Attachment 3

PROFESSOR OF
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June 20, 2006

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 April 13 meeting.

Enclosed are the recommendations of the standing REDAC subcommittees on Aircraft Safety, Environment and Energy, Air Traffic Services, Airports, and Human Factors. I have also sent you the report of the working group on Financing the Next Generation Air Transportation System under a separate cover.

As you know we are currently in the process of trying to increase the value of the REDAC to the FAA by focusing more of the effort at the subcommittee level and strengthening the relationship between the subcommittees and the relevant parts of the FAA. There has been a very positive response for this approach from both the committee and FAA leadership.

One area of concern has emerged regarding the partnership between the FAA and NASA. NASA is reducing and refocusing its aeronautics efforts. While it is too early to fully assess the impact of these changes, it appears that there will be gaps in content and technical maturity between FAA needs and NASA's plans in ATM and Safety research. If this is correct, it would impact the ability of the FAA to meet it's near term goals and the nation's ability to transition to the Next Generation Air Transportation System. We will continue to monitor this.

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, Research, Engineering and Development Advisory Committee
Professor of Aeronautics and Astronautics
Director, MIT International Center for Air Transportation

Enclosure

REDAC Subcommittee Recommendations for FY 2008

Subcommittee on Aircraft Safety

Recommendation #1

The FAA needs to make an assessment of the impact of the budget cuts in NASA's aeronautics R&D. Subcommittee on Aircraft Safety is concerned that there may be inadequate resources in the FAA's budget for taking on safety-related research that NASA used to perform in the past but won't be funded to cover in the future.

Recommendation #2

The FAA should initiate a project to develop a common and standard approach for "risk assessment". This standard should become standard throughout the FAA for all departments. Today each department appears to be developing its own method for assessing risk.

Recommendation #3:

Research should be conducted on advanced materials and joining processes being introduced on new aircraft; on new wiring technologies and on large by-pass engines. Also, on aircraft modifications designed to mitigate the risk of MANPADS, on fires due to non HAZMAT-declared shipments, on expanding operational deployment of UAV's and on reversing the trend toward a dwindling pool of qualified AMT's.

Subcommittee on Environment and Energy

1) Subcommittee members expressed widespread concern that we need to be proactive in addressing fuel availability/energy independence.

Recommend that the Administrator direct AEE to work with DoE, DoD, and NASA to identify commercial needs and leverage research to commonly address this challenge.

2) The subcommittee members continue to be concerned about the balance of FAA environmental investment in mitigation (via AIP) versus RE&D.

The FAA needs to evaluate the balance between investment in mitigation activities ($300 million plus) and development and engineering efforts to enable near term pioneering solutions to address environmental issues. This should be done taking into account the relative benefit of each investment.

3) The subcommittee endorsed the above target initiatives. In particular, the FAA should provide additional funding to address pressing particulate matter (PM) and hazardous air pollutants (HAPs). The new initiative should also include work to address the need for

alternative fuels to meet commercial needs. The 70% increase reflects the remarkable growth in environmental requirements imposed by NGATS. It also denotes the subcommittee's appreciation of the quality of the work. And it reflects the view of a very diverse set of stakeholders (airports, airlines, manufactures, environmental organizations, academia, and other government agencies).

The subcommittee also made some additional recommendations specific to the detailed program review:

1) PARTNER research could have long-term policy implications (i.e., noise metrics) and FAA needs to start considering how the research will be translated and applied.

2) The Advisory Board noted that Project 13, Lateral Alignment, while having noble goals had questionable benefit; the general sense was that AEE investment should cease.

Subcommittee on Human Factors

Selection, Training and Staffing of Air Traffic Control

Recommendation 1: The Human Factors Subcommittee applauds the comprehensive response of the Controller Workforce Integrated Action Plan. The subcommittee strongly recommends that the efforts in that plan (directed to current work force selection and training) be leveraged to provide task analyses, procedural development and metrics for evolving capabilities in en route automation modernization (ERAM) and NGATS early products. The subcommittee sees an opportunity for human factors input early in the transition process to new paradigms of air traffic service provision. The subcommittee does not want to divert effort form the current CWIAP efforts, but rather to amplify these to lead research in t4echnology transition with respect to training, selection and evaluation processes.

Recommendation 2: The Human Factors Research and Engineering Division should work closely with other offices developing partnerships with advanced technology developers (e.g., NASA Airspace Systems program and projects to anticipate transition requirements for NGATS developments. Theses impacts will be felt in the human factor systems engineering, workforce planning, and air traffic training to model the impact of future concepts of operation, technology, and procedures on controller staffing, selection and training requirements. The development of methods, tools, and processes for modeling the evolving air traffic service provider work process is needed as part of that collaboration.

Flight deck/Maintenance/System Integration

Recommendation 3: The subcommittee recognizes and endorses the need for air ground integration research in response to advanced information-centric distributed air traffic management initiatives. The subcommittee suggests that these research initiatives be

coordinated with safety assessment and procedures development. In order to extend and position past safety assurance and certification work to support new technologies transition

Recommendation 4: Subcommittee finds that the FAA Human Factors Office is uniquely placed to support a responsive transition strategy to future operations. We suggest that the office consider broadening the activities in air-ground integration with partnerships with NASA and JPDO.

NAS Operations Subcommittee

Recommendation re Wake Vortex Research: Continuation of research funding in this area at the current expenditure level is appropriate. Currently available improvements in navigation and surveillance technology could produce major improvements in terminal area capacity if the wake vortex hazards can be understood and efficiently avoided. The current program is producing new procedures that will go into effect this year at St. Louis that will provide operational benefits. Recent investment in wake research has validated additional operating benefits that may be appropriate at other airports. However, the suggested out-year funding for implementing these new procedures does not reflect the importance of the wake vortex in enabling terminal area capacity improvements.

Recommendation re Separation Standards: A NAS Operations Subcommittee working group is currently looking at this issue and will shortly be making recommendations regarding research on separation standards. We expect that this working group will suggest that separation standards could be safely reduced or redefined as to the way they are structured and applied (a la stochastic separation.). Defining the details of these new approaches to safe separations will require new research into the statistics of flight technical error (in the context of modern FMS capability), into blunder statistics and recovery mechanisms, and into the impact of a stochastic separation approach. These efforts will require close coordination with the developing NGATS definition. The budget projection for separation standards (no money after 2006) will not support this urgent need.

Recommendation re Unmanned Aircraft Systems: We need an R&D program that assesses the impact of integrating UAS into the NAS. "The funding for RE&D related to Unmanned Aircraft Systems in FY08 and beyond does not reflect the complexity of the technical and operational issues associated with their routine integration into civil airspace. This is a critical national priority for both homeland security and national defense missions as well as the emerging commercial potential enabled by this new species of aircraft.

Recommendation re R&D Transition to Operational Utility: The committee notes that the transition from R&D product to operational utility is very long. Promising R&D products (at Technology Readiness Level 6) typically take more than 10 years to initial operational capability. In addition, recent cuts in funding levels in NASA Airspace System Program research and increased emphasis on earlier technology readiness levels is likely to widen this gap and thus the committee is concerned that in the coming years this transition delay will grow. In anticipation of the acceleration of technology deployments required to realize NGATS, the committee recommends that the FAA assess the costs of NGATS deployments and apply sufficient funds to accelerate the technology transfer and implementation.

Subcommittee on Airports

1. Subcommittee reconfirmed the proposed program for FY 06 and FY 07 research. FAA needs to continue to coordinate with the new and growing ACRP research program to assure that the two programs are complimentary.

2. Subcommittee supports the increased funding in FY 08 for friction and winter operations research. Additional friction research and data collection on winter runway braking characteristics is needed (following up on the Midway accident). The research should include modification to simulators to include runway surface characteristics, and the development of aircraft-derived braking data into the research as well.

3. In FY 08 the Airport R&D Branch at the Technical Center should have a head count increase from 20 to 22 heads. The Subcommittee has stated previously that if the program grew from the historic $5.5M level to the higher levels that are now in place, the requested increase should be implemented. The two engineers should be included in the Airport Technology FY 08 budget request.

4. Subcommittee suggested that the FAA should initiate research on EMAS systems to consider stopping characteristics within shorter distances by perhaps allowing higher deceleration capabilities.