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June 12, 2007

The Honorable Marion C. Blakey
Administrator
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Dear Administrator Blakey:

On behalf of the Research, Engineering and Development Advisory Committee (REDAC), I wanted to again thank you for your participation in the May 2 meeting.

Enclosed are the recommendations of the standing REDAC Subcommittees on Airports, Environment and Energy, NAS Operations, and Human Factors.

The Aircraft Safety Subcommittee was unable to meet due scheduling and member health issues. Some safety issues were reviewed by the full REDAC which was briefed on the status of the Aviation Safety Information and Sharing System (ASIAS). The REDAC feels that ASIAS is an important cornerstone of the FAA safety strategy and was encouraged by the collaboration between the FAA and NASA in the development of methods of advanced data analysis. The Committee also cautions that the expectations for ASIAS will push the state of the art and will require significant intellectual capability and effort.

The REDAC is currently conducting a focused study of Aviation Weather requirements and also providing some input to the Joint Planning and Development Office (JPDO) on the NextGen R&D plan.

Thank you again for your interest and participation. I, and the other members of the REDAC, are available if you would like to discuss these, or other issues in more detail.

Sincerely,

R. John Hansman
Co-Chair
FAA Research, Engineering and Development Advisory Committee

Enclosure

REDAC Recommendations for FY 09

Subcommittee on Airports

The Airports Subcommittee:

1. Is pleased with the co-operation that has been exhibited between the FAA Technical Center and the projects that are being funded by the Airports Cooperative Research Program (ACRP). The Subcommittee is particularly pleased with the efforts that are being made to eliminate any duplication of effort between FAA research efforts and those of the ACRP.
2. Recommends further staffing increase of 2 positions in the Airport R&D Branch. One position for safety projects and one position for pavement research. The positions are necessary to support the significant growth of Airport Technology Research from \$7.5 million to over \$18 million in the FY 2008 request.
3. We encourage the support of the Wm. J. Hughes Technical Center in helping AAR-410 in obtaining permits, etc. to construct the pavement test lab that has been planned and funded .
4. Strongly supports the proposed research tasking in:
 - Airfield pavement friction and roughness studies
 - Fire fighting techniques for 2nd level fires and composite fires
 - Bird detection and wildlife control
 - Airfield pavement behavior and longevity
 - LED and Retro-reflective lighting devices for General Aviation airports
 - Continued research and promotion of EMAS installations
 - Initiation of an environmental research (runoff water quality) task within AAR-410
 - Continued testing of low cost Foreign Object Detection (FOD) radars at airports
5. The Subcommittee is very pleased with the initiation of work in an environmental area that has been the bane of many airports large and small across the United States in recent years - that of the detrimental environmental aspects of the effect on ground water quality

due to runoff from airfield pavements. The Subcommittee commends the Airport Technology Branch for moving into this critical area, the impact of which can be highly beneficial both to the environment and to the airports themselves. The Subcommittee supports including \$500,000 in the FY 2009 budget request for research on water quality issues. This water quality research initiative also has the strong support of the Environmental Subcommittee.

Subcommittee on Environment and Energy

The subcommittee identified the following specific issues as matters to bring to the attention of the Administrator.

Issue 1: Subcommittee maintains that environment is a key – if not the key – constraint to NextGen. Subcommittee commends the Administrator for her leadership providing resources under the NextGen Finance Reform proposal to address aviation environmental issues in FY08 and beyond. All members unanimously supported CLEEN and believe the FAA needs to ensure it is ready to execute this important effort.

Recommendation 1: Immediately convene a task group – under the auspices of the REDAC E&E subcommittee to weigh options for establishing the CLEEN consortium and recommending how to implement. Need to ensure that all key stakeholders are engaged. Secure some seed funding to do a detailed program plan.

Issue 2: Subcommittee is concerned that the right emphasis be placed on addressing airport environmental needs in the short term. Subcommittee commends the Administrator for the proposal to expand the ACRP program, dedicating \$5 million to environmental issues. The subcommittee encourages the FAA to work with Airports and other stakeholders to ensure that the ACRP environmental program has a strategic vision and avoid any duplication of efforts.

Recommendation 2: Work with the TRB to add a position on the ACRP Board to be filled by FAA's Office of Environment and Energy. Ensure that FAA's Office of Environment and Energy as well as appropriate Office of Airports staff are fully engaged with all ACRP environmental projects through participation in the panels formed to oversee the projects.

Issue 3: Subcommittee believes that clean and quiet operational procedures have the potential to provide significant environmental mitigation in the short to mid term, complementing the benefits we derive from technologies. The Subcommittee commends the Administrator for innovative proposals like the Environmental Mitigation Demonstration Pilot Program and the augmentation of RE&D and Capital 1 funding to address procedures. The subcommittee expressed concerns that some airports may not be able to participate in the pilot program because their regional mitigation funds were already committed for several years.

Recommendation 3: Ensure that funding made available for the Demonstration program is widely available to all airports and not constrained by commitments already in place for mitigation.

Issue 4: Subcommittee was very pleased with the augmentation in RE&D and Capital 1 budget to support NextGen needs. The subcommittee endorsed the FY09 budget request and urged the Administrator, the Department and the Office of Management and Budget to support the FY09 budget as presented in the FY08 NARP. Subcommittee members felt that this was a good step – but that given the potential benefits of mitigating impacts (billions of dollars), that investment decisions may need to be revisited in the future, particularly in CLEEN and climate impacts research. Members also suggested some minor wording changes to Sect 606 (CLEEN) of the Administration NextGen Finance Reform Bill proposal. However, they recognized that the proposed legislation has gone to the Hill and FAA was not in a position to make these edits. Individual Members indicated they would pursue this through the legislative committees.

Recommendation 4: For NextGen RE&D a) Consider CLEEN a pilot program. After weighing success, consider expansion. b) Continue to work with CCSP to establish a robust aviation climate impacts research program with appropriate levels of funding.

Issue 5: Subcommittee was encouraged by the move to and funding allocated towards establishing an Environmental Management System. However, there were concerns that this has not fully been scoped.

Recommendation 5: Direct the Office of Environment and Energy to provide the subcommittee a detailed description of the concept of EMS, including how it would be used; as well as how RE&D and Capital 1 programs will support its development at the next subcommittee.

Subcommittee on Human Factors

The subcommittee identified the following issues.

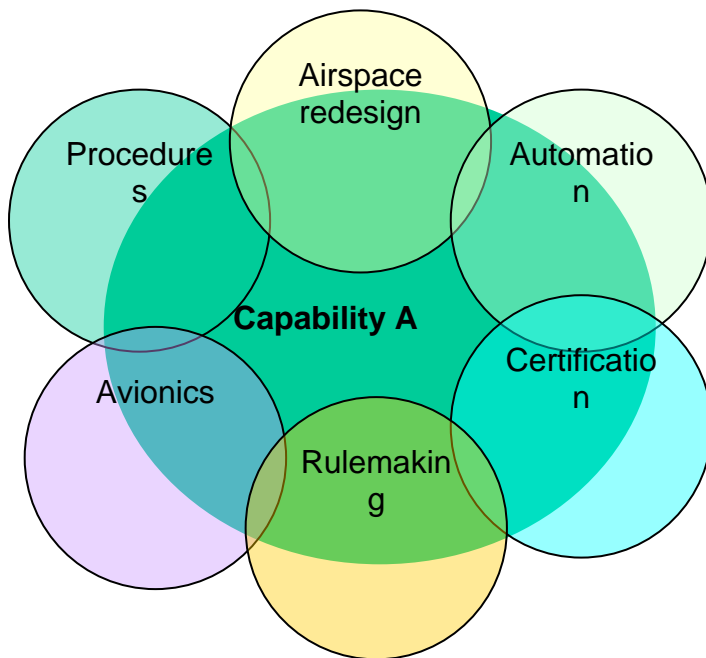
1. The FAA needs to increase its human capital and expertise in the area of human factors. There is a general concern regarding the national aviation human factors capability. The FAA and others are having difficulty filling current human factors openings and the FAA should take a leadership role in rejuvenating the aviation human factors field.
2. Human-Systems integration considerations will be critical for NextGen. Many of the key concepts proposed for NextGen have significant human factors issues. The subcommittee recommends that the FAA and JPDO assure that human factors lessons learned are integrated into NextGen concepts and that Human-System performance metrics and risks are considered. Human factors considerations should be included early in the development process and extend beyond the operational concept to include human-system integration, procedures, selection, and training. It will also be necessary to develop a strategy to manage human factors considerations in the development process with methods such as simulation and in-use human assessment
3. The research requirements process could be more effective if it included a longer term component and had more continuity. The current process is effective at linking research and operational units but tends to focus on short term emergent concerns. The committee recommended a portfolio approach with some focus on longer-term NextGen issues to achieve portfolio balance.

NAS Operations Subcommittee

Finding 1: The forecasted increase in demand leads not only to a requirement for the NextGen capabilities and paradigms to increase capacity, but also for a reduced combined ANSP/user per-operation cost in NextGen to decrease overall system costs. Most of the research presented, however, did not provide a potential life-cycle cost assessment.

Recommendation: R&D projects, even at very early stages, should be presented with some attention to the life-cycle costs impact on the ATM system and system users, with improving fidelity of these estimates being provided as the R&D matures toward the OEP Core.

Finding 2: In several briefings, the connections of the R&D to the requirements of instantiating the NextGen system, such as examining the impact on safety or assessing stakeholder perceptions, were not made.



Recommendation: The capability paradigm which is used by ATO-P for OEP and addresses multiple dimensions of technology development and insertion should be addressed in each research project.

Finding 3: The NextGen paradigm implies different roles and responsibilities for the humans in the system, both in the air and on the ground, as well as new interactions among them. The briefings on Human Factors research relevant to NAS Ops in NextGen implied that the research was acting more as an integrator of concepts than in its critical

role as an early definer of acceptable con-ops through focused research on human performance issues.

Recommendation: The RED and ATO-Cap HF program funding and organizational construct should be examined from the standpoint of NextGen implementation.

Finding 4: The Subcommittee views with alarm the move of FAA sponsorship of its weather R&D out of ATO. NAS OPS Subcommittee has a working group defining the important needs for Weather/ATM Integration, and the critical impact of this integration on solving the capacity problem. The change in FAA R&D sponsorship may hinder the changes needed in the R&D.

Recommendation: The FAA should evaluate carefully the recommendations of the Weather/ATM Integration Working Group that will be presented at this meeting. Some improved focus and integration of the weather R&D within the FAA should be implemented.

Finding 5: The routine integration of Unmanned Aircraft into the National Airspace System is transformational. Concepts in NextGen (e.g., Trajectory-based operations) may facilitate this transformation. Previously the subcommittee had observed that the funding level for UAS-related research did not reflect the complexity of the technical and operations issues associated with their routine integration into civil airspace. Funding appears to have decreased further. The subcommittee is concerned that there does not appear to be a direct tie among NextGen transformation activities and UAS R&D activities as outlined in the NARP. The subcommittee was not able to discern that the necessary research (e.g., economics and other drivers for UAS applications) is being done to inform policy decisions.

Recommendation: The FAA should review the magnitude and implementation of its UAS-related research investment to ensure that funded activities can best inform critical policy decisions and that the agency is positioned to integrate this transformational technology in the evolution towards NextGen.