subcommittee requested to receive the Responsible AI Framework document prior to its Spring 2025 meeting.

Presentation: 4. New Air Traffic Management Requirements
Presenter: *Casey Hines*

Summary: Mr. Casey Hines reviewed the New ATM Requirements portfolio which includes: Air-to-Ground System Wide Information Management (SWIM) and is also known as Connected Aircraft; Weather Transition; UAS Integration and qualification of 3rd party weather information providers; Flight and Flow Information for a Collaborative Environment; and development of a certification framework for Artificial Intelligence (AI) and Machine Learning (ML) in the National Airspace System (NAS). Dr. Akbar Sultan asked if there will be additional 3rd party qualification activities such as those needed for separation assurance or communications. Mr. Hines replied that such work is planned for future, overall qualification development. The subcommittee noted that it would like to see more detail on what is being done (e.g. prioritized list of weather requirements and how it changes year to year) at upcoming briefings.

Presentation: 5. Informational Briefing: New ATM Project – AI Certification Framework Update
Presenter: *Kanvasi "TJ" Tejasen / Rebekah Yang / John Crissman*

Summary: Ms. "TJ" Tejasen provided an overview of the FAA's AI Certification Framework. She was joined by Rebekah Yang who reviewed the motivation for the framework. Mr. John Crissman discussed a use case applied to runway configuration assistance. Dr. Kuchar asked what example risks are being explored by the framework. Mr. Crissman answered that the work considers general AI development process risks, e.g. ensuring there are sufficient training data, or separation of training and testing data sets. He then also provided an overview of a Digital Information Platform ML Airport Surface Model application.

Presentation: 6. AVS AI Roadmap Update
Presenter: *Trung Pham*

Summary: Dr. Trung Pham provided an overview of the FAA's AI Roadmap on AI Safety. This included a review of the history behind the development of the roadmap and meetings that informed its contents, culminating in its initial release in August 2024. Dr. Bruce Holmes asked what will be in the FAA Technical Document (vice the roadmap document) that is planned to be developed. Dr. Pham answered that the technical document will describe the processes needed to conduct validation and verification of AI systems.

Presentation: 7. Informational Briefing: Strategic Outlook for Aviation Research (SOAR) Framework
Presenter: *Eric Neiderman*

Summary: Mr. Eric Neiderman provided an update on the SOAR charts, starting with an overview of FAA strategic planning and the National Aviation Research Plan (NARP). He then walked through an example SOAR chart for one of six research thrusts.

Presentation: 8. Runway Incursion Reduction Program (RIRP)
Presenter: *Rob Higginbotham / Ingrid Rinker*

Summary: Mr. Robert Higginbotham reviewed the Runway Incursion Reduction Program (RIRP) which is focusing on a direct-to-pilot indication to help reduce the frequency and severity of runway

incursions. He provided an overview of the Runway Incursion Prevention through Situational Awareness (RIPSA) effort at San Antonio airport. RIPSA is adapting existing Runway Status Lights algorithms to operate with a new surface movement radar and ADS-B to trigger runway entrance lights at certain runway/taxiway intersections.

Presentation: 9. Informational Briefing: UAS/AAM Integration Research Update
Presenter: *Karin Olson*

Summary: Ms. Karin Olson provided a brief update on the FAA's UAS & AAM integration research activities and walked through a set of R&D efforts that related to NAS Operations. She noted that the research plan is being continually reviewed and updated but was not sure whether a releasable version was available for the subcommittee.

Presentation: 10. Informational Briefing: FAA ASSURE COE Program Update
Presenter: *Karen Davis*

Summary: Ms. Karen Davis provided an update on the ASSURE UAS Center of Excellence which includes 19 core member universities and 10 affiliates, and which involves industry through 1:1 matching-fund requirements. The current period of performance of ASSURE ends in 2025. She also gave an outline of the range of current and proposed research activities in ASSURE. Dr. Holmes asked whether the large-UAS industry community is being involved, as they don't appear to be part of the set of listed collaborators. Ms. Davis answered that they will be more involved in upcoming projects, as the focus on large-UAS is increasing. Dr. Kuchar noted that the 1:1 matching fund requirement for the COE excludes direct collaboration with certain organizations such as Federally Funded Research and Development Centers, which may restrict the scope and depth of its work.

Presentation: Findings and Recommendations Discussion

Presenter: *Jim Kuchar / Subcommittee*

Summary: The Subcommittee reviewed the first day's presentations and identified candidate areas of focus for findings and recommendations. Discussions were then adjourned until the following day.

Day 2 – September 5, 2024

Presentation: 11. Weather Program
Presenter: *Tammy Flowe / Randy Bass / Gary Pokodner*

Summary: Ms. Tammy Flowe and Mr. Randy Bass provided an overview of the Weather Research portfolio. Safety, efficiency, delays have been reduced from 66% - 57% between 2007 - 2019. Funding in FY23 was reduced when combining the Weather Research Program with the Weather Technology in the Cockpit (WTIC) program, but will be restored in FY24+. Ms. Flowe noted that part of the portfolio is starting to evaluate the benefits of access to raw data from Automated Surface Observation Systems (ASOS) (versus what is currently available through processed information), which may for example aid in gust speed observation and forecasting. Work has been growing in space weather research, e.g. for radiation exposure, communications, and GPS impacts. Work on volcanic ash detection and wind detection and forecasting was deferred for one year due to budgetary constraints. Mr. Holmes raised the potential for expanding research on networked airborne turbulence information which might, in the near term, improve conventional aviation safety and which in the longer term might inform and improve the robustness of AAM in adverse weather conditions. Ms. Flowe noted that much of the airborne data are currently proprietary within the airlines and so

data sharing may be an issue to resolve. There is an RTCA effort to specify air-to-air weather data transmission.

Mr. Gary Pokodner reviewed the Weather Technology in the Cockpit research portfolio which is focused on General Aviation weather information. Work is also starting on qualifying data sources and setting requirement for systems that could be used for AAM or UAS operations. Research efforts include the Cockpit Cognitive Assistance Tool, ADS-B Vertical Rate, Pilot Understanding Observation Uncertainty, Weather Data and Representativeness, and the Flight Profiler for Preflight Briefings.

Presentation: 12. NextGen – Wake Turbulence
Presenter: *Chris Lawler*

Summary: Mr. Chris Lawler reviewed the NextGen – Wake Turbulence portfolio, which includes work on wake generation and encounter response assessment, development of a candidate absolute wake encounter metric, collection of wake data at San Francisco and JFK airports, analysis of enroute aircraft wake generation data, providing wake recommendations for Innovate28 modeling efforts at the FAA Technical Center, and developing a Wake Hazard Avoidance region for air traffic control. Mr. Sultan asked whether work has begun on modeling or collecting data on multi-rotor electric vertical takeoff and landing (eVTOL) aircraft and how they may react to wake encounters. Mr. Lawler answered that a new methodology is being developed to model and evaluate the wake encounter dynamics of those types of aircraft. Dr. Matthias Steiner asked whether wakes due to buildings would also be considered in future research. Mr. Lawler answered that such analyses are not currently within the planned program scope.

Presentation: 13. Operations Concept Validation & Infrastructure Evolution (ATDP)
Presenter: *Jorge Rodriguez Cifuentes / Zachary Dussault*

Summary: Mr. Jorge Rodriguez Cifuentes provided an update on the Operations Concept Validation and Infrastructure Evolution portfolio. The main FY24 accomplishment was a market analysis performed for the NAS Integration of Transiting Operations (NITRO) related to upper-E operations. Work in FY25 and FY26 will include other new entrants including space launch and reentry, Upper-E traffic management, UTM and interoperability with conventional ATC, and UAM airspace and CNS needs. Dr. Kuchar asked whether the space launch and recovery work is being coordinated with the FAA's Office of Commercial Space Transportation (AST). Mr. Zachary Dussault answered that there is no direct collaboration, but there is some interaction via the ATC System Command Center. Mr. Dussault also provided a review of the recently completed market analysis for Upper Class A and Upper Class E airspace. Dr. Kuchar asked whether the market analysis has also considered (or will consider) the baseline impact on air traffic control and conflicts with conventional air traffic. Mr. Dussault answered that such analysis will be starting later, with a focus on balloon space tourism as an initial use case.

Presentation: 14. Informational Briefing: Office of Commercial Space Transportation R&D Plan Update
Presenter: *Brian Rushforth*

Summary: Mr. Brian Rushforth provided an update on the Office of Commercial Space Transportation (AST) research portfolio, with highlights specifically on Liquid Oxygen (LOX) / Methane explosiveness research, a vessel traffic model, and human spaceflight. He noted that plans for a research alliance (proposed earlier) are on indefinite hold due to budget constraints. Work on LOX/Methane has been delayed due to contracts issues and also incurred significantly greater cost than anticipated ($8M vice $2M estimate). As a result, new research projects are being delayed or cut and those projects will focus on licensing or standards related to launch site safety. Activities such as

airspace hazard areas that impact air traffic operations have been transferred to the FAA Air Traffic Organization (ATO).

Presentation: 15. Enterprise Human Factors
Presenter: *Tara Gibson*

Summary: Ms. Tara Gibson provided an overview of the Enterprise Human Factors portfolio. Accomplishments include work on trajectory based operations (TBO) impact on traffic management units, human readiness level adaptation and implementation to enhance acquisition management system processes, a NAS mental model framework, and TBO training methods.

Presentation: 16. Air Traffic Control/Technical Operations Human Factors
Presenter: *Tara Gibson*
Summary: Ms. Tara Gibson provided an overview of the ATC/Technical Operations Human Factors portfolio. A common theme for this portfolio relates to air traffic controller training. Work products include exploring the impact of new facilities on the controller workforce, integration of human factors engineering into system development, and a review of augmented/virtual/extended reality technologies.

Presentation: 17. Workshop on FAA Aviation Safety Research Strategy
Presenter: *Bruce Holmes / Akbar Sultan / Jim Kuchar*

Summary: The subcommittee discussed the recent AVS Safety Research meeting which was held at the Volpe National Transportation Research Center in Cambridge, MA on 27-28 August. Mr. Sultan also provided a brief summary of the NASA Communications Navigation Surveillance (CNS) and Security Workshop held at NASA Glenn Research Center on 29-30 August. This is anticipated to have been the first of a continuing series of CNSS workshops to be hosted by NASA in the future.

Presentation: Findings and Recommendations Discussion
Presenter: *Subcommittee*

Summary: The Subcommittee discussed findings and recommendations and identified documents and briefings to be included for the next meeting. That meeting will be held on March 11-12, 2025. Assignments were made to begin drafting findings and recommendations for the Fall full REDAC meeting on October 16, 2024. The Subcommittee also selected the date for the Fall 2025 meeting, which was set for September 9-10, 2025.

The Subcommittee requested the following documents prior to the next meeting:

- Aviation-Specific Responsible AI Framework (Steve Bradford)
- Latest version of the UAS/AAM Integration Research Plan. The subcommittee's most recent version of that document is titled "Unmanned Aircraft Systems (UAS) / Advanced Air Mobility (AAM) Integration Research Plan (2021-2026)" and was provided to the subcommittee in Fall 2022 by Sabrina Saunders-Hodge.

The Subcommittee also discussed a desire to receive the following information topics for briefings in the Spring 2025 meeting:

- Invited briefing from the General Aviation Manufacturers Association (GAMA) Electric Propulsion & Innovation Committee (EPIC) CNS working group on industry perspectives for a CNS roadmap for supervised flight operations of automated systems. This briefing can be provided by Mr. Jens Hennig (GAMA).
- Future spectrum issues for aviation including 5G/6G interference, vehicle-to-vehicle communications, C Band spectrum, etc. Suggested POC is Ms. Sandra Wright, FAA.
- Atlantic City airport remote tower testbed status and plans [POC Mr. Eric Neiderman]

- Deep dive on architecture and operating environment for Synchronization of Air/Ground SWIM Connected Aircraft including where/how does the planned App Store fit in as part of the architecture. The subcommittee would like to see information including engineering wiring diagrams and not just textual descriptions. [Steve Bradford]
- Update on AI Certification framework, including more detail on specific questions and lists of items used in quantifying compliance. Also of interest is understanding how specifically is the certification decision going to be made including decision factors, decision thresholds, etc. [TJ Tejasen]
- NASA AOSP update: NASA would provide an update on their activities in AAM through the joint interagency RTT, flight trials on sustainability, and airline weather rerouting at the North Texas research site [Mr. Akbar Sultan or designee]

Presentation: Recap and Closing
Presenter: *Jim Kuchar / Kristina Carr*

Summary: Jim Kuchar and Kristina Carr thanked the Subcommittee and FAA participants for their time and efforts in planning for and conducting the meeting. The meeting was adjourned at approximately 3:30pm.

REDAC / NAS Operations Subcommittee Meeting Agenda

Purpose: Review the R&D portfolio developed based on the subcommittee's strategic guidance from the Fall Meeting. The FAA briefs the proposed R&D FY+2 years.

Day 1: Wednesday, September 4th

Conference Room:

Building 10A, Orville Wright Building, 800 Independence Ave SW, Washington, DC 20591
8th Floor, Conference Room **8B** (see Page 4 for room location)
Zoom/Dial-in: See Page 3 for phone and video conferencing details

8:45am	Welcome / Review of Actions	Jim Kuchar / Kristina Carr
8:55 am	1. Director Remarks	Eric Neiderman
9:05 am	2. Budget Briefing	Tennille Blackwell
9:30 am	3. Enterprise Concept Development	Hamza Abshir
10:00 am	4. New Air Traffic Management Requirements	Casey Hines
10:30 am	Break	
10:45 am	5. AI Certification Framework Update	Kanvasi "TJ" Tejasen
11:15 am	6. AVS AI Roadmap Update	Trung Pham
12:00 pm	Lunch	
1:00 pm	7. SOAR Framework	Eric Neiderman
1:45 pm	8. Runway Incursion Reduction Program (RIRP)	Rob Higginbotham / Ingrid Rinker
2:15 pm	Break	
2:30 pm	9. UAS & AAM Integration Research Update	Sabrina Saunders-Hodge
2:45 pm	10. FAA ASSURE COE Program Update	Bill Oehlschlager
3:15 pm	Findings and Recommendations Discussion	Subcommittee

Fall 2024 REDAC NAS Ops Agenda

Day 2: Thursday September 5th

Conference Room:

Building 10A, Orville Wright Building, 800 Independence Ave SW, Washington, DC 20591
8th Floor, Conference Room **8B** (see Page 4 for room location)
Zoom/Dial-in: See Page 3 for phone and video conferencing details

8:45 am	Subcommittee Reconvenes	Jim Kuchar
9:00 am	11. Weather Program	Tammy Flowe / Gary Pokodner
10:00 am	Break	
10:15 am	12. NextGen – Wake Turbulence	Jillian Cheng
10:45 am	13. Operations Concept Validation & Infrastructure Evolution (ATDP)	Guillermo Sotelo
11:15am	14. Office of Commercial Space Transportation R&D Plan Update	Brian Rushforth
12:00 pm	Lunch	
1:00 pm	15. Enterprise Human Factors	Tara Gibson
1:30 pm	16. Air Traffic Control/Technical Operations Human Factors	Tara Gibson
2:00 pm	Break	
2:15 pm	Workshop on FAA Aviation Safety Research Strategy	Jim Kuchar / Bruce Holmes/ Joe Bertapelle
2:45 pm	Findings and Recommendations Discussion	Subcommittee
4:00 pm	Adjourn	

Legend Key:

	Informational Briefing or Update

	9/4 Attendees	9/5 Attendees
1	Adam Jordan	Adam Ohara
2	Adam Ohara	Akbar Sultan
3	Akbar Sultan	Alexandria Papantoniou
4	Alexandra Pantoniou	Alexis Jones
5	Alexis Jones	Anthony Pocchio (ctr)
6	Asal Beyki	Bill Kaliardos
7	Bill Kaliardos	Bob Humbertson
8	Bob Humbertson	Bria Johnson
9	Brandon Graham	Brian Rushforth
10	Bria Johnson	Bruce Holmes
11	Brian Powers	Caitlin O'Kelly
12	Bruce Holmes	Chinita Rountree Coleman
13	Carl Bernsten	Chris Lawler
14	Casey Hines	Deborah Shaibe
15	Eddie Austrian	Eddie Austrian
16	Eddie Sierra	Eric Neidermier
17	Emily Stelzer	Gary Pokodner
18	Giwa Okoneme	Giwa Okoneme
19	Hamza Abshir	Hamza Abshir
20	Jerry Crutchfield	Jerry Crutchfield
21	Jim Kuchar	Jim Kuchar
22	John Crissman	Jon Schleifer
23	Kenvasi Tejasen	Jorge Rodriguez Cifuentes
24	Kristina Carr	Kevin Siragusa
25	Latoya Smith	Kristina Carr
26	Mark Hale	LaToya Smith
27	Mark Palmer	Mark Hale
28	Marlo Allen	Marlo Allen
29	Mathias Steiner	MaryAnn Bernacki (ctr)
30	Monica Alcabin	Mathias Steiner
31	Phil Yeung	Monica Alcabin (Boeing)
32	Purvi Sharma	Purvi Sharma
33	Rebekah Yang	Randy Bass
34	Reshma Kumar	Reshma kumar
35	Tara Gibson	Tammy Flowe
36	Tennille Blackwell	Tara Gibson
37	Tiayonna Hawkins	Tennille Blackwell
38	Victor Quach	Tiayonna Hawkins
39	Wyatt Element	Trung Pham
40	Chinita Roundtree-	Wyatt Element
	Coleman	Zachary Dussault