FAA REDAC Subcommittee on Environment and Energy

August 2015 Meeting

Findings and Recommendations

The Environment and Energy Subcommittee of the FAA Research, Engineering and Development Advisory Committee (REDAC) met in Washington, DC on August 6 - 7, 2015. Following is the report on the outcome of this meeting. The recommendations offered are all for inclusion in the REDAC report. There are no recommendations from this meeting for the letter to the Administrator.

Finding (1):

Noise continues to be a significant challenge for the implementation of Performance Based Navigation (PBN) for operational efficiency improvements, which are a critical element of NextGen.

Recommendation (1):

In the near term, the FAA should ensure that the operational procedure development and implementation work is continued. Effective community and airport engagement techniques are an especially important part of the implementation. The recent reductions in the F&E budget could result in undesired delays in the development and implementation of these procedures.

To increase the success-rate of implementing PBN-based procedures, it is necessary to better understand the impacts of these procedures and define acceptability criteria for their use. In addition to the recommendations made at the March 2015 subcommittee meeting, the subcommittee recommends the FAA initiate research to understand the additional annoyance due to the noise focusing aspects of PBN. We would recommend you follow this work with research to develop ATM and/or operational concepts that will mitigate the identified noise impacts from PBN implementation. The safety and efficiency aspects of these changes would need to be considered. Finally, we recommend that the FAA use the knowledge gained from this research to develop the necessary mission support tools, policies and procedures to inform decision-making.

Finding (2):

We commend the FAA/AEE for vigorously leveraging the efforts of, and working with, other divisions of the FAA, other government agencies, (e.g., EPA, NASA, DOE, DOD), and industry and utilizing available databases to advance the Environment and Energy R&D portfolio. A recent example is their use of the Medicare and Women Health Initiative medical databases to understand if there is a correlation between aircraft noise exposure and health impacts.

Recommendation (2):

The subcommittee encourages FAA to continue to find additional collaboration opportunities. With regards to using databases from other fields of study, the appropriateness and limitations of the databases to support the objectives of the study should be considered.

Finding (3):

The CLEEN program tasks are ending in 2015. The subcommittee is very pleased with the successes from the CLEEN Program in achieving the maturation and validation of a wide suite of technologies that will reduce noise, emissions and fuel burn from the aircraft fleet.

Recommendation (3):

The subcommittee recommends the FAA continue to implement and execute the second phase of CLEEN (known as CLEEN II) to mature technologies as they will enable the achievement of the CLEEN II goals for noise, emissions and fuel burn reductions.

Finding (4):

The Environment and Energy R&D portfolio have delivered significant results, and the FAA are doing a better job of communicating these successes, but there is more needed to highlight these in public communications.

Recommendation (4):

The subcommittee recommends the FAA make these accomplishments visible broadly. FAA has taken significant steps here by developing websites for CLEEN and ASCENT COE, publishing CLEEN Fact Sheets summarizing the CLEEN program's significant accomplishments, and developing brochures on the FAA's Environmental and Energy Strategy. The Subcommittee is impressed with the quality of these materials and they recommend that they be communicated broadly. The subcommittee encourages regular updates to these to highlight recent accomplishments and to continue developing additional communication materials such as a new Environment and Energy website for the FAA.

Finding (5):

Based on the information presented by the FAA at the Subcommittee meeting, the Subcommittee feels the Environment and Energy R&D portfolio is reasonably balanced in terms of the resource allocation among technologies, tools, policy / standards development, sustainable alternative fuels, and ATM and operations improvements.

Recommendation (5):

As the aviation environmental tool suite effort matures from development to implementation and use in decision making, including standard setting and other policy making efforts, there may be opportunities to strengthen the R&D efforts on operational improvements within the Environment and Energy

portfolio. These have been negatively impacted due to the F&E funding reductions in the past three years. The need to better understand the impact of aviation emissions on climate should also be considered in this Environment and Energy R&D portfolio planning. The subcommittee encourages the FAA to leverage efforts with ACRP studies like enhanced data gathering on noise and emissions impacts. The regular evaluation of the Environment and Energy R&D portfolio should be continued with consideration of "what does it take to be where we need to be in 2025 and beyond". To achieve these goals, additional collaborative technology development would be required.

Finding (6):

The environmental impacts of Unmanned Aerial Systems (UAS) are going to be a growing issue. Given the recent surge in the number of UAS operation approvals, there is a need to get ahead of this issue.

Recommendation (6):

The subcommittee recommends that the FAA start plans to assess and understand the noise impact of UAS. This would include development of assessment tools and impact mitigation concepts.

Finding (7):

Real-time information-based decision making represents an opportunity for improving the operational efficiency and environmental impact of air vehicles.

Recommendation (7):

The subcommittee recommends that the FAA support research to develop technology that enables integration of relayed information (e.g., weather, 4D trajectories, etc) with cockpit information. This will enable higher levels of onboard automation and the ability to further reduce the environmental impacts from aviation.