

Minutes

REDAC (Research, Engineering, and Development Advisory Committee) Subcommittee on Human Factors (HF) Winter/Spring 2024

Meeting date | *March 26-27, 2024*

Meeting location | *Washington, DC, FAA Headquarters-Room 7B*

Purpose: Review the RE&D accomplishments and expectations for FY24, and research plans through FY27, and advise FAA on future research.

Tuesday, March 26, 2024

Welcome / Introductions and Update from Full REDAC Committee Meeting | Presenter
Eric Neiderman, FAA Tech Center Deputy Director, Dr. Barbara Holder, Embry-Riddle University, HF Subcommittee Chair, and Bill Kaliardos, FAA, Designated Federal Official

Dr. Barbara Holder welcomed the committee. Dr. Bill Kaliardos (Designated Federal Official, DFO) reviewed the agenda. The meeting was called to order.

Eric Neiderman provided an overview of the kickoff topics for the consideration by the REDAC subcommittee. He reviewed active and planned HF research portfolios and HF research beyond standard portfolios.

The subcommittee discussed:

- The acts passed as part of the FAA Reauthorization could direct the type of research.
- What will be the role for the expanded REDAC membership.

Barbara went over the key objectives of the HF REDAC subcommittee meeting and Phil Smith provided an overview of the findings and recommendations (F&R) from the full REDAC subcommittee meeting in August 2023.

FAA Update on Aviation Safety R&D Strategy | Presenter *Bruce DeCleene, FAA Director Office of Senior Technical Experts*

Bruce DeCleene provided an update on the Aviation Safety Research strategy. Bruce recommends that a Strategic Thrust Working Group is created to get feedback and develop the Strategic Research Thrust Areas before the next REDAC meeting.

The subcommittee discussed:

- Automation complexity differences between humans and AI.

- How do the strategic thrusts translate in an organizational structure?
- How can we assure that organizationally, Aviation Safety is highly visible across broader topics.

Break, back at 10:50

Core Flight Deck Human Factors Research | Presenter *Dr. Chuck Perala, FAA Core Flight Deck HF Portfolio Manager*

Bill introduces Dr. Chuck Perala to brief the subcommittee on the “Core” Flight Deck Human Factors research portfolio. Chuck provided an overview of the program that addresses research, engineering, and development requirements defined by technical sponsors in the Aviation Safety (AVS) organization. Requirements are driven by the human factors needs of FAA Aircraft Certification (AIR) and Flight Standards (AFX, AFS) personnel.

The subcommittee discussed:

- Clarifying the research question regarding Guidance and standards for Supersonic Aircraft Operations.
- In the Adapting Training and Flight Operations to Emerging Risks research, how are the emerging risks identified?
- What does Dual Pilot Crew in Alternate Location Using Natural Vision in a Transport Airplane mean exactly and who is asking for this research?
- *Chat question:* “What university is conducting OC1 emerging Pilot workforce study/research regarding VR head-worn devices with 22 civilian pilot students enrolled in a collegiate aviation program?”
- Should we spend taxpayer money on Improving General Aviation Pilot Response to Unexpected Events and what is the driver behind this?
- *Kathy Abbott added a link to the GAJSC in the chat:* <https://www.gajsc.org/sc/>
- Advanced Alerting Systems research performers.
- Who would be the focus of the single source reference document for Flight Standards.
- Aircraft Evaluation Division (AED) Evaluation of Aircraft Certification (AIR) Assumptions about End User Characteristics, does this include any user populations other than pilots?

Lunch Break, back at 1:00

FAA Budget Briefing | Presenter Tom Kelly, FAA RE&D Budget Formulation Manager

Bill introduced Tom Kelly, the RE&D Budget Formulation Manager, he provided an overview of the FAA 2022-2026 RE&D budget.

The subcommittee discussed:

- Aviation Grant Management

FAA Flight Deck HF Research, NextGen portfolio | Presenter Dr. Chuck Peralá, FAA Core Flight Deck HF Portfolio Manager

Dr. Chuck Peralá briefed the subcommittee on behalf of Victor Quach, BLI manager of the NextGen Air/Ground Integration Human Factors research portfolio.

The subcommittee discussed:

- Multimodal Controls for Flight Deck Systems-Speech recognition/Voice Activated Controls and the types of aircraft used for the research.
- Reasons for the gap between existing Connected Aircraft research and research starting in FY26 and the direction the subcommittee would suggest to change the gap.
- Mapping out research plans and AI interactions. Another briefing is suggested.

Break, back at 2:15

August 2023 Winter/Fall F & R Discussion-ALL

- Competency Based Training and Assessment Timeline (CBTA)-#2
 - Concerns about the pace of implementation
 - Interactions with ICAO on CBTA
 - Competency Based Training and Assessment leans more towards assessment than training.
 - 121 operator and CBTA: does the FAA have enough information to evaluate that?
 - The subcommittee asks if they can leave it open or reissue it with similar language.

Action: Find out the latest status of the CBTA at the next meeting.

- Training and Checking Program Changes due to Changing Pilot Entry-Level Experience and Skills-F&R #4
 - From the FAA perspective, is it an emerging risk?
 - Concern about proficiency gaps.
 - Pilot training, demographic changes and tracking the challenges.
 - FAA could reevaluate the assumptions that the training program was built on.

- How to show the effectiveness of training.

Barbara suggests the subcommittee continue to focus on this and to articulate a clear research need to the FAA. Close this F&R and draft an observation that reflects the conversation.

- AI/ML Human Factors Research Plan #3
 - Waiting until more research is completed to assess what additional research is needed.
 - Discussion with TJ Tejasen from the Technology Development and Prototyping Division (ANG-C5) on what the next steps would be to include more Human Factors.
 - The subcommittee would like to have more formal discussions on the topic.
 - Should they revisit all areas of AI?

ACTION: Draft a request for another briefing at the next meeting.

BREAK, until 3:33

FAA Weather-Technology-in-the-Cockpit (WTIC) research update (focused on HF) |
Presenter -Dr. Ian Johnson, FAA HF Lead, WTIC

Dr. Ian Johnson presented the Weather-Technology-in-the-Cockpit (WTIC) research update.

The subcommittee discussed:

- Is there any research in the Air Transport realm?
- The types of AI research in WTIC.

Last Meeting's F &R #1 and New Recommendations Discussion-ALL

- Urban/Advanced Air Mobility Research Timeline #1
 - Does the subcommittee want to comment on the overabundance of AAM research
 - Emerging entrants and automation complexity are AVS strategic thrusts that might be relevant to AAM research
 - Kathy Abbott should have more information about their research by the next meeting.

ACTION: Ask for a briefing on the resolution of what was proposed and what is going to be supported by the budget.

New F & Rs

- 1) Angel and Maggie will draft a new F&R around alerting prioritization project.

- 2) Maggie Ma would like an F & R about the AI maintenance environment and how can they deliver the content better.
- 3) Chris will draft an observation about the research gap in Connected aircraft.
- 4) Steady supersonic Flight Ops needs to be clarified. Should it be a Subcommittee observation?

Next Meeting Dates

2024 Summer/Fall is August 21, 2024.

Subcommittee votes for the next Winter/Spring March 25-26, 2025.

End of day 1 at 4:38 pm

Wednesday, March 27, 2024

General Review of Day 1 | All

Barbara welcomed everyone to Day 2 of the REDAC and discussed the findings and tentative plan from Day 1.

- Maggie and Angel to write an F & R on alerting.
- Phil will write an action for another briefing on AI/ML
- Positive F&R on maintenance training
- Chris to write an observation on Connected Aircraft
- The formal funding process and the budget gaps for connected aircraft

The subcommittee discussed:

- Human Factors having its own AVS strategic thrust.
- If the subcommittee should comment on the FAA resources and funding process as opposed to commenting on the end results.

FAA Enterprise Human Factors and ATC/Tech Ops Research, NextGen | Presenter *Karl Kaufmann, ATC/Enterprise HF Portfolio Manager*

Karl Kaufmann briefed the subcommittee on the current FY24 NextGen Enterprise Air Traffic Human Factors research and the planned activities for beyond FY27.

The subcommittee discussed:

- Human Readiness Levels (HRL) and the acquisition (AMS) process.
- HRL discussions at the technical exchange meeting (TIM).
- Release date of the HRL Adaptation and Implementation Opportunities to Enhance AMS Process Draft Report.
- HF evaluations of AI technology in Traffic management.
- Concept Development work turning into actual acquisitions.

- HF not having its own checkbox on the JRC.
- Clarifying the Emerging Focal Areas in FY26.

Break, back at 10:52

FAA Enterprise Human Factors and ATC/Tech Ops Research, CORE | Presenter Karl Kaufmann, ATC/Enterprise HF Portfolio Manager

Karl Kaufmann briefed the subcommittee on the ATC/Tech Ops Human Factors research and the planned activities for the near term.

The subcommittee discussed:

- *Chat question:* Is there anyone measuring or monitoring how well those stress management techniques are being reinforced while training at the facility?
- Detecting high workload in the ATC Task and workload management research
- Cognitive Skill Degradation
- Increased use of AR/VR and remote learning alternatives to reduce training cost while improving training effectiveness.
- If the training research will be ready in time to help train all the new pilot hires.
- The disconnect between the Flightdeck side and the Air Ground side; what is being done with the Air-Ground research BLI (i.e., NextGen flight deck HF research)?

Kathy Abbott had an update on her discussion with Bruce DeCleene. He asks the subcommittee to provide him with a spreadsheet of research to prioritize for AVS Safety funding.

- The subcommittee discussed:
- Whether they should write an F&R or an observation
- Which research to add to the list.
- Homework for subcommittee-consolidate the OCs that need prioritizing and put them into a spreadsheet.

Lunch Break -Back at 1:00

Overview of the Center of Excellence on Technical Training and Human Performance (focused on HF)

|Presenter Karen Callihan, FAA, CoE TTHP Program Manager

Karen Callihan provided an overview of the Center of Excellence on Technical Training and Human Performance research efforts and their focus on Human Factors.

The subcommittee discussed:

- Publishing Technical reports from completed projects.
- Consolidating all the reports in one place for ease of use.
- Avoiding research overlap.
- How are the AVS projects prioritized through the AVS R&D Process.
- How the ATC Visual Search Pattern research relates to this research.

Bill showed the subcommittee a spreadsheet of research done by AAM/UAS and the different projects were discussed.

NEW RECOMMENDATIONS Discussion | ALL

- Finding: Draft of Alerting recommendation
- Finding-Support of Maintenance training portfolio
- Finding-Response to Bruce's request for a list of priorities Human Factors subcommittee has for AVS Safety research.
- Actions: Another AI/ML Learning briefing from TJ Tejasen from ANG-C5 for status
- Observations
 - Chris to write an observation on the gaps in the Connected Aircraft research.
 - AVS strategy does not have HF as part of the strategic thrusts and risks being overlooked.
 - F&R #4 from last meeting- Training and Checking Program Changes due to Changing Pilot Entry-Level Experience and Skills. The subcommittee feels that even after the F & R there is still significant risk that should be considered.
- A request was made to standardize the presentations for the REDAC meetings. They preferred the way that Chuck Perala's slides presented the dates, research information, and color-coded the funding.

Break, back at 2:15

Sampling of NASA Aviation Human Factors Research | Presenter Cheryl Quinn, NASA, Deputy Director for the Airspace Operations and Safety Program (AOSP)

Cheryl Quinn presented a sampling of the NASA aviation research and where Human Factors fits in.

The subcommittee discussed:

- What NASA is doing with AAM/UAS vehicles using commercial airports.
- Human Factors Research into Supersonic boom noise.

- Bill asks for a brief about the Traditional Airspace Operations at the next meeting.
- Pilot monitoring research collaboration with the FAA
- Status of report on Emerging Operations and UAM procedures
- The amount of overlap and complementary research between NASA and FAA

Break, back at 3:20 pm

Sampling of MITRE Aviation Human Factors Research | Presenter *Chris DeSenti MITRE, Manager Transportation Infrastructure, Spectrum, and Cyber Evolution*

Chris DeSenti, Patty McDermott and Steve Estes provided a sampling of the Human Factors research at MITRE.

Chris DeSenti presented MITRE's focus and expectations of CAASD. He also highlighted MITRE's laboratories that offer AI, Autonomous driving, Small Robotics. Patty McDermott talked about MITRE's Human-AI enabled Traffic Flow Management (TFM) work. Steve Estes provided an overview on MITRE's Digital Cognitive assistance for Pilots research work.

The subcommittee discussed:

- The role of AI in supporting the collaboration between the TMUs and the Command center.
- The concern AVS has about the risk of personification of AI systems, such as with digital "copilots" and "human-AI teaming".
- Digital Copilot Surface Safety and the degree of user modeling.

Request for List of Priorities for Bruce DeCleene/Subcommittee Discussion | All Attendees

The subcommittee went over the spreadsheet that Chuck sent with the Research Operational Capability (OC) numbers, Research Topic area and Project titles.

- Expanding the list to include 2025.
- Asked for more details on the 2024 priorities.
- Maggie Ma would like to include the color coding to show the funding levels; they will fill that in and send it to Barbara.
- Barbara will send the draft list out to the subcommittee for comment and then the subcommittee will figure out next steps.
- Kathy asks for more details on the FY24 status of each activity on an additional slide.
- Asked Dave and Phil to have their observation about last meeting's F & R #4 by Friday.

Barbara will gather dates for meeting, summarize F & R and send it out on Friday.

Meeting Adjourned-4:34 pm ET Day 2

DRAFT Findings and Recommendations Winter/Spring 2024 (These are potential F&R topics, to be refined in the coming weeks)

Recommendation 1: Advanced Flight Deck Alerting Systems

Due to the criticality and urgency for guidance and design standards for new and advanced crew alerting systems, the HF Subcommittee recommends:

- Funding for this project should be prioritized to ensure this work begins in a timely manner.
- The complexity of the project and implications to the flight deck design (integration with other systems and technologies such as Head Up Displays, Head Worn Displays, Artificial Intelligence and so on) should include participation from a consortium of experts (e.g., Original Equipment Manufacturers, Suppliers, Academia, Airline operators, Pilots, etc.)

Recommendation 2: Aviation Maintenance Training Projects

The subcommittee commends the FAA for introducing and funding for several research projects focused on aviation maintenance training. These projects aim to identify the role and frequency of factors involving AMT knowledge, skills, experience, training, assumptions, and design for maintainability in global transport category aircraft accidents 2010-present. They also ask what training and operational policies/procedures are needed to address gaps in existing FAA guidance or to inform new guidance on designing for maintainability. The subcommittee believes these projects provide a good balance of investment across work groups in the portfolio. The subcommittee recommends the FAA prioritize these projects to ensure that the research for the maintainer work group are conducted in a timely manner and sustained.

Recommendation 3: Flight Deck and Air/Ground Information Integration

FAA has embarked on a vision of the future that includes ubiquitous information for users and service providers, enabling a more connected aircraft to leverage that ubiquitous information. With the proliferation of “apps”, and mobile devices, already finding their way onto the flight deck, as well as the long lead time required to understand the safety implications of integrating new information into flight operations, the FAA should not delay in continuing progress in this area. The Subcommittee recommends the FAA fund research to address the challenge of presentation of integrated information from multiple sources to pilots as well as the air/ground personnel. The subcommittee recommends a holistic approach to research conducted for the connected aircraft concept and that this research commence in FY2024.

Recommendation 4: Access to in-service human factors and safety data for industry to better inform safety decisions and improvements.

The Subcommittee received a briefing on the FAA's current research portfolio on Human Factors and the Aviation Safety research strategy. The subcommittee found that operational data related to in-service events associated with human factors or human performance are typically not readily available to industry. The subcommittee recommends that the FAA conduct research to develop the means and tools to make operational data related to HF or human performance readily available to allow industry better inform safety assessment and target critical improvements.

Recommendation 5: AVS Research Prioritization

The Subcommittee received a briefing on the FAA's current Human Factors research portfolio and the Aviation Safety research strategy. During the briefings, the Subcommittee noted that many of the projects for FY2024 were still not confirmed to be funded, only planned. Bruce DeCleene responded to the Subcommittee the reason was due to a reprioritization of projects to reflect the new AVS research strategy. Mr. DeCleene asked the HF Subcommittee to prioritize the projects and identify those projects that are high priority, research gaps, and what should not be funded. The Subcommittee recommends the FAA consider their prioritization of projects as they finalize the decision process for those projects that will go forward.

Action: Artificial Intelligence

The FAA is completing an analysis of the opportunities and issues associated with the integration of Artificial Intelligence/Machine Learning (AI/ML) into FAA software and more generally into software to improve performance within the aviation system (such as flight deck systems). Research includes human factors considerations to define how these tools will be integrated into safe and effective human-centered system designs that consider human-automation interaction within an overall workflow with associated procedures.

The REDAC Human Factors Subcommittee requests a briefing by ANG-C5 on the results of this analysis at its Summer/Fall meeting scheduled for August 2024. Those insights should help the Subcommittee in considering future research needs associated with the use of AI/ML technologies for aviation applications.

Observation 1: HF in the AVS Research Strategy. In reviewing the AVS portfolio, it became apparent to the Subcommittee that the revised AVS process for funding and prioritizing research introduced discontinuities in funding for several HF projects that were already approved. This makes advising on the future projects extremely challenging because of the lack of specificity around what projects will be funded to begin in the FY24 and the projects that were planned to follow them. The subcommittee remains concerned that if HF is not represented explicitly in the AVS research strategy that HF projects will be more vulnerable to being cut from the portfolio or being under prioritized.

Observation 2: Pilot Entry-Level Experience. After discussions with the FAA at the FY24 Winter/Spring meeting, the subcommittee understands that the FAA, while not disagreeing with the Finding and Recommendation 4: *Training and Checking Program Changes due to Changing Pilot Entry-Level Experience*, has determined that the situation described therein does not

suggest a research need. The subcommittee observes that the issue is a clear and present concern and suggests that the FAA give it due attention internally, even if new research is not deemed necessary to address it. The objective of this effort would be to proactively manage emerging risks in the system rather than continuing to be reactive to events when they arise.

REDAC Human Factors Subcommittee Meeting Agenda

DAY 1 – Tuesday, March 26, 2024

FAA HQ, 800 Independence Ave SW, 20591, 7th Floor Conf Room, 7B

Time (ET)	Topic	Presenter
9:30 (30 min)	Welcome / Introductions	Eric Neiderman , FAA Tech Center Deputy Director Barbara Holder , Embry Riddle Aeronautical University, HF Subcommittee Chair Bill Kaliardos , FAA, Designated Federal Official, HF Subcommittee
10:00 (30 min)	FAA Update on Aviation Safety R&D strategy	Bruce DeCleene , FAA, Director, Office of Senior Technical Experts
10:30 (15 min)	Break	
10:45 (60 min)	FAA flight deck HF research, “core” portfolio	Chuck Perala , FAA, Flight Deck Core HF Research Portfolio Manager
11:45 (75 min)	Lunch Break	
1:00 (15 min)	FAA budget briefing	Tennille Blackwell / Tom Kelly , FAA, RE&D Budget Formulation Manager
1:15 (45 min)	FAA Flight deck HF research, NextGen portfolio	Chuck Perala , FAA, Flight Deck Core HF Research Portfolio Manager (on behalf of Victor Quach)
2:00 (15 min)	Break	
2:15 (60 min)	Last meeting’s Findings and Recommendations	All
3:15 (15 min)	Break	
3:30 (30 min)	FAA Weather-Technology in-the-Cockpit (WTIC) research update (focused on HF)	Ian Johnson , FAA, HF Lead, WTIC

4:00 (30 min)	New Recommendations Discussion	All
4:30	Adjourn (followed by social event at 5pm)	All

Day 2 - Wednesday

Time (ET)	Topic	Presenter
9:30 (15 min)	Welcome / recap	All
9:45 (45 min)	FAA air traffic HF Research, NextGen	Karl Kaufmann , FAA, Air Traffic HF Research Portfolio Manager
10:30 (15 min)	Break	
10:45 (60 min)	FAA air traffic HF Research, "Core"	Karl Kaufmann , FAA, Air Traffic HF Research Portfolio Manager
11:45 (75 min)	Lunch Break	
1:00 (30 min)	Overview of the Center of Excellence on Technical Training and Human Performance (focused on HF)	Karen Callihan , FAA, CoE TTHP Program Manager
1:30 (30 min)	New Recommendations Discussion	All
2:00 (15 min)	Break	
2:15 (45 min)	Sampling of NASA aviation HF research	Cheryl Quinn , NASA, Deputy Director for the Airspace Operations and Safety Program (AOSP)
3:00 (15 min)	Break	
3:15 (45 min)	Sampling of MITRE aviation HF research	Chris DeSenti , MITRE, Manager Transportation Infrastructure, Spectrum, and Cyber Evolution
4:00 (30 min)	New Recommendations Discussion	All
4:30	Adjourn	All

HF = Human Factors

F&R = Finding and Recommendation by REDAC

RED/RE&D = Research, Engineering, and Development

AVS = FAA Office of Aviation Safety

UAS = Unmanned Aircraft Systems

AAM = Advanced Air Mobility

Attendee List
Day 1

1	Tony D Darnell	FAA
2	Kevin Siragusa	Fort Hill Group (CTR)
3	Mark Hale	JMA Solutions (CTR)
4	Andrea Stevenson-Hardin	FAA
5	Will Rosenkranz	Booze Allen Hamilton (CTR)
6	Dr. Justin Nelson	Air Force Research Lab
7	Chuck Perala	FAA
8	Kelene A Fercho	FAA
9	Karen Callihan	FAA
	Marlo E Allen	JMA Solutions (CTR)
11	Jorge Fernandez	FAA
12	Michael Bartron	FAA
13	Ferne Friedman-Berg	FAA
14	Mark Orr	FAA
15	Florian Jentsch	University of Central Florida
16	Rany Azzi	FAA
17	Okoineme Giwa-Agbomeirele	FAA
18	Phil Bassett	Cavan
19	Debbie Carstens	Florida Institute of Technology
	Kelvin L Courtney	FAA
21	Steve Lang	Cavan
22	Joseph M Jaworski	FAA
23	Sarah Zak	FAA
24	Maura Lohrenz	Volpe
25	Kathy Abbott	FAA
26	Anthony Pocchio	CTR
27	Kylie N Key	FAA
28	Chris Reed	JetBlue
29	Vicki Ahlstrom	FAA
	Carrie Smith	FAA
31	Carla Hackworth	FAA
32	Sherry Chappell	FAA
33	David McKenney	MITRE CAASD
34	Kevin Comstock	ALPA
35	Jamie Barrett	FAA
36	Douglas Rodzon	FAA
37	MaryAnn Bernacki	Diakon Solutions (CTR)
38	Kenneth Allendoerfer	FAA
39	Dr. Ian Johnson	FAA
	Adam Rhodes	FAA
41	Barbara Holder	Embry Riddle Aeronautical University

	Sonia Dodd	Honeywell
43	Maggie Ma	Boeing
	Divya Chandra	Volpe
45	Chris DeSenti	MITRE CAASD
	Lisa Thomas	FAA
47	Bill Kaliardos	FAA
	Chanda Sanders	FAA
49	Dr. Heidi Kim	FAA
	Sabreena Azam	FAA
51	Katrina Avers	FAA
	Jon Schleifer	FAA
53	Monique Moore	FAA
	Pam Munro	FAA
55	Cathy Swider	FAA
	Sarah Ligda	FAA
57	Reshma Kumar	FAA
	Lowell Foster	Wisk
59	Elly Smith	MITRE CAASD
	Nichola Lubold	Honeywell
61	Amber Cole	FAA
	Deborah M Shaibe	FAA
63	Patrick Genua	FAA
	Andrea Sparko	Volpe
65	Bobby Bourk	FAA
	Josh Jackson	FAA
67	TJ Tejasen	FAA
	Tara Gibson	FAA
69	CA Roundtree-Coleman	FAA

Day 2

1	Kevin Siragusa	Fort Hill Group (CTR)
	Andrea Stevenson-Hardin	FAA
3	Chuck Perala	FAA
	Florian Jentsch	University of Central Florida (UCF)
5	Karen Callihan	FAA
	Bobby Bourke	FAA
7	Marlo E Allen	JMA Solutions (CTR)
	Rany Azzi	FAA
9	Debbie Carstens	Florida Institute of Technology (FIT)
	Dr. Justin Nelson	Air Force Research Lab (AFRL)
11	Vicki Ahlstrom	FAA
	Sarah Ligda	FAA
13	Tracy Lennertz	Volpe
	Anthony Pocchio	Changeis Inc (CTR)
15	Jamie Barrett	FAA
	Michael Bartron	FAA
17	Kenneth Allendoerfer	FAA
	David McKenney	MITRE CAASD
19	Dr. Ian Johnson	FAA
	Amber Cole	FAA
21	Mark Hale	JMA Solutions (CTR)
	Ferne Friedman-Berg	FAA
23	Okoineme Giwa-Agbomeirele	FAA
	Kevin Comstock	ALPA
25	Sherry Chappell	FAA
	Bill Kaliardos	FAA
27	MaryAnn Bernacki	Diakon Solutions (CTR)
	Jerry Crutchfield	FAA
29	Thomas A Van Dillen	FAA
	Tara Gibson	FAA
31	Chris DeSenti	MITRE CAASD
	Phil Bassett	Cavan
33	Steve Lang	Cavan
	Deborah M Shaibe	FAA
35	Monique Moore	FAA
	Maggie Ma	Boeing
37	Kelvin L Courtney	FAA
	Sarah Zak	FAA
39	Chanda Sanders	FAA
	Chris Reed	JetBlue
41	Susan Taylor	FAA

	Dr. Heidi Kim	FAA
43	Reshma Kumar	FAA
	Lisa Thomas	FAA
45	Carrie A Roberts	FAA
	Barbara Holder	Embry Riddle Aeronautical University (ERAU)
47	Carrie Smith	FAA
	Sabreena Azam	FAA
49	Scott Williams	FAA
	Divya Chandra	Volpe
51	Douglas Rodzon	FAA
	Patty McDermott	MITRE CAASD
53	Pam Munro	FAA
	Steven Estes	MITRE CAASD
55	Kathy Abbott	FAA
	CA Roundtree-Coleman	FAA

