Meeting Minutes of the Federal Aviation Administration Research, Engineering and Development Advisory Committee

April 8 & 9, 1997

On April 8 and 9, 1997, the Federal Aviation Administration (FAA) Research, Engineering and Development (R, E&D) Advisory Committee held a meeting at the Maritime Institute of Technology in Linthicum Heights, Maryland. Attachments 1 and 2 provide the meeting agenda and meeting attendance, respectively

DAY ONE -- April 8, 1997

Welcome and Introductory Remarks

Dr. Andres Zellweger, Executive Director and designated federal official of the Committee, read the official public meeting announcement notice. He acknowledged Mr. Carl Schellenberg, the Deputy Associate Administrator for Air Traffic Services, who represented the operational side of FAA.

Mr. Ralph Eschenbach, Chairman, introduced four new members to the Committee: Dr. David Crow, Senior Vice President of Engineering at Pratt-Whitney; Mr. James Pierce, Chairman and Chief Executive Officer of ARINC; Dr. Robert Helmreich, Professor of Psychology at the University of Texas at Austin; and Mr. John Olcott, President of National Business Aircraft Association (NBAA).

Mr. Eschenbach announced that Dr. Zellweger will retire from FAA on May 1 to assume a position at Embrey-Riddle Aeronautical University as Dean of the graduate program for research. He praised Dr. Zellweger for developing a strong centralized research and development (R&D) program in Aviation Research and presented an award to Dr. Zellweger from the Committee.

Mr. Eschenbach remarked that he and Dr. Donohue had testified before Congress about two weeks ago. He explained that Congress is very interested in what the Committee is doing and is taking a serious look at the Committee's work. Mr. Eschenbach observed that FAA also is interested in, and receptive to, the Committee's recommendations, especially recommendations on its planned research and development investments.

Dr. George L. Donohue, Associate Administrator for Research and Acquisitions, welcomed the new members to the Committee. He discussed the Secretary of Transportation Slater's vision of

aviation as a major economic artery into the next century which is similar to what the highway system was in the latter half of the 20th century. Dr. Donohue remarked on the challenges in making this vision a reality. Recent airline analysis and independent analysis confirm that a major problem in air traffic capacity will occur between 2002-2004. Radar and radio separation will increasingly become inadequate for the expected air traffic capacity as we enter the 21st century which will necessitate the move to satellite-based systems. The Gore Commission recommended a modernized air traffic system prior to 2005. Introducing technology, safety, and capacity improvements into the system in such a short time-frame creates sociological, fiscal, and technical challenges. With approximately 400,000 aircraft in the world, equipage is a major challenge in the transition to new ground and cockpit technology by 2005. Over the next 3-5 years, research must shift from development to field testing. Flight 2000 (formerly Halaska) is an approach to transitioning to a modern air traffic system by establishing beta test sites in Alaska and Hawaii. The beta sites will provide a cognitive approach to introducing new technology and procedures and will allow a phased transition into the modern air traffic system. Dr. Donohue asked for the Committee's input on the Flight 2000 program and challenged all segments of the aviation community to work together to build consensus on financing, inserting technology, and transitioning to a modern air traffic system by 2005.

NAS R&D Panel Report

The NAS R&D Panel was chartered to review the content and management of FAA's current research and development program against the proposed National Airspace System (NAS) architecture. The purpose of the review was to identify issues that required resolution in order to complete the architecture and to explore opportunities for increasing the program's effectiveness in enhancing the NAS. Mrs. Nancy Price Chaired the Subcommittee. Mrs. Price presented the Subcommittee's report titled, "Subcommittee Report of the NAS ATM R&D Panel to the R,E&D Advisory Committee", dated March 25, 1997. The Committee unanimously approved the report. Mr. Eschenbach, Dr. Donohue, and Mrs. Price agreed that the standing Subcommittee on Air Traffic Services (ATS), also Chaired by Mrs. Price, would continue the work of the NAS R&D Panel by reviewing the Flight 2000 program (formerly Halaska) over the summer. The Subcommittee would submit a report in September on the results of the Flight 2000 review.

Subcommittee for General Aviation (GA) and Vertical Flight

Mr. Eschenbach presented the proposed terms of reference for a GA and Vertical Flight Subcommittee to the Committee for vote. The Committee unanimously approved the terms of reference. Mr. Eschenbach appointed Mr. John Olcott and Mr. John Zugschwert to serve as Co-Chairs of the Subcommittee. The Subcommittee will investigate the current national transportation system as well as the proposed system architecture for the future national transportation system with respect to how these systems support GA and vertical flight. The Subcommittee plans to meet over the next year and a half and present its report at the September 1998 Committee meeting. Dr. Donohue reminded the Committee that the Gore Commission made several specific recommendations related to GA. One of the

recommendations dealt with making advanced avionics affordable for GA aircraft. He asked the Subcommittee to consider the Gore Commission recommendations and to determine if the right things are being done to make GA safer.

Meeting Process

Dr. Clyde A. Miller, FAA's Research Division Manager, presented the objectives of the meeting. The principle objective was for the Committee to provide FAA feedback on the 5-year R,E&D investment portfolio for fiscal years (FY) 1999-2003. Specific emphasis was placed on FY 1999. FAA wants to know if the Committee believes it is investing in the right things with its limited FY 1999 R, E&D resources.

Dr. Miller requested that the breakout groups consider the following questions in their review of the investment portfolio:

- Portfolio Content – Does the portfolio address the right outcomes, outputs, and timeframes?
- Research Project Description (RPD) Funding – Which RPDs should receive more funding and which should receive less and why?
- Target Area Funding – Which areas should receive more funding and which should receive less and why?
- Partnerships – What specific opportunities exist to better leverage R, E&D investments with contributions from industry, academia, and other government agencies?
- Response – Has FAA responded effectively to the guidance provided by your subcommittee?
- Process – What should FAA do to improve the process it is using to engage the Committee in providing advice on its investment portfolio?
- Additional Guidance and Recommendations – Whatever else the Committee would offer the Administrator to better focus R,E&D investments on community needs.

Program Briefings

The FAA presented its 5-year R&D investment portfolio for FY 1999-2003 to the Committee in six program areas: Air Traffic Services (ATS), Airport Technology, Aircraft Safety, Security, Environment and Energy, and R, E&D Management. For each program area, FAA presentations highlighted the program's mission, outcomes and outputs, long range views, and funding summaries. The presenters, in order of presentation, were as follows:

Ms. Paula Lewis	**Air Traffic Services**
Dr. Satish Agrawal	**Airport Technology**
Mr. Dave Smith	**Aviation Security**
Mr. George Marania	**Aircraft Safety**
Mr. Tom Connors	**Environment and Energy**
Mr. Randy Stevens	**R, E&D Management**

The Subcommittee on Human Factors did not meet separately. Members from this Subcommittee participated in the breakout group for the Subcommittee on Aircraft Safety or the Subcommittee on Air Traffic Services to review the relevant human factors research and development in these areas.

Subcommittee Reports

The meeting reconvened in plenary session for the presentation of the subcommittees' recommendations. Each Subcommittee Chair presented a 10-minute briefing outlining their subcommittee's recommendations. The subcommittee recommendations are provided by Attachment 3. The meeting adjourned for the day at 5:00 p.m.

DAY TWO -- April 9, 1997

Introductory Remarks

Mr. Eschenbach convened the meeting in plenary session and announced the Committee's task for the day which was to make overall recommendations for FAA's proposed R&D investment portfolio.

Breakout Groups

Members met in three breakout groups. To provide a balanced perspective in each of the three groups, membership was assigned so that there were participants from each of the six standing subcommittees in each of the three groups. The groups were to consider all six program areas of the proposed portfolio and take into account the work done by the subcommittee groups in the previous day's session. Again, the breakout groups were asked to consider the questions posed by Dr. Clyde Miller in his presentation on the previous day on the meeting process and objectives. The following Committee members were appointed to Chair the three groups:

Ms. Nancy Price	**Group 1**
Dr. Wesley Harry	**Group 2**
Mr. Robert Doll	**Group 3**

Breakout Group Reports

Eschenbach reconvened the Committee in plenary session to review the reports and discuss the recommendations of each breakout group. The Chair from each group gave a report of his or her group's findings and recommendations. The reports from the three groups are provided by Attachment 4.

Committee Recommendations

Committee discussed the recommendations received from the various breakout groups and conducted several votes to determine the highest priority recommendations that the Committee would provide by letter to the Administrator. The Committee members reached consensus on five recommendations which were as follows:

1. The Committee recommends that **FAA set the specific objectives and detailed operational concepts for free flight.** This should include a plan and system architecture for the transition from the current NAS system to free flight. In support of verifying the free flight operational concept and transitioning to free flight, **FAA should develop a detailed plan, operational concept and architecture for the Flight 2000 demonstration and validation.** In particular, the fiscal year 1998-2003 R, E&D program should include a comprehensive, large-scale simulation effort to develop and validate the operational concepts. In order to meet the objectives of live operational testing starting in the fiscal year 2000, these simulation efforts must start in 1998. The ATS Subcommittee has been asked to evaluate the 1998 and 1999 research allocations and determine if any adjustments need to be made. This report will be submitted in September 1997.

2. The Committee strongly supports the Flight 2000 demonstration program. To accomplish Flight 2000 and the transition to free flight by the 2005 date suggested by the Gore Commission, **FAA must provide strong leadership within the Aviation Community** to insure stakeholder support and dedicate its R,E &D investments in air traffic services and related areas to achieving free flight and Flight 2000.

3. **The FAA should place more emphasis on the National Resource Specialists (NRS).** We recommend that FAA fill vacancies with well-qualified people who understand the role of the NRS. Furthermore, FAA should utilize the NRS to guide its research and development investments in aircraft safety and related areas including collaborative efforts with the National Aeronautics and Space Administration (NASA).

4. We recommend that **FAA consider diverting 20 percent of its planned investments in aviation security to high priority requirements for air traffic services research.** We do not feel that the money is being misused, but that it would be more in the National interest to support the Flight 2000 program and the transition to free flight.

5. The Committee strongly endorses the FAA's collaborative research and development activities with NASA. In the collaboration, **NASA's role should be focused strongly on basic research** that provides a technology base in FAA mission areas. **FAA's role principally should be in applied research** and development in support of its regulatory and air traffic services responsibilities.

These five recommendations on FAA's planned R&D investments will be provided by letter from Mr. Eschenbach, the Committee Chair, on behalf of the Committee, to the Administrator. The next Committee meeting is planned for September.

The meeting adjourned at 3:00 p.m.

Research, Engineering & Development (R, E&D) Advisory Committee

Maritime Institute of Technology
5700 Hammonds Ferry Road
Linthicum Heights, MD 21090
(410) 859-5700 Fax: (410) 859-0942

April 8-9, 1997

AGENDA

Tuesday, April 8 – Classroom 1

8:00 am	Welcome and Introductory Remarks	Mr. Ralph Eschenbach, Chair Dr. Andres Zellweger, FAA Dr. George Donohue, FAA
8:25 am	Vote on NAS R&D Panel Report	Mr. Ralph Eschenbach, Chair
8:35 am	Vote on GA & Vertical Flight Subcommittee Terms of Reference	Mr. Ralph Eschenbach, Chair
8:45 am	Meeting Process and Objectives	Dr. Clyde Miller, FAA
9:00 am	FY1999 R, E&D Investment Portfolio	Dr. Clyde Miller, FAA
9:45 am	BREAK	

Target Area Team (TAT) Reports

10:00 am – 10:50 am	Air Traffic Services	Ms. Paula Lewis, FAA
10:50 am – 11:20 am	Airports	Dr. Satish Agrawal, FAA
11:20 am – 12:00 pm	Security	Mr. Dave Smith, FAA
12:00 Noon	Lunch	Maritime Cafeteria

(TAT) Reports Continued

1:00 pm – 1:50 pm	Aircraft Safety	Mr. George Marania, FAA
1:50 pm- 2:20 pm	Environment & Energy	Mr. Tom Connor, FAA
2:20 pm – 2:30 pm	R,E,&D Management	Mr. Randy Stevens, FAA
2:30 pm	BREAK	
2:45 pm	Breakouts (5) – Subcommittee Meetings	Committee Members

- Air Traffic Services – Classroom #1
- Airports – Room A302
- Aircraft Safety – Room A303
- Security – Room A305
- Environment & Energy – Room A307

3:45 pm	Subcommittee Reports (Plenary Session) [10 Minutes per Subcommittee]	Subcommittee Chairs
5:00 pm	Meeting Adjourn	
5:30 pm	Cocktails DoubleTree Atrium Lounge	
6:00 pm	Dinner DoubleTree Atrium Café [participants must sign up by 12:10 pm in order to attend	

Wednesday, April 9 – Classroom 1

8:00 am	Plenary Session Guidance to Breakout Groups	Mr. Ralph Eschenbach, Chair Dr. Clyde Miller, FAA
8:15 am	Breakouts (3) – Investment Portfolio Discussions Group 1 – Room A302 Group 2 – Room A303 Group 3 – Room A307	Committee Members
12:00 Noon	Lunch – Maritime Cafeteria	
1:00 pm	Breakout Group Reports (Plenary Session)	Group Leaders
3:00 pm	BREAK	
3:30 pm	Committee Recommendations	
5:00 pm	Adjourn	Mr. Ralph Eschenbach, Chair

BREAKOUT GROUP ROOMS:

Room #302
Room #303
Room #305
Room #307

RESEARCH, ENGINEERING AND DEVELOPMENT (R,E&D)ADVISORY COMMITTEE

Maritime Institute of Technology
Linthicum Heights, MD
April 8-9, 1997

LIST OF ATTENDEES

Dr. Andres Zellweger, Executive Director, R,E&D Advisory Committee

Mr. Ralph Eschenbach, Chairman

Dr. Satya Atluri
Mr. Viggo Butler
Mr. Frank Colson
Hon. Susan Coughlin
Mr. Robert Doll
Dr. Aaron Gellman
Ms. Angela Gittens
Dr. Wesley Harris
Dr. Robert Helmreich
Mr. George Howard
Ms. Margaret Jenny
Mr. Jean McGrew
Dr. Dennis McLaughlin
Mr. Jack Olcott
Mr. James Pierce
Mrs. Nancy Price
Mr. Michael Rioux
Mr. Edward Stimpson
Dr. Robert Whitehead
Mr. John Zugschwert

OTHER ATTENDEES

George Donohue, FAA
Clyde Miller, FAA
Lee Olson, FAA
Randy Stevens, FAA
Tom Proeschel, FAA
Ken Klasinski, FAA
Lonnie Bellamy, FAA
Vincent Capezzuto, FAA
Dave Sankey, FAA
Warren Fellner, FAA
Herb Schlickednaier, NASA
Tom Connor, FAA
Kathy Abbott, FAA
Tom Imricu, FAA
Edward Harris, FAA
Charles Beam, FAA
Paul Drouilhet, MIT/LL
Frank Earhardt, FAA
Satish Agrawal, FAA
Mike Dundon, FAA
Larry Cole, FAA
Craig Bolt, Pratt & Whitney
Robert Grove, II Morrow
Mike Hawthorne, FAA
Dina DeAnnuntis, FAA
Bernard Blood, Volpe
Dennis Goeddel, Volpe

Dot Buckanin, FAA
John Burks, NASA
Paul Dykeman, FAA
Ernie Dash, FAA
Tony Fainberg, FAA
Steve Bradford, FAA
Chuck Ruehle, FAA
John Loynes, FAA
Hugh Bergeron, FAA
Michael Hermes, MITRE
David Cherry, FAA
John Fielding, Raytheon
Edward Gervais, Boeing
Tony Freck, GE
Tom McCloy, FAA
Cathy Bigelow, FAA
Vivian Hobbs, Volpe
Charlie Huetner, NASA
Russ Benel, MITRE
Frank Tung, Volpe
John Rybka, FAA
Dave Smith, FAA
Susan VanNamee, FAA
Carl Shellenberg, FAA
Richard Young, FAA

Maureen Pettitt, FAA
Debra Winchester, FAA
Sig Poritsky, Consultant
Jim Poage, Volpe
Quentin Taylor, FAA
Julian Vinck, FAA
Thomas William, FAA
Herman Rediess, FAA
Rob Tucker, FAA Barry
Romney, FAA
Hick Stoer, Self
Stu Schreckengast, MITRE
Harold Smetana, FAA
Gary Skillicorn, FAA
Jim Wychmann, MIT
Paul Polski, FAA
Bob Wright, FAA
Arthur Sullivan, FAA
Art Pyster, FAA
Bill Swedish, MITRE
George Marania, FAA
Victor Ilenda, JHU
Dennis Kershner, JHU
Calvin Mitchell, FAA
Nelson Miller, FAA

J.C. Johns, FAA
Joe McCormick, Consultant
Charles Overbey, FAA
Paul Kelleher, FAA
Lawrence Nivert, FAA
Chuck Martin, FAA
Charlotte Long, FAA
Paul Jones, FAA
John McCarthy, NCAR
Paula Lewis, FAA
Hugh McLaurin, FAA
Ruth Martin, NASA
Ann Joyce, FAA
Karen Miles, Norman Dev.
Bob Luddy, NASA
Robert Dodd, Battelle
Mary Barboza, FAA
June Lidder, TRW
Paul Kelleher, TRW
Helen Kish, SRM
Marcie Romagnoli, TRW
Carole Schmidt, AMTI
Gloria Dunderman, AMTI

Breakout Group Reports
From the
Subcommittee Meetings

April 8, 1997

Includes Reports from the Following Subcommittee Groups:

Air Traffic Services
Airport Technology
Aircraft Safety
Aviation Security
Environment & Energy

Report from the Subcommittee on Air Traffic Services

Chair: Mrs. Nancy Price

Members:

Mr. Frank Colson

Hon. Susan Coughlin

Ms. Margaret Jenny

Mr. John Olcott

Mr. Michael Rioux

Mr. John Zugschwert

- ATS R&D needs leadership
- ATS needs an operational concept and needs to be brought together with the lab
- Need Cost Benefit Analysis to support ATS investment decisions
- Need detailed roadmap for Flight 2000
- Flight 2000 needs leadership to develop structure and goals

- Subcommittee needs by the end of May:
    - Flight 2000 definition (roadmap, structure, and goals)
    - FY 1998 budget realignment to accomplish Flight 2000
    - FY 1999 budget focused on Flight 2000 requirements
- Subcommittee will report by end of September on how to adjust FY 1999 R,E&D ATS investments for Flight 2000

Report from the Subcommittee on Airport Technology

Chair: Mr. George Howard

Members:

Mr. Viggo Butler

Ms. Angela Gittens

- Non-Destructive Pavement Testing is not funded for FY 1999 at the 100 percent program level. The Subcommittee recommends that this RPD be included (No. 143) at an amount of $150K
- The Subcommittee questioned the appropriateness of R&D funds for Airport Planning and Design (No. 132) but, after discussion with the FAA staff, agreed to its inclusion at a level of $150K
- These recommendations preserve the G-7 FY 1999 total of $7,029K. The Subcommittee would prefer to have $350K added to the G-7 funding level for the inclusion of RPD 143
- The Subcommittee recommends that the full R,E&D Committee address itself to the need for R&D funding at much higher levels and explore the potential for greater partnership with industry and the concept of user funding

Report from the Subcommittee on Aircraft Safety

Chair: Mr. Robert Doll

Members:

Dr. Aaron Gellman

Dr. Robert Helmrich

Mr. Jean McGrew

Mr. Edward Stimpson

- There was insufficient time to cover the wide scope of R&D in this program area. The team does not feel comfortable with the limited time that we have had for discussion and debate
- We will meet in Atlantic City during the summer to discuss the research project descriptions (RPDs) in detail. A three-day meeting in August is planned
- For the immediate future, we feel that the portfolio is reasonably balanced, but we expect some revisions after the August meeting
- A major issue that has emerged is the level of participation to be expected from industry, DOD, and NASA in FAA research projects
- We felt that the FAA response to the Subcommittee was adequate

Report from the Subcommittee on Aviation Safety

Acting Chair: Dr. Dennis McLaughlin

- Planned Subcommittee Meetings
    - February 13 and 14, FAA Headquarters, Washington, D.C.
    - April 17 and 18, Aviation Security Laboratory, William J. Hughes Technical Center, Atlantic City, N.J. (This is a security classified meeting).
- Program Overview
    - This program has the fastest growing annual budget (doubling every 3 years for the past decade).
    - Its growth puts this program clearly in a different arena than all of the rest of the R&D programs.

- In FY 1997, of the $57M Aviation Security R&D budget, $21M was allocated directly by Congress to Security.
    - The $21M allocation was intended to “shepherd” the security equipment infusion from the SEIPT program ($144M).
- Of the $57M budget, about 20 percent is allocated for research and exploratory development.
    - About a quarter of this (5 percent) is expended at the William J. Hughes Technical Center
    - The remainder is expended in prototyping, advanced development, and alpha and beta testing.

- R&D Categories:
    - Explosives/Weapons Detection
    - Airport Security
    - Aircraft Hardening
    - Human Factors
- Response to Questions:
    - Adequate Portfolio Content
        - The portfolio requires one more level of detail that will include security classified information. James Pierce, our Chair, and Lyle Malotky, the Designated Federal Official (DFO), will preside over the meeting next week at the Technical Center
    - Partnerships
        - $150M annually.
        - 80 Partners.
    - Prior Subcommittee Recommendations
        - Some attention should be given to assessing the threat of terrorist launched small missiles and the possible area of responsibility (perhaps, this is in the DOD, FBI domain).

- Clarify information coming to the Subcommittee by combining RPDs

- The process is following a sensible approach

Report from the Subcommittee on Environment & Energy

Chair: Dr. Wesley Harris

Members:

Capt. Patricia Andrews

Dr. Robert Whitehead

- What's Missing

The Environment and Energy 100 percent portfolio would be significantly strengthened by adding an accurate, user-friendly, comprehensive environmental impact simulation and modeling capability to its research agenda. This impact simulation/model would predict the effects of noise and emissions produced by aircraft inclusive of a wide range of conditions and critical limits. Based on proven scientific principles and facts and established engineering practices, the simulation and modeling tool should be used on a management enabler to guide and control investments in environmental impact research and development.

This comprehensive, robust environmental impact simulation and modeling capability would be an essential component in defining the FAA environmental impact investment roadmap. It would provide a guide to NASA as NASA develops and refines its emerging long range plan in aviation environment mitigation. Also, this tool would strengthen the partnership, and hence leverage, between the FAA and industry.

This add-on requires a funding increase of $1.5M per year.

- RPD Funding

It is recommended that six (6) full-time equivalent (FTE) positions be added to the Environment and Energy Program Office. This added personnel would provide a much needed in-house expertise in environmental impact (noise and emissions).

- Response

All elements responded to satisfactorily

Breakout Group Reports
From the
Investment Portfolio Discussion Groups
April 9, 1997

Includes Reports from the Following Groups:

Group 1
Group 2
Group 3

Group1

Chair: Mrs. Nancy Price

Members:
Mr. George Howard
Mr. James Pierce
Mr. Michael Rioux

- AIR TRAFFIC SERVICES
    - System by 2005
    - Identify RPDs
        - System Integration Lab Including Operational Procedures, Certification, Human Factors, Logistics, and Training
        - Baseline Plan for Evolution of NAS Concepts of Operation, Architecture, Functionality, Transition Mechanisms, Environmental, and Safety
    - Address Partnerships
        - Ensure Allocated Funds are Effectively Used Toward 2005
            - FAA
            - NASA
            - DOD
            - MITRE
            - International
            - Industry

- Establishing Inter-Agency/Industry IPT's To Address R&D As A Single Goal

- Response to Subcommittee Recommendations

    - Well Done & Appreciated
    - With Mailing of Materials in Advance
    - It's Possible to Minimize Staff Presentations
    - Should Focus on Questions, Issues, Concerns

- AIRPORT TECHNOLOGY

    - Concur with yesterday's recommendations

    - Additional Air Transport Association (ATA) input:

        - Need to deliver products earlier time frame.

        - Runway friction - long term program but no product until 2002.

        - $20M in airport pavement research but limited devoted to runway traction. Focus more on winter friction testing and environmentally safe deicing fluids

        - Coordinate research with ongoing programs. Airport lighting should be coordinated with AMASS activities

        - Taxiway deviation study should be part of a new large aircraft verses figuring out how much larger taxiways should be

- AIRCRAFT SAFETY

    - "Aging System" is missing

    - Review items and determine if industry or NASA or DOD is researching projects. Where should research be done?

- SECURITY

    - No comments except to apply 20 percent of security budget to ATS

- HUMAN FACTORS
    - Speed up and make decisions to put structure in place to make things happen. (Earl Wiener Report).
    - Publicly state what's being done
    - Continue to endorse recommendations of Abbott Report

Group2

Chair: Dr. Wesley Harris

Members:
Dr. Satya Atluri
Mr. Viggo Butler
Hon. Susan Coughlin
Mr. Jean McGrew
Mr. John Olcott

- Background
    - Air transportation is vital to economic development of the United States
        - Responsible for nearly $800 billion in economic activity, per Wilbur Smith
        - Generates (conservatively) $30 billion in tax revenues for the U.S. Government
        - Facilitates jobs in rural America
        - Links U.S. business into broad domestic and international markets
        - Provides an exportable product for U.S. providers of air transportation technology (ATM hardware, software)
    - Air transportation is vital to quality of life
        - Enables family members to visit often (because of low-cost fares)

- Provides companies with a capability of locating in rural areas, thereby providing jobs in rural areas
- Increases property values in areas where good transportation is available
- Eliminates boundaries, thereby linking geographically disbursed people
- Provides nation with economic security needed to protect our way of life (future conflicts threatening our way of life and security will be economic, not military.)

- Central Theme

  A more efficient, robust, modernized air traffic management system is absolutely necessary to avoid unacceptable delays and potential safety problems in U.S. aviation. **This system is "free-flight."**

- Observations/Requests
  - Leadership Challenge
    - Goal setting/identification of 'free flight" objectives
    - Fundamental review of R&D to transition to "free-flight."
    - Specific, detailed plan for Flight-2000
    - Impact of Flight 2000 on current FAA R&D plan
    - Impact of Flight 2000 as guidance to "free-flight."
    - FAA must set the world's standards for "free-flight" technology/system

- Technology Specific
  - Emission (high-altitude)
  - Security
  - Safety
  - Pavement technology

Group3

Chair: Mr. Robert Doll

Members:
Mr. Frank Colson
Dr. Aaron Gellman
Ms. Angela Gittens
Dr. Dennis McLaughlin

- Flight 2000
  - Less complex political structure in U.S verses Europe. Advantage for our leadership in designing eventual technology structure
  - We need to decide now what the technology is. Can't wait another 6 months for another engineering solution
  - FAA must take the leadership role in making decisions
  - Endorse choice of Alaska and Hawaii rather than trying in on East Coast
  - Fastest conversion is needed from ground to Satellite
  - Leasing program must be made available for the participants from a combination of government and the financial community
- Partnerships
  - FAA relationships with NASA for the ASIST Program -NASA needs to keep its discipline, i.e, keep to 6.1, 6.2 levels of research. FAA needs to focus on 6.3. Industry needs to participate at all levels
  - FAA is responsible to court DoD - needs to leverage DoD research more than in past
  - NRS program - quality of people improved and all positions filled - role on the FAA /NASA boundary
- Guidance
  - Shortage of qualified Aerospace personnel - especially in the MRO area. The academic side is about 180 degrees out of phase with cyclic rate of the

aerospace industry. FAA needs to be proactive in fostering the aerospace career field.

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- TAT Allocations
    - Rapid ramp up of security program is placing a stress on the program to effectively spend these funds
- Process
    - Concern that the impact of NASA work and F&E was not fully explained
    - The sudden change out of Subcommittee members caused a discontinuity - should be some overlap
    - Every two years for a total program review is not frequent enough - annual is right
    - The Subcommittees should be examined to ensure full representation of shareholders - but limit to 10-12. The FAA should examine ARAC for lessons learned