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

Committee Guidance on FY 2002 Budget

Report and Minutes

September 14-15, 1999

Research, Engineering & Development (R,E&D) Advisory Committee
Holiday Inn Rosslyn Westpark Hotel
1900 North Fort Myer Drive, Arlington, VA 22209
September 14 and 15, 1999

On September 14 and 15, 1999, the Federal Aviation Administration (FAA) Research, Engineering and Development (R,E&D) Advisory Committee (REDAC) held a meeting at the Holiday Inn Rosslyn Westpark Hotel in Arlington, Virginia. Attachments 1 and 2 provide the meeting agenda and meeting attendance, respectively.

DAY ONE – September 14

Welcome and Introductory Remarks

Dr. Herman Rediess, Executive Director and Designated Federal Official of the Committee read the public meeting notice.

Mr. Robert Doll, Chairman of the Committee, welcomed the attendees and introduced two new members: Mr. Joseph Jackson, Manager of Airline Programs with Commercial Aviation Systems, Honeywell; and Captain Chester "Chet" Ekstrand, Vice President for Extended-Range Twin Engine Operations (ETOPS) and Communication, Navigation, Surveillance/Air Traffic Management (CNS/ ATM) with Boeing Commercial Airplane Group. Mr. Doll also welcomed Dr. Louis Mancini who became a new member at the April 21 meeting.

Mr. Doll announced that President Clinton nominated Mr. Ed Stimpson as the U.S. Representative on the Council of the International Civil Aviation Organization with the rank of Ambassador. On behalf of the Committee, Mr. Doll expressed appreciation for Ed's dedication to the Committee and wished him well in his new position.

Mr. Monte Belger, Acting Deputy Administrator, discussed the status of the fiscal year (FY) 2000 budget appropriation, a proposal to privatize air traffic control functions, the potential of FAA to operate as a performance-based organization (PBO), and FAA's strategic plan, which focuses on safety, security, and efficiency.

Mr. Steve Zaidman, Associate Administrator for Research and Acquisitions, discussed FAA safety research successes including the Soft Ground Arrestor Program. He also discussed FAA progress in the areas of security, safety and efficiency, which include new initiatives in information security, a newly formed Human Factors Task Force, and progress defining Free Flight Phase 2.

Meeting Process and Objectives

Dr. Herman Rediess, Director, Office of Aviation Research (AAR-1), introduced Mr. Hugh McLaurin, Manager, Research Division (AAR-200), who is responsible for formulating the research and development (R&D) budget portfolio.

Dr. Rediess outlined the meeting process and objectives. The primary objective of the meeting was to develop Committee guidance on the FY 2002 R&D investments.
Dr. Rediess provided a budget synopsis for the FY 1999 and 2000 budgets and a review of the budget process. The budget process involves the Committee in the following ways:

- In September, the Committee provides investment guidance for the FAA's upcoming budget formulation (current year plus three). Each standing subcommittee presents its guidance to the Committee at this time.
- In the February to March timeframe, the standing subcommittees meet with their respective FAA Program Planning Team (PPT) to review FAA's proposed R&D investment portfolio.
- In April, FAA presents its integrated R&D investment portfolio to the Committee for its final review and comment. The standing subcommittees present their findings from the February/March meetings to the Committee at this time.

Dr. Rediess pointed out that the former FAA Group of Seven (G-7) has been renamed and expanded to the R&D Executive Board (REB). FAA Target Area Teams (TAT) have been renamed Program Planning Teams (PPT).

Free Flight Steering Committee & REDAC/ATS Complementary Roles

In August Mr. Doll, Dr. Rediess, and Mr. Paul Drouilhet, Air Traffic Services (ATS) Subcommittee Chairman, met with Ms. Margaret Jenny, Radio Technical Commission for Aeronautics' (RTCA) Free Flight Select Committee Co-Chair. The purpose of the meeting was to discuss the roles of the RTCA Free Flight Steering Committee and REDAC ATS Subcommittee. This was an attempt to ensure the two committees do not overlap, thus avoiding unnecessary duplication and use of valuable resources. Dr. Rediess developed operating guidelines to distinguish the two committees, which he provided to the Committee for review.

FAA REDAC and NASA ASTAC Update

Mr. Doll provided an update on FAA and National Aeronautics and Space Administration's (NASA) commitment to form a closer working relationship between the REDAC and the NASA Aero-Space Technology Advisory Committee (ASTAC). FAA and NASA are accomplishing this in a number of ways.

- Currently, there are five members who participate on both the REDAC and ASTAC.
- NASA has formed two subcommittees with several members from the FAA REDAC who participate. These are the Goals Subcommittee and the Air Traffic Management (ATM) R&D Executive Steering Committee.
- The REDAC ATS Subcommittee has met jointly each year for the past two years with the ASTAC ATM R&D Executive Steering Committee.
- The REDAC receives periodic briefings from NASA on current research programs. The Small Aircraft Transportation System (SATS) scheduled for this session is an example of such a presentation.

Mr. Doll pointed to two primary research concerns: (1) the FAA's ability to effectively implement NASA's research technologies as NASA delivers these to FAA for development, and (2) NASA's ability to respond to FAA's future research requirements.

Framework for Linking the R&D Portfolio to FAA Goals

Dr. Rediess presented the three strategic goals of FAA's Strategic Plan, which are safety, security, and system efficiency, and the enabling goal of environmental compatibility. He discussed how the objectives under each of these goals map to the research program. Finally, he presented FAA's R&D funding for FY 1999 and FY 2000 separated into the categories of safety, security, system efficiency, and environment and energy.

Joint FAA/NASA Efficiency Goals Harmonization Update

The objective of the joint goal harmonization effort is to establish a framework that allows FAA and NASA to communicate, coordinate, and manage their R&D goals in the areas of safety, efficiency, environment and energy, and space transportation. FAA and NASA have accomplished most of the work on the safety goal harmonization effort. They have started the efficiency goal harmonization effort, and they plan to work on the environment and energy goal and space transportation goal harmonization in the future.

Dr. Rediess presented the efficiency goal harmonization update. He showed a notional diagram depicting the overlap of various FAA and NASA efficiency-related programs. He also reviewed a draft efficiency goal framework or matrix that maps FAA's Strategic Plan goals to research goals with an axis to show which of the research programs address these goals.

Joint FAA/NASA Aircraft Safety Goals Update

Dr. Jan Brecht-Clark, Deputy Director, Office of Aviation Research, presented the FAA/NASA safety goal harmonization framework. The overarching safety goal is to reduce U.S. aviation fatal accident rates by 80 percent from 1994-1996 levels.

After careful review and mapping to the various goal elements and sub-elements, the two agencies have reached harmonization. Dr. Brecht-Clark emphasized that both agencies have gone beyond harmonization to develop the FAA/NASA Integrated Safety Research Plan that includes a communication strategy, an investment-planning process, and analytical tools designed to give strategic direction to the joint program. Joint research programs include aging aircraft, fire safety, and crashworthiness.

Response to Committee Recommendations

Each year in April, the Committee provides recommendations on FAA's planned research and development investment portfolio prior to FAA's finalization of its R,E&D budget. At the April 1999 meeting, the Committee reviewed FAA's planned FY 2001-2005 investments and provided formal recommendations to the Administrator by a letter dated June 11, 1999. Dr. Rediess provided an interim response to the Committee's recommendations. FAA will provide the formal response by letter.

The Runway Incursion Subcommittee was established as an ad hoc subcommittee in September 1997 to develop recommended runway incursion preventive actions that would contribute to developing a runway incursion action plan. Mr. Bruce Landsberg chaired the Subcommittee. The Committee approved the Subcommittee's report titled "Report of the Subcommittee on Runway Incursions" dated January 29, 1998, and provided it to the Administrator by letter dated February 2, 1998. Dr. Rediess provided the FAA's response to the report. Attachment 3 provides FAA's formal response.

Small Aircraft Transportation System (SATS) Update

Dr. Bruce Holmes, NASA General Aviation Program Office Manager, briefed the Committee on the Small Aircraft Transportation System (SATS). This is a research concept developed under NASA's Aerospace Enterprise, to tackle the widening gap in transportation supply and demand.

Dr. Holmes described SATS as a fast, safe means of transportation, available to greater numbers of people in diverse locations. It thus equalizes access for those in more remote communities while expanding economic opportunities for all regions within a state. It provides scheduled and on-demand point-to-point air transportation (including very small economical jets) between 5,400 public use landing facilities. The program is characterized as an "alternative," rather than a solution, to saturated hub-and-spoke configurations and highway gridlock, and is "meant as preserving an option for our future."

Dr. Holmes said NASA is submitting the SATS research proposal to the Office of Management and Budget next week. If this high-risk, high-payoff infrastructure and technology program emerges, he said it will demand a national NASA-led partnership with FAA, Department of Transportation (DOT), Department of Commerce (DOC), and the States.

SATS Working Group

The SATS presentations generated a lengthy Committee discussion, and ended with a proposal and vote to form a working group, headed by Mr. Paul Fiduccia, to examine whether or not the Committee should form an ad hoc Subcommittee to study and report on SATS, in-depth. Mr. Fiduccia will report back to the Committee on the group's findings at the next meeting.

Update on GA and Vertical Flight Subcommittee

The Subcommittee on General Aviation and Vertical Flight is an ad hoc subcommittee established on April 8, 1997, for a two-year duration to investigate general aviation and vertical flight issues. The Committee voted to extend the Subcommittee's terms of reference on January 21, 1999.

Mr. John Zugschwert, Co-Chair of the GA and Vertical Flight Subcommittee, provided a brief overview of the Department of Defense (DOD) V-22 tiltrotor and commercial tiltrotor programs. Mr. Zugschwert and Co-Chair Dr. Wesley Harris have issued invitation letters to prospective Subcommittee members at FAA, NASA, Helicopter Association International, American Helicopter Society, DOD, Bell and Boeing Helicopter, Massachusetts Institute of Technology, Sikorski, Satellite Technology, and Georgia Technology Institute. They plan for the first Subcommittee meeting to occur before the end of October 1999.

Subcommittee Guidance for FY 2002

Each year in September, the Committee provides recommendations on how FAA should invest its R, E&D funds. FAA uses these recommendations to prepare its investment portfolios. Each standing subcommittee chair presented the recommendations from his or her subcommittee to the Committee. These recommendations are provided in
Attachment 4. The following standing subcommittee chairs presented the recommendations:

Air Traffic Services	Mr. Paul Drouilhet
Airports	Mr. Viggo Butler (Acting)
Aircraft Safety	Dr. Louis Mancini
Security	Mr. Viggo Butler
Human Factors	Dr. Deborah Boehm-Davis
Environment & Energy	Dr. Wesley Harris

DAY TWO - September 15, 1999

Mr. Doll convened the meeting at 8:30 a.m., and Dr. Rediess reiterated the terms of the public meeting announcement.

April 2000 Committee Meeting

Dr. Rediess proposed a new Committee meeting schedule for fiscal year 2000. This would include two rather than three Committee meetings per year – one in April and the other in September. The January meeting would be eliminated.

The next Committee meeting will be April 11-13, 2000, with a tentative schedule allowing one and a half days for the R,E&D Advisory Committee meeting and one and a half days for a joint REDAC and NASA ASTAC meeting. Dr. Rediess reviewed proposed topics for the April meeting.

The Committee discussed the proposal and agreed to hold two vice three Committee meetings in 2000 with part of the April meeting reserved for a joint meeting with the NASA ASTAC.

Committee Discussion on Guidance for FY 2002

Mr. Doll led Committee member discussion on what the Committee's letter to the Administrator should offer as guidance for planning the FY 2002 budget. Attachment 5 provides the resulting guidance.

Closing

Before adjourning the meeting, Mr. Doll thanked members for their comments and for all their efforts on the Committee. He announced the fiscal year 2000 meeting schedule, which is below, and requested Subcommittee Chairs to meet with him over dinner on the evening of Monday, April 10.

Meeting Schedule:

- April 11, 12, and 13 (includes joint meeting with NASA ASTAC)
- September 12 and 13

Attachment 1

Research, Engineering & Development (R,E&D) Advisory Committee
Holiday Inn Rosslyn Westpark Hotel
1900 North Fort Myer Drive, Arlington, VA 22209
(703) 807-2000 Fax: (703) 522-7480

September 14-15, 1999

AGENDA

Tuesday, September 14

9:00 am - 9:30 am	Welcome and Introductory Remarks - Welcome New Members	Mr. Robert Doll, Chair Mr. Steve Zaidman, FAA Dr. Herman Rediess, FAA
9:30 am – 10:00 am	Meeting Process and Objectives & Update on R&D Investments	Dr. Herman Rediess, FAA
10:00 am - 10:15 am	Free Flight Steering Committee & REDAC/ATS: Complementary Roles	Mr. Robert Doll, Chair
10:15 am - 10:30 am	FAA REDAC and NASA ASTAC Update	Mr. Robert Doll, Chair
10:30 am - 10:45 am	BREAK	
10:45 am - 11:00 am	Framework for Linking R&D Portfolio to Goals	Dr. Herman Rediess, FAA
11:00 am - 11:15 am	Joint FAA/NASA Efficiency Goals Harmonization Update	Dr. Herman Rediess, FAA
11:15 am - 11:30 am	Joint FAA/NASA Aircraft Safety Goals Update	Dr. Jan Brecht-Clark, FAA
11:30 am-12:00 noon	Response to Committee Recommendations	Dr. Herman Rediess, FAA
12:00 noon	LUNCH	
1:00 pm – 2:00 pm	Small Aircraft Transportation System (SATS) Update	Dr. Bruce Holmes, NASA
2:00 pm – 2:15 pm	SATS: FAA Perspective	Mr. Jim McMahon, FAA
2:15 pm - 2:30 pm	Update on GA & Vertical Flight Subcommittee	Mr. John Zugschwert Mr. Steve Fisher, FAA
2:30 pm - 2:45 pm	BREAK	
	<u>Subcommittee Reports</u>	<u>Subcommittee Chairs</u>
2:45 pm - 3:05 pm	Subcmte. on ATS	Mr. Paul Drouilhet

3:05 pm - 3:25 pm	Subcmte. on Airports	Mr. Viggo Butler
3:25 pm - 3:45 pm	Subcmte. on Aircraft Safety	Dr. Louis Mancini
3:45 pm - 4:05 pm	Subcmte. on Security	Mr. Viggo Butler
4:05 pm - 4:25 pm	Subcmte. on Human Factors	Dr. Deborah Boehm-Davis
4:25 pm - 4:45 pm	Subcmte. on Env. & Energy	Dr. Wesley Harris
5:00 pm	Adjourn	

Wednesday, September 15

8:30 am	Convene Meeting - April 2000 Meeting Discussion	Mr. Robert Doll, Chair Dr. Herman Rediess, FAA
8:30 am - 10:00 am	Committee Discussion on R&D Program	Mr. Robert Doll, Chair
10:00 am – 10:15 am	BREAK	
10:15 am - 11:00 am	Committee Report on Guidance for FY 2002	Mr. Robert Doll, Chair Dr. Herman Rediess, FAA
11:00 am-12:00 noon	Future Committee Activity	Mr. Robert Doll, Chair Dr. Herman Rediess, FAA

Attachment 2

Research, Engineering & Development (R,E&D) Advisory Committee
September 14-15, 1999

Attendance

Members

Mr. Robert Doll, Chairman	Mr. Sam Armstrong	Dr. M.J. Benzakein
Dr. Deborah Boehm-Davis	Mr. Viggo Butler	Mr. James DeLong
Mr. Paul Drouilhet	Capt. Chester Ekstrand	Dr. Wilson Felder

Mr. Paul Fiduccia	Dr. Aaron Gellman	Dr. John Hansman
Dr. Wesley Harris	Dr. Joseph Jackson	Mr. John Kern
Dr. Louis Mancini	Mr. John O'Brien	

Audience

Monte Belger, FAA	Lee Olson, FAA	B.R. Climie, Honeywell
A. L. O'Rourke, TRW	Hugh McLaurin, FAA	Robert Woolfolk, SRI
Edward Gervais, Boeing	Jaiwon Shin, NASA	Calvin Mitchell, FAA
Rosanne Marion, FAA	Joe McCormick, Consultant	Gloria Kulesa, FA
Dave Ford, FAA	Keith Murray, SETA	Roy Reichenbach, NASA
Randy Stevens, FAA	Tom Proeschel, FAA	Raymond LaFrey, MIT
Jim Poage, Volpe	Jim White, FAA	William Richard, FAA
Herm Rediess, FAA	Chueck Ruehle, FAA	Carmine Primeggia, FAA
Jim Rogers, FAA	Ralph Yost, FAA	Rick Page, FAA
Richard Young, FAA	Herb Bachner, FAA	Terry Kraus, FAA
Kenneth Cobb, TRW	Dave Goehler, Jeppesen	Brandan Hardie, FAA
Peggy Gilligan, FAA	Nancy Lane, FAA	Sam Kovnat, Flight Safety Technologies, Inc.
Bruce Holmes, NASA	Jim McMahon, FAA	Rich Nehl, FAA
Paul Polski, FAA	Dave Smith, FAA	John Rekstad, FAA
Mark Rodgers, FAA	John Zugschwert	Robert Wright, FAA
George Marania, FAA	Walt Hett, WHA	Steve Bradford, FAA
Sharnon Darnell, FAA	John Lebron, MITRE/ CAASD	Steve Fisher, FAA
Lee Norvell, FAA	Gordon Thomas, Textron	Armen Sahagian, FAA
Jan Brecht-Clark, FAA	Hugh Bergeron, FAA	Charles Huettner, NASA
Bill Edmunds, ALPA	Dennis Filler, FAA	Tony Freck, GE Aircraft
Jim Crook, ATCA	Mike Gallivan, FAA	Paul Jones, FAA
Warren Fellner, FAA	Satish Agrawal, FAA	Chuck Friesenhahn, FAA
Virgenia Embry, FAA	George Hussey, Crown	Chuck Fluet, FAA
William Dsyptak, FAA	Chris Seher, FAA	Dennis Kershner, JHU
Paul Piscopo, DOD	Geoff Mumford, APA	Howard Wesoky, FAA
Dave Tuttle, UNITECH	Sieg Poritzky	Lyle Malotky, FAA
Joel Wilcox, FAA	Steve Pansky, FAA	Dave Watrous, RTCA
Aston McLaughlin, FAA	David Johnson, The Federation	Diane Boone, MITRE/ CAASD
Lee Norvell, FAA	Steve Zaidman, FAA	Fenton Carey, RSPA
Nick Stoer	Marchie Romagnoli, TRW	Denise Davis, FAA
June Lidder, TRW	Kelly Rollins, Crown	Carole Schmidt, Crown

Gloria Dunderman,
Crown

Attachment 3

STATUS OF RESEARCH, ENGINEERING, AND DEVELOPMENT ADVISORY SUBCOMMITTEE RECOMMENDATIONS

Recommendation 1. The Federal Aviation Administration (FAA) should expeditiously amend Federal Aviation Regulation 91.129(i) to require a specific air traffic control clearance to cross any runway: MITRE is studying the impact of this change. Action plan reference: 1Bb. Tasks and target dates are as follows:

- Build baseline airport model. Completed on March 29, 1999.
- Document and deliver modeling results. Completed on May 3, 1999.
- Site selection and coordination for field trial. Ongoing.
- Evaluation of field trial. Completion to be determined (TBD).
- Deliver final report. Completion TBD.

Recommendation 2. The FAA should provide directions to airport operators regarding expanding the size, number, and conspicuity of runway holding positions markings.
Action plan reference: 4B.

- Revision to Advisory Circular (AC) 5340-1H. Completed on March 15, 1999.
- Anticipated revision publication date: September 30, 1999.

Recommendation 3. The FAA should encourage use of runway entrance lighting. Action plan reference: 4B.

Completed with publication of AC 150/5340-28 and 5345-46B on September 1, 1998.

Recommendation 4. The FAA should develop a standard procedure for use of aircraft lights during surface operations. Action plan reference: 2Ea.

- Review Society of Automotive Engineers (SAE) Committee A-20, with a view toward drafting and presenting a proposed rule project record for aircraft lighting conspicuity, for inclusion in the fiscal year (FY) 2000 agenda for the Regulation and Certification (AVR) Safety Target Area Team.
  Completed on February 15, 1999.
- Report sent to the SAE Committee on evaluation of runway occupied lighting and lighting/painting

schemes. Completed on April 15, 1999.

- Develop standard procedure for use of aircraft lights during surface operations. Completed on July 15, 1999.

- Procedural update forwarded and will be included in the January 2000 change to the Aeronautical Information Manual.

Recommendation 5. The FAA should research ways to improve aircraft conspicuity, particularly to make aircraft more visible from the rear. Action plan reference: 2Ea.

Flight Standards (AFS) and AVR are continuing discussions concerning research and conspicuity options. Completion TBD.

Recommendation 6. The FAA, in conjunction with industry, should develop specific training for all general aviation pilots to address techniques for surface error prevention. Action plan reference: 2Ba

- Seminar-in-a-Box, a joint Aircraft Owners and Pilots Association, Runway Safety Program, ATO-102, and Aviation Safety Program effort. Items include safety advisors, a 26-minute video, and a Discussion Leader's Guide. Seminars are to being conducted by AFS safety personnel for the general aviation pilot community. Completed on April 1, 1999.

- ATO-102 provided each region with runway incursion information for the Flight Standards District Office (FSDO) safety program manager quarterly safety meetings. Completed on August 18, 1999.

Recommendation 7. The FAA should provide direction to the airline industry to develop standardized cockpit procedures for surface movement to minimize runway incursions. Action plan references: 1Bd, 2C.

An AFS policy letter being developed for FSDO's, primary offices of interest, and other concerned parties. Completion NLT September 30, 1999.

Recommendation 8. The FAA should expand the use of Runway Incursion Action Teams (RIAT). Action plan reference: 4Cb.

- FY 1998 – 7 RIAT meetings accomplished.

- FY 1999 – 20 RIAT meetings scheduled, 17 accomplished; the Dallas/Ft. Worth International (DFW)/ Addison and Cleveland International Airports RIAT meetings are scheduled for September 1999.

- Runway Safety Program order published. Detailed guidance for RIAT makeup and the evaluation process. Completed in August 1999.

Recommendation 9. The FAA should develop an objective method for determining when airport surface markings need repainting. Action plan reference: 4Ac.

Project included in FY 2000 Research and Development Plan submitted to Congress. (Dependent upon

funding.) Completion TBD.

Recommendation 10. The FAA should continue research on low-cost airport surface detection equipment (ASDE), other ground surveillance, and in-cockpit technologies geared to short-term implementation. Action plan references: 2D, 3Bc, 3C, 4Aa.

- X-Band Surface Detection Radar at the Milwaukee International Airport (MKE) – The MKE air traffic controllers, as part of an extended operational demonstration, are currently using the Raytheon pulse X-band radar at MKE. The Raytheon ASDE tests results have been positive, as the system has been able to track targets in low-visibility conditions and inclement weather while also providing basic conflict alerting capabilities. The FAA is in the process of executing an agreement with Raytheon to extend the period of this demonstration for up to 3 additional years.

- LOOP Technology – The FAA has not requested FY 2000 funding for this project, but is currently planning to integrate the LOOP technology program into the Runway Incursion Reduction Program demonstration to evaluate real-time seamless surveillance coverage of the airport movement area. This demonstration is scheduled for FY 2000 at DFW.

- Phased Array Radar at the Norfolk International Airport – The formal evaluation of the Norfolk phased array ASDE radar was completed in February 1999. The evaluation was delayed due to technical problems experienced during the system test. Most of the problems were corrected and the system has been operating as part of an informal air traffic controller evaluation since February 1999. The completion date for this informal evaluation has not been determined.

- DFW is in the process of testing a multi-lateration surface sensor system that fuses data from other sensor subsystems (i.e., ASDE-3, LOOP, and ADS-B) to provide seamless airport surface coverage. Integration of all system components and data collection will commence in October 1999. The final demonstration will be in January 2000.

Recommendation 11. The FAA should provide immunity/remedial training for gathering safety data. Action plan references: 1Cf, 1Db, 1Dc.

- Temporary pilot immunity program. A memorandum from the Director, Flight Standards Service, AFS-1, to all AFS division managers regarding the establishment of information gathering "Go Teams" is in final coordination. Completion NLT September 30, 1999.

- Runway incursion computer-based instruction (CBI) course for air traffic controllers. Completed on March 31, 1999.

- Mandatory refresher training for air traffic controllers developed and sent to the field. Completed on April 1, 1999.

- CBI distribution to the field. Completion NLT September 15, 1999.

- Remedial training for air traffic controllers involved in surface incidents already exists in FAA Order 3120.4, Air Traffic Technical Training.

- Airport operator remedial training program for drivers involved in surface incidents will be accomplished via Cert Alert. Completion NLT September 30, 1999.

Recommendation 12. The FAA should study runway exiting to determine ways pilots can ensure that the aircraft tail is clear of the runway. Action plan reference: 4Ab.

An analysis indicated there was no significant trend attributable to this occurrence. Completed on September 15, 1998.

Recommendation 13. The FAA should extend the charter of the Runway Incursion Subcommittee. Action plan reference: 1Eb.

The Runway Incursion Subcommittee officially disbanded on April 12, 1999.

Attachment 4

Recommendations for FY 2002

Mr. Paul Drouilhet, Chairman
Subcommittee on Air Traffic Services

Mr. Paul Drouilhet, Chairman, said the ATS Subcommittee has reviewed its advisory role, and how the Subcommittee interfaces, particularly, with the RTCA Select Committee on Free Flight. After recent Subcommittee meetings and a meeting with Margaret Jenny's group at RTCA, the Subcommittee has a better understanding of how it should focus its activities.

Recommendation

FAA/NASA Cooperation - Continue to work toward better integration of the NASA ATM R&D program with FAA's system validation and implementation capabilities.

Comment: NASA, in its current involvement in ATM research, can bring new technology developments to the proof-of-concept stage but properly expects FAA to undertake the final R&D process which leads to operational readiness and implementation. Yet current and projected FAA R&D budgets to do not provide the necessary funding for this critical transition step. Given the shortage of R&D funds, it is imperative that NASA's ATM R&D investment strategy be matched to FAA's needs, (a) to support the intermediate term implementation plans as embodied in Free Flight Phase 1 (FFP1) and its immediate follow-on and in the NAS Architecture, and (b) to provide the technology options for longer-term system enhancement. FAA needs to work with NASA to develop a joint program of R&D, system validation, and implementation that supports intermediate and long-term NAS modernization.

Recommendation

ADS-B - Complete the ADS-B development and implementation plan. Make sure that the plan sets forth the issues that need to be resolved, the criteria against which decisions will be made, and the activities that will be undertaken to reach these decisions.

Comment: ADS-B has been recognized as an important enabling technology for NAS modernization. With the help of the user community, the FAA is developing a plan for the development and implementation of ADS-B and ADS-B-based services. If the FAA desires, the ATS Subcommittee will review the draft plan to assess whether, in its view, the R&D aspects of the plan are adequately treated.

Recommendation

NAS Characterization - Expand and institutionalize the Performance Metrics activity being carried out as part of FFP1.

Comment: The ATS Subcommittee has, in the past, emphasized the importance of developing a better understanding of the performance of the NAS, both to identify the most critical bottlenecks and to provide a basis for measuring the effect of new systems and procedures. It is pleased that an effort has been initiated as part of FFP1. This effort should be expanded, and become a permanent and on-going element of the FAA system engineering process.

Recommendations for FY 2002

Mr. Viggo Butler, Acting Chairman
Subcommittee on Airports

Portfolio Content

- Research addresses airport needs
- Pavement technology
- Airport safety
  - Wildlife hazard mitigation
  - Rescue and firefighting
  - Airport lighting
- Airport planning and design

FY 2002 Funding Recommendations

Increase funding from $7.5M in FY 2001 to $9.5M in FY 2002

Airport Pavement Technology	$4,100K
Airport Planning and Design	$ 500K
Wildlife Hazard Abatement	800K
Rescue and Firefighting	$ 400K
Airport Lighting, Marking	$1,700K
In-house Staff	$2,000K

Partnerships

- Center of Excellence for Pavement at University of Illinois
- Department of Agriculture for Wildlife Mitigation
- Boeing Corp. for Pavement and Test Facility

Recommendations

- Operation of Pavement Test Facility is highest priority
- Airport safety projects are underfunded
- Decrease efforts on runway friction measurements and focus on improving arrestor bed technology
- Wildlife mitigation is highest priority for safety projects
- Wildlife mitigation for ground animals as well as birds
- Priority for planning and design should be reduced and focus on airside activities
- Increase priority for airport lighting in areas such as advanced taxiway lighting and LED technology
- Consider use of ADS-B or other new technology for improving airport capacity and tracking

Recommendations for FY 2002

Dr. Louis Mancini, Chairman
Subcommittee on Aircraft Safety

The Subcommittee on Air Safety (SAS), has the following recommendations for the FAA on FY 2002 research programs. The recommendations are divided into three distinct areas:

1. Roles, Relationships, and Policies
2. Funding Levels
3. Priorities and Allocations

Roles, Relationships, and Policy Recommendations

- All RPDs should have clearly defined goals, show cost/benefit and clearly identify sponsor(s).

- In many cases, the deliverables from research provide tools and methods, therefore whenever possible, outcomes should flow to OEM/Operators outside of the establishment of regulation(s).

Additionally, research should be funded that can help *reduce* regulation.

- Research should not accomplish specific OEM/Operator Research, Engineering and Development responsibilities. These should be market driven.

- Continued to emphasize basic research.

- AVR and ATS research activities should be better coordinated, especially in avionics and software.

- There should be a review of the National Research Specialist (NRS) Program for effectiveness and its relationship to research.

- OEM/Operators should have better access to research activities.

- Provide better information on who is involved in the research.

- Make visible unfunded requirements.

- Provide dollar allocation amounts at the task level.

Funding Level Recommendations

- Several programs are either unfunded or underfunded.
- FY 2001 planned research programs are modest.

- FY 2001 levels should represent a "floor" for FY 2002.

- Funding levels should provide flexibility to address "pop-up" safety research.

- More money is needed for research.

Priority and Allocation Recommendations

Generally, the SAS believes that the FAA needs to conduct more basic research with broad ownership for that research within the agency. Specific allocations include increasing the research in the following areas:

- Aging electrical and mechanical systems.

- Software validation as this research cuts across several projects. Testing of software needs

better definition.

- Fire research and safety, including both fire resistant materials and fire safety research.
- Human Factors tools and methods, including General Aviation applications.
- Rotor life management and improved materials for aircraft engines.
- Rotorcrafts research (1 member recommendation).

The SAS recommended refocusing the following existing projects:

- Focus icing research more on safety issues that generate in-flight icing conditions (1 member recommendation).
- Define the HIRF threat. If not defined, phase out research.
- Refine/develop new tools for Flight Standards. Phase out research for ATOS/SPAS.

Recommendations for FY 2002

Mr. Viggo Butler, Chairman
Subcommittee on Security

Portfolio Content

- Research addresses threat detection needs
- Requirements exist for specific deliverables
- Operational Vision is evolving
- Emphasis switch appropriate
- Funding appropriate at $66M

Funding Distribution

$23.6M Checkpoint
$13.9M Checked Luggage
$ 9.0M Cargo/Mail
$ 7.4M Integration
$ 6.0M Human Factors
$ 6.1M Aircraft Hardening

Partnership

- Industry
- Academia

- Government Laboratories
- International Allies
- Federal Agencies

Process

- FAA is achieving Goal Definition
- Confidence in research team direction
  - Matrix approach is working
- Technology focus is in balance with implementation

Recommendations

- Emphasis on seamless security
  - Off-airport checkin
- Equipment deployment
  - IPT feedback on operational issues
  - Some IPT transition work should be done in R&D
- Technology development needs exit criteria

Recommendations for FY 2002

Dr. Deborah Boehm-Davis, Chair
Subcommittee on Human Factors

Portfolio Content

- Flight Deck/Aircraft Maintenance
- Air Traffic and Airway Facilities
- Aeromedical

RPD Funding

- People/Facilities
  - AAR-100
  - CAMI
  - Tech Center
- External Contract Program

External Contract Program Priorities

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- Flight Deck
  - Air Carrier
  - Aircraft Maintenance
  - Flight Deck Automation

  - Commuter Airlines
  - General Aviation
  - Pilot Performance
  - Air/Ground Integration

- Air Traffic and Airway Facilities
  - Optimizing Human Performance
  - Training and Selection
  - Decision Support
  - Airspace Design
  - Airway Facilities
  - HF Acquisitions

- Aeromedical
  - Human Protection/Survival in Civil Aviation
  - Cabin Health and Environmental Guidelines
  - Medical/Toxicological Factors of Accident Investigation

Issues

- Level of effort
- Role of "customer" money/investment
- Time scale for results

Partnerships

- In-House
  - Headquarters
  - CAMI
  - Tech Center

- External
  - Universities
  - Industry
  - MITRE
  - Volpe

Process

- Internal "customers" (such as Certification and Flight Standards)
- Congress
- Industry
- Human Factors Plan

- Expert Advice

Additional Guidance

- Time Scale for Results
- Scope
- Continuity of personnel

Recommendations for FY 2002

Dr. Wesley Harris, Chairman
Subcommittee on Environment and Energy

The Subcommittee strongly recommends

1. FAA take a more systematic approach to aviation environmental impact, i.e., greater integration of R&D on

- Sources
- Operations
- Models & simulations
- Land usage
- Standards & regulations
- Cost/benefit to the community
- Intra FAA activities

Aviation environmental impact challenges include a mix of technology, operations, and political will.

2. FAA develops a process leading to realistic goals for noise aviation impact standards beyond stage 4.

3. FAA research, develop, and adopt a policy of continuous improvement in aviation environmental impact. Such a policy would require fleet owners to reduce aviation environmental impact over scheduled time blocks/cycles. The cycles from reduction would be consistent with national economy and technology rates of advancement.

4. FAA elevate aviation environmental impact to an agency mission level goal (above the current status of an enabling goal.)

OBSERVATIONS

1. FAA efforts in aviation environmental impact are fragmented with a significant need for more

modeling and simulation R&D. We noted the following models for improvement:

- New Noise Impact Rating System (NIRS)
- Heliport Nose Model (HNM)
- Integrated Noise Model (INM)
- Integration of INM and HNM
- Model for assessing global exposure to the noise transport aircraft (MAGENTA)
- Emissions and Dispersion Modeling System (EDMS)

2. FAA - NASA partnering has not produced a discernable process to develop an integrated, useful, and efficient technology driven policy to ensure a non-aviation environmental constraint on the health and wealth of our citizens and our economy. This shortfall is not without considerable risk to national leadership in the world's economy.