Welcome / Opening Comments / Introductions | Presenters: Dr. Barbara Holder, HF Subcommittee Chair, Dr. Bill Kaliardos, DFO, Shelley Yak, FAA Director of William J. Hughes Technical Center, R&D Executive Chair

Drs. Bill Kaliardos and Barbara Holder welcomed the Subcommittee and started introductions. The members introduced themselves. The Subcommittee reviewed the agenda and the meeting was called to order. Shelley Yak introduced herself and emphasized the importance of the Committee as the Research and Development (R&D) Landscape continues to be developed.

Update from Full Committee Meeting | Presenter: Dr. Barbara Holder, HF Subcommittee Chair

Dr. Barbara Holder provided an update on the Full Committee Meeting. She reminded the audience of the purpose of the REDAC, emphasizing the benefit their input brings in terms understanding the broader R&D landscape. She listed various goals of the meetings (shown in briefing). She then moved to an overview of the Full Committee meeting. She explained that the Human Factors Emerging Issues list was a focus of the meeting, as this list will be used to inform the content and direction of the R&D Landscape. She also detailed the process for Findings and Recommendations (F&Rs), highlighting there is a new mandate requiring the FAA to respond to the F&Rs within 60 days of the official release.

Research & Development Landscape (Action Item #1) | Presenter: Maureen Molz, Division Manager, NextGen R&D Management Division, ANG-E4

Maureen Molz and her team briefed on the current state of the Aviation R&D Research Landscape and the tasking they are asking of each of the REDAC subcommittees. She began by defining a landscape as a “collection of research drivers that provides information about their potential impacts to the industry”, with a driver being any force that stimulates R&D investment. She explained that the tasking for the Subcommittee was to help the FAA understand the aviation industry’s strategic focus and provide input on the progress of the Landscape. Maureen asked the Subcommittee to review the list of drivers and identify gaps. The Subcommittee had concerns regarding the approval of the landscape within the FAA. Other concerns include the source of data for the list of drivers, the process to assure the drivers are correct, how the Landscape will be used, among others. The Subcommittee offered their list of Human Factors
Emerging Issues, a list the Subcommittee has been developing over past meetings and is continuing to develop, as their response to the Research Landscape. The Subcommittee determined that the Action Item would remain open, and requested for an update briefing at a future meeting, at which point the Subcommittee will provide further feedback.

**FY22 Guidance and Process | Presenter: Mark Orr, Aviation Safety Research & Development Manager**

Mark Orr briefed the Subcommittee on the AVS research FY22 process. Mark began by explaining that during the FY21 portfolio development, there was a high level of management involvement throughout the process, including the Executive Management Team. As a result, management determined a redesign of the process was required for the FY22 cycle. A working group of managers and R&D members were assembled to redesign this process. The current focuses of the working group include developing 1) AVS-1 Guidance, 2) the checklist/criteria/rubric, and 3) the input template. After the kick-off of drafting proposals, the working groups focus will shift to developing the specifics for prioritization and the specifics for programming the budget to produce the draft portfolio. The current goal is to have an agreed to draft FY22 Portfolio to show at the Winter/Spring Aircraft Safety (SAS) REDAC Meeting, then dovetail this into the full FAA portfolio process. Further details can be found in his briefing accessed via the link above.

**Budget Update | Presenter: Mike Gallivan, Manager, R,E&D Financial Management**

Mike Gallivan updated the Subcommittee on the current state of the FAA budget. He noted that the FY20 Research, Engineering and Development (RE&D) Request was at $120M, outlining the different line items with highlighted sections based on audience interest. Mike continued by showing out-year targets and the planned requests. Mike Gallivan concluded his briefing thanking the subcommittee and providing contact information for any questions.


Dr. Chuck Perala and Karl Kaufmann briefed the Subcommittee on the FY19 Core Flight Deck Research Accomplishments and the FY19 NextGen Flight Deck Research accomplishments respectively. Each briefing began with a description of the program as well as the team members and primary performers of the work. The briefings outlined the different research requirements that are unique to both the Core and NextGen flight deck groups. Each briefing then provided status updates on a number of ongoing research projects, before outlining research plans for future planned work. Following both briefings, a Subcommittee member noted that there may be unexplored opportunities in integrating Flight Deck and Air Traffic Control (ATC) research. The Subcommittee decided to draft a Finding and Recommendation (F&R) on this topic. Both briefings can be accessed using the online repository.
FY19 Core ATC & NextGen Enterprise ATC Research Accomplishments | Presenters: Dan Herschler, Scientific & Technical Advisor for Human Factors, Dr. Bill Kaliardos, NextGen Human Factors Integration Lead

Dan Herschler and Dr. Bill Kaliardos briefed the Subcommittee on the FY19 Core Air Traffic Control (ATC) Research accomplishments and the FY19 NextGen Enterprise ATC Research accomplishments respectively.

Dan began by explaining that the Core ATC program works to improve the safety and efficiency of complex ATC systems by application of R&D to address factors affecting human performance in ATC operations and ATC system maintenance. He briefed the FY19 accomplishments and anticipated FY20 research areas, as well as highlighting emerging areas for FY21. Dan’s briefing can be accessed using the online repository listed above.

Dr. Kaliardos briefed the Subcommittee on his NextGen Enterprise ATC program, explaining that it provides integrated guidance on human performance considerations to concept development, validation, and implementation teams. Dr. Kaliardos gave an overview of the program and the associated sponsors and organizations. He gave a brief description of Trajectory Based Operations (TBO), before briefing the anticipated research areas and accomplishments. Following both briefings, a subcommittee member noted that there was no work that focused on Urban Air Mobility (UAM). The Subcommittee decided to draft an F&R on that emphasizes the need to invest in UAM Human Factors research. This briefing can be accessed through the link above.

Findings and Recommendations (F&R) Discussion and Homework Assignments | Presenter All

The Subcommittee reviewed and discussed the proposed F&Rs and Action Items. There was discussion surrounding Urban Air Mobility and the emphasis on needed research in this area. There was also discussion about drafting an F&R regarding the AVS research prioritization process. The emphasis is on the need for a process that identifies the necessary human factors research areas. A third F&R was discussed regarding a recommendation for more integrated research between the Flight Deck and ATC Human Factors Budget Line Items (BLIs).

Report out from the Industry Human Factors Roundtable hosted by Alaska Airlines | Presenter: Captain Rich Loudon, Alaska Airlines

Captain Rich Loudon briefed the audience on the Industry Human Factors Roundtable hosted by Alaska Airlines. He reviewed the topics covered during the two day conference and noted the industry involvement and collaboration that occurred as a result. The roundtable covered a wide range of topics; Captain Loudon’s briefing can be accessed using the online repository listed above.
ALPA Perspective on Human Factors Research | Presenter: Captain David McKenney, ALPA

Captain David McKenney briefed the audience on the ALPA perspective on Human Factors research. The briefing focused on what ALPA views as the different necessary areas of Human Factors research, including Manual Flight Operations, Distance Learning, Resilience, among others. This briefing can be accessed using the online repository listed above.

Discussion on Human Factors Emerging Issues List | Presenter: All

The Subcommittee discussed the Human Factors emerging issues list that has been in development over past REDAC meetings. Subcommittee members briefed on emerging issues (Urban Air Mobility, unintended impacts of automation, and maintenance), and the current list was reviewed.

Review of Recommendations and Action Items and Wrap-up | Presenter All

The Subcommittee reviewed the proposed list of F&Rs and Action Items. They discussed drafting assignments and agreed that the Human Factors emerging issues would continue to be reviewed and updated. The F&Rs were discussed during the meeting and Action Items developed from this meeting are listed below.

End of Day 2
**Action Items**

**Action 1: UAS Human Factors Research**
The Human Factors Subcommittee was briefed previously on a high-level FAA UAS research plan. However, at the Summer/Fall 2019 meeting the Subcommittee became concerned that visibility into the progress of UAS research is reduced. The Subcommittee requests an update on the progress of the FAA UAS Research plan, and specifically on how the plan is being translated into research requirements related to human factors and their associated research requirements.

**Action 2: Research Landscape**
The landscape presented to the subcommittee at the Summer/Fall 2019 meeting has shown some progress however, based on discussions during the meeting, the subcommittee is concerned the Landscape has not been fully vetted or approved within the agency. The subcommittee requests the FAA report at the Winter/Spring meeting on the following:

- How will the Landscape balance current issues and drivers with emerging issues and drivers?
- What data are being collected and analyzed to define high priority current and emerging issues and drivers?
- How will the Landscape be used across the agency? How will it inform the R&D needs and portfolio prioritization?
- How does the Landscape and the NARP relate to and inform each other?

**Action 3: UAM Human Factors Research**
The Human Factors Subcommittee requests a briefing on current UAM research that contains human factors aspects at the Winter/Spring 2020 meeting.
### Agenda:

#### DAY 1 – Tuesday, August 27, 2019

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<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
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<tr>
<td>8:00–8:30</td>
<td>Check in at JMA offices (Suite 420)</td>
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<tr>
<td>8:30-8:45</td>
<td>Welcome / Opening Comments / Introductions</td>
<td><strong>Dr. Barbara Holder</strong>, HF Subcommittee Chair, <strong>Dr. Bill Kaliardos</strong>, DFO</td>
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<tr>
<td>8:45-9:00</td>
<td>Welcome</td>
<td><strong>Shelley Yak</strong>, FAA Director of William J. Hughes Technical Center, REDAC Co-Chair</td>
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<td>9:00-9:15</td>
<td>Update from Full Committee Meeting</td>
<td><strong>Dr. Barbara Holder</strong>, HF Subcommittee Chair</td>
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<td>9:15-9:30</td>
<td>Budget Update</td>
<td><strong>Mike Gallivan</strong>, Manager, RE&amp;D Financial Management</td>
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<td>9:30-10:00</td>
<td>FY22 Guidance and Process</td>
<td><strong>Mark Orr</strong>, Aviation Safety Research &amp; Development Manager</td>
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<td>10:00-10:30</td>
<td>Morning Break</td>
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<tr>
<td>10:30-11:15</td>
<td>FY19 Flight Deck Core Research Accomplishments</td>
<td><strong>Dr. Chuck Peralta</strong>, Scientific &amp; Technical Advisor for Human Factors</td>
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<td>FY19 NextGen Flight Deck Research Accomplishments</td>
<td><strong>Karl Kaufmann</strong>, Scientific &amp; Technical Advisor for Human Factors</td>
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<td>11:15-12:00</td>
<td>FY19 ATC Core Research Accomplishments</td>
<td><strong>Dan Herschler</strong>, Scientific &amp; Technical Advisor for Human Factors</td>
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<td>FY19 NextGen Enterprise ATC Research Accomplishments</td>
<td><strong>Dr. Bill Kaliardos</strong>, NextGen Human Factors Integration Lead</td>
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<td>12:00-13:00</td>
<td>Lunch</td>
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<td>13:00-13:30</td>
<td>Research &amp; Development Landscape (Action Item #1)</td>
<td><strong>Maureen Molz</strong>, Division Manager, NextGen R&amp;D Management Division, ANG-E4</td>
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<td>13:30-14:30</td>
<td>F&amp;R Discussion and Homework Assignments</td>
<td><strong>All</strong></td>
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<td>14:30-14:45</td>
<td>Afternoon Break</td>
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<td>15:15-16:00</td>
<td>ALPA Perspective on Human Factors Research</td>
<td><strong>Captain David McKenney</strong>, ALPA</td>
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<td>EVENING</td>
<td>Group Dinner</td>
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## DAY 2 – Wednesday, August 28, 2019

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<tr>
<th>Time</th>
<th>Topic</th>
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<tr>
<td>8:00-8:30</td>
<td>Check in at JMA offices (Suite 420)</td>
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<tr>
<td>8:30-9:00</td>
<td>Recap and Review of Homework Assignments</td>
<td>All</td>
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<tr>
<td>9:00-9:15</td>
<td>Update on Flight Deck Information Management Practices (Action Item #2)</td>
<td><strong>Dr. Kathy Abbott</strong>, Chief Scientific &amp; Technical Advisor, Flight Deck Human Factors</td>
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<td>Update on the Enterprise ATC Human Factors Program (F&amp;R #2)</td>
<td><strong>Dr. Bill Kaliardos</strong>, NextGen Human Factors Integration Lead</td>
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<td>Meeting Adjourned</td>
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## Name | Affiliation | Name | Affiliation
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Kenneth Allendoerfer | FAA | Maureen Molz | FAA
Carla Hackworth | FAA | Jeff Handel | Delta
Chuck Perala | FAA | Richard Barhyot | NASA
Al Secen | RTCA | Phil Smith | OSU
Dan Herschler | FAA | Steve Lang | CAVAN
Karl Kaufmann | FAA | Rich Loudon | Alaska
Rachel Seely | FAA | Edward Austrian | Fort Hill Group
Lara Schmidt | FAA | Daniel Brock | FAA HQ
David Buczek | FAA | Kevin Comstock | ALPA
Kathy Abbott | FAA | Robert Thomas | ALPA
Kim Cardosi | DOT/Volpe | Leja Collier | ALPA
Jeff Handel | Delta | Karl Kauffmann | FAA
Chris DeSanti | MITRE | Carla Hackworth | FAA
Alan Jacobsen | Boeing | Kenneth Allendoerfer | FAA
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Edward Austrian | Fort Hill Group | Alan Jacobsen | Boeing
Jimmy Bruno | FAA | Terry King | FAA
Terry King | FAA/CAMI | Monique Moore | FAA
Daniel Brock | FAA HQ | Bill Kaliardos | FAA
Kevin Comstock | ALPA | Evan Harvey | Human Proof
Robert Thomas | ALPA | Chinita Roundtree-Coleman | FAA
Leja Collier | ALPA | | |
Shallu Darhele | FAA HQ | | |
Victor Quach | FAA HQ | | |
Mark Hale | JMA Solutions | | |
Mike Gallivan | FAA | | |
Barbara Holder | Honeywell | | |
Shelley Yak | FAA | | |
Maureen Molz | FAA | | |
David Mckinney | ALPA | | |
Evan Harvey | Human Proof | | |
Sabreena Azam | FAA HQ | | |
Monique Moore | FAA | | |
Tara Holmes | FAA | | |
Chinita Roundtree-Coleman | FAA | | |