

STATEMENT OF STEVEN B. ZAIDMAN, DIRECTOR OF THE OFFICE OF SYSTEM ARCHITECTURE AND INVESTMENT ANALYSIS, FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON SCIENCE, SUBCOMMITTEE ON TECHNOLOGY, CONCERNING NATIONAL AIRSPACE SYSTEM MODERNIZATION. JUNE 24, 1997.

Chairwoman Morella and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss the FAA's research, engineering and development program. I would like to describe for you what we are doing to introduce new technologies into the air traffic management system, some of the challenges associated with that transition, and the necessity of a full-scale evaluation of the technologies around the year 2000.

I will also address the FAA's progress in better focusing its research investments, in particular the role that our Research, Engineering and Development Advisory Committee is playing in this process. And I want to mention a few things about the agency's partnerships in research and development, especially our expanding partnership with NASA.

The Need for Modernization

The greatest limitation of the air traffic management technology we are using today is its inability to support the continued growth of air travel in our country. Last year, more than 600 million people flew on air carriers in the

United States. This segment is expected<sup>2</sup> to grow at an annual rate of 3 percent. By 2005 the number of passenger trips will approach 800 million. This increase in traffic cannot be supported by the technology and air traffic management practices currently in use.

Some airline analyses indicate that traffic delays will begin to increase exponentially around the year 2003 or 2004 unless the current system of navigation along fixed route structures can be replaced with a "free flight" system. Free flight would distribute the traffic more effectively than the current system, while allowing aircraft to operate more efficiently along users' preferred routes.

#### New Technologies Are Available

New cost-effective technologies are available, including satellite-based techniques for communications, navigation and surveillance; the means for providing aviation weather products; and decision support systems to aid controllers and flight crews in moving aircraft along the efficient flight paths envisioned for free flight. Some of this technology has been developed within the FAA's research, engineering and development program. Much of it comes to us from the Department of Defense and NASA, and industry has contributed as well.

The challenge now is to integrate these technologies into a new air traffic management system capable of taking us to the future. We are working to ensure that this integration process addresses the human factors implications of the new system, and that the necessary procedures are developed and validated. Finally, it is essential that the new system deliver the operational benefits anticipated for all airspace users.

### Flight 2000

The final report of the White House Commission on Aviation Safety and Security established a goal of having a modernized air traffic management system fully operational nationwide by 2005. The report also recommended a demonstration evaluation of the new system as a major step in achieving the 2005 modernization goal.

The demonstration evaluation project for the modernized national airspace system is now called Flight 2000. We expect that Flight 2000 will permit the comprehensive technical integration of the new technologies and subsystems, including air traffic management and flight operations procedures, human factors elements, and validation of the associated user benefits and FAA cost savings. Most important, Flight 2000 will be carried out in close collaboration with the full range of airspace users. The user community will participate in

developing the concept of operation, and the assessment of system operation, including its benefits. A principal element of this collaboration among the FAA, the aviation industry and the user community will be working on ways to reduce the current high costs of introducing new avionics technology into the air traffic management system. Achieving these cost reductions is a key element of realizing the full benefits of modernization. FAA is completing its initial plans for Flight 2000 with the objective of conducting this activity between 1999 and 2003.

#### R,E&D Investment Priorities

I would now like to turn to the agency's continuing efforts to better focus its R,E&D investments on those initiatives that best serve airspace users and the needs of a safe and efficient air transportation system. Our efforts in this area have been bolstered by two allies.

The first is the Congress, in particular this Subcommittee, with its attention to the framework and discipline established by the Government Performance and Results Act (GPRA) of 1993. GPRA focuses on outputs agencies deliver to external customers and the outcomes, or benefits, these outputs produce in the hands of customers. Investments are valued and prioritized in terms of these outputs and outcomes as opposed to earlier approaches focused on internal activities of agencies. The FAA now builds its R,E&D investment

portfolio by focusing on outputs and outcomes. The result is an investment portfolio more effectively centered on the agency's customer community.

Our second ally has been the agency's Research, Engineering and Development Advisory Committee, represented here today by Mrs. Nancy Price. The Advisory Committee consists of representatives of the FAA's customer and stakeholder communities as well as subject-matter experts. We collaborate with the committee in making our R,E&D investment decisions. The process is formal and engages the committee first at the level of subcommittees reviewing component parts of our portfolio, and then a full committee review of the integrated portfolio. The process provides an objective review of agency plans that we believe is absolutely essential. The committee has been direct and clear in its advice to us and we have taken this advice seriously in compiling our final budget in research and development.

### Partnerships

Finally, FAA continues to be aggressive in establishing research partnerships with industry, academia, other Government agencies and international civil aviation authorities. At last count, we had more than 475 such agreements. The partnerships leverage FAA research investments with contributions from these other sectors. They foster innovation and the new ideas that are the life blood of a viable research program, and assure that research initiatives

are coordinated to guard against overlap and contradictory goals and directions.

Our partnership with NASA is particularly important. This collaboration has been in place for many years. Traditionally, the NASA role is in basic research designed to provide a technology base for the future air transportation system. Their work typically focuses on long-range, high-risk, high-payoff ventures outside the mainstream of FAA research and development. The complementary FAA role is in applied research and development that builds on the technology base established by NASA. Our partnership is guided by a formal Coordinating Committee co-chaired by agency Associate Administrators working within a framework that establishes research goals to be pursued together. Our collaboration has been productive and the FAA believes that it is essential to the further development of the air transportation system. Our partnership with NASA is but one of many that will help ensure that we are ready to meet the aviation challenges of the next century.

That concludes my prepared statement. I would be pleased to respond to questions you may have at this time.