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# AVIATION SAFETY AND SECURITY

## Challenges to Implementing the Recommendations of the White House Commission on Aviation Safety and Security

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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to share our views on the recommendations contained in the recently released report of the White House Commission on Aviation Safety and Security. The Commission's 57 recommendations broadly cover safety, security, air traffic control, and disaster response. As you know, 1996 was a bad year for aviation safety. Last year, 380 people died in air accidents involving large U.S. air carriers, the highest number in 11 years. The crashes of TWA Flight 800 off New York and ValuJet Flight 592 in Florida accounted for most of those deaths. Although the nation's air transportation system remains the safest in the world and the Federal Aviation Administration (FAA) the model for other nations, these tragic events have served to raise the Congress's, the administration's, the aviation industry's, and the flying public's consciousness of the need to continuously increase the existing margin of safety.

During the past several years, we have reported to the Congress on the status of a wide range of programs and initiatives intended to expand that margin of safety. Our testimony this morning, based on this prior work and on an analysis of the Commission's recommendations, will focus on the implementation issues relating to three areas addressed by the Commission: aviation safety, air traffic control modernization, and aviation security.

We believe that the Commission's recommendations are a good start toward an evolutionary process of making real the Commission's vision of ensuring greater safety and security for passengers, restructuring the relationships between the government and the industry, and maintaining America's position of global leadership in aviation. However, key questions remain about how and when the recommendations will be implemented, how much it will cost to implement them, and who will pay the cost. Our message this morning focuses on the challenges that lie ahead in taking the next steps to convert the Commission's recommendations from concepts to realities.

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## Aviation Safety

The Commission made 14 recommendations in the general area of aviation safety. Foremost among these is establishing a national goal to reduce the fatal accident rate by 80 percent within 10 years. This is a very challenging goal, particularly in the light of the projected increases in the amount of air traffic in the coming decade.

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We applaud the Commission's adopting such a goal for accident reduction and endorse many of its recommendations for improving safety. These recommendations include, for example, expanding FAA's inspection program to cover not only aging aircraft's structural integrity but also such areas as electrical wiring, fuel lines, and pumps. A number of these recommendations resonate with safety and efficiency improvements that we and others, including FAA, have suggested over the years.<sup>1</sup> However, we believe that, as FAA tries to fundamentally reinvent itself as the Commission contemplates through some of its recommendations, FAA and the aviation industry will be challenged in three areas: (1) FAA's organizational culture and resource management, (2) FAA's partnerships with the airline industry, and (3) the costs of and sources of funding to implement the recommendations.

A number of recent studies and the FAA itself have pointed to the importance of culture in the agency's operations. Last year, our review of FAA's organizational culture found that it had been an underlying cause of the agency's persistent acquisition problems, including substantial cost overruns, lengthy schedule delays, and shortfalls in the performance of its air traffic control modernization program.<sup>2</sup> Furthermore, the lack of continuity in FAA's top management, including the Administrator and some senior executive positions, has fostered an organizational culture that has tended to avoid accountability, focus on the short term, and resist fundamental improvements in the acquisitions process.

Similarly, a 1996 report issued by the Aviation Foundation and the Institute of Public Policy stated that the recent actions taken to reorganize FAA have done nothing to change the long-term structural problems that plague the organization.<sup>3</sup> The study concluded that FAA does not have the characteristics to learn and that its culture does not recognize or serve any client other than itself.

As FAA's own 1996 report entitled *Challenge 2000* points out, it will take several years to overcome the many cultural barriers at FAA, determine the

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<sup>1</sup>For example, see *Aviation Safety: New Airlines Illustrate Long-Standing Problems in FAA's Inspection Program* (GAO/RCED-97-2, Oct. 17, 1996); *Aviation Safety: Targeting and Training of FAA's Safety Inspector Workforce* (GAO/T-RCED-96-26, Apr. 30, 1996); and *Aircraft Maintenance: FAA Needs to Follow Through on Plans to Ensure the Safety of Aging Aircraft* (GAO/RCED-93-91, Feb. 26, 1993).

<sup>2</sup>*Aviation Acquisition: A Comprehensive Strategy Is Needed for Cultural Change at FAA* (GAO/RCED-96-159, Aug. 22, 1996).

<sup>3</sup>*Why Can't the Federal Aviation Administration Learn? Creating a Learning Culture at the FAA*, the Aviation Foundation, Falls Church, Virginia and the Institute of Public Policy, George Mason University, Fairfax, Virginia (July 10, 1996).

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skill mix of the workforce of the 21st century, and recruit the necessary talent in a resource-constrained environment.<sup>4</sup> In the light of these studies' results, we would caution that the organizational and cultural changes envisioned by the Commission may require years of concerted effort by all parties concerned.

In connection with resource management, FAA's fiscal year 1998 budget request reveals some difficult choices that may have to be made among safety-related programs. For example, FAA proposes increasing its safety inspection workforce by 273 persons while decreasing some programs for airport surface safety, including a program designed to reduce runway incursions. The National Transportation Safety Board has repeatedly included runway incursions on its annual lists of its "most wanted" critical safety recommendations. FAA's budget request includes a reduction in the Runway Incursion program from \$6 million in fiscal year 1997 to less than \$3 million in fiscal year 1998. Although FAA set a goal in 1993 to improve surface safety by reducing runway incursions by 80 percent by the year 2000 from the 1990 high of 281, the results have been uneven; there were 186 runway incursions in 1993 and 246 in 1995. As was shown by the November 1994 runway collision in St. Louis, Missouri, between a commercial carrier and a private plane, such incidents can have fatal consequences—2 people lost their lives. It is unclear what progress will be made in this area, given the proposed budget cuts.

Similarly, we have reported since 1987 that the availability of complete, accurate, and reliable FAA data is critical to expanding the margin of safety.<sup>5</sup> However, funding for FAA's National Aviation Safety Data Analysis Center, a facility designed to enhance aviation safety by the rigorous analysis of integrated data from many aviation-related databases, is slated to be reduced from \$3.7 million in fiscal year 1997 to \$2 million in fiscal year 1998.

The Commission's report stresses that safety improvements cannot depend solely on FAA's hands-on inspections but must also rely on partnerships with the aviation industry in such areas as self-monitoring and certification. Several programs for the airlines' self-disclosure of safety problems have already contributed to identifying and resolving

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<sup>4</sup>Challenge 2000: Recommendations for Future Aviation Safety Regulation, prepared for FAA's Office of Policy, Planning, and International Aviation by Booz•Allen & Hamilton, Inc. (Apr. 1996).

<sup>5</sup>Aviation Safety: Data Problems Threaten FAA Strides on Safety Analysis System (GAO/AIMD-95-27, Feb. 8, 1995); Department of Transportation: Enhancing Policy and Program Effectiveness Through Improved Management (GAO/RCED-87-3, Apr. 13, 1987).

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some of these types of problems.<sup>6</sup> For example, one airline's program for reporting pilot events or observations—a joint effort by the airline, the pilot union, and FAA—has identified safety-related problems, the vast majority of which would not have been detected by relying solely on FAA surveillance. The discovery of these problems has resulted in safety improvements to aircraft, to the procedures followed by flight crews, and to air traffic patterns. As the Commission has recognized, however, such information will not be provided if its disclosure threatens jobs or results in punitive actions. However, FAA's role in some broader partnerships with industry has also raised some questions. For example, FAA's cooperative process working with Boeing on the 777 aircraft helped enable the manufacturer to meet the planned certification date, but FAA was also criticized by some FAA engineers and inspectors for providing inadequate testing of the aircraft's design.

In the case of self-disclosure programs, decisions will have to be made on which aviation entities are best suited to such partnership programs, how to monitor these programs and make effective use of the data they offer, how to balance the pressure for public disclosure against the need to protect such information, and how to standardize and share such information across the aviation industry. With broader cooperation between FAA and the aviation industry, the Congress and FAA need to be on guard that the movement toward partnerships does not compromise the agency's principal role as the industry's regulator.

Finally, it is important to point out that the costs associated with achieving the accident reduction goal and who should pay for these costs have not yet been determined. In accordance with the Commission's call for more government-industry partnerships, government, the industry, and the traveling public would likely share in these costs. For example, FAA's partnership programs involve significant costs for both the agency and the industry. In the case of equipping the cargo holds of passenger aircraft with smoke detectors, the cost would fall initially on the industry, while the costs associated with the recommendation that children under the age of 2 be required to have their own seats on airplanes would fall more directly on the traveling public.

Regardless of who bears the cost of the proposed improvements, the Commission has correctly recognized that additional safety improvements may sometimes be difficult to justify under the benefit-cost criteria applied

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<sup>6</sup>Examples of ongoing or recent partnership programs include the American Airlines Safety Action Program for pilots as well as the USAir Inc. Altitude Awareness Program and the Alaska Airlines Altitude Awareness Program.

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to regulatory activities. The Commission recommended that cost not always be the determining factor or basis for deciding whether to put new aviation safety and security rules into effect. Specifically, the Commission notes that the potential reduction in the fatal accident rate merits a careful weighing of the options for improving safety in terms of the benefits that go beyond those traditionally considered in benefit-cost analyses. However, we also believe that it is important to recognize that the recommendation (1) represents a significant departure from traditional processes, (2) could result in significant cost increases for relatively modest increases in the safety margin, and (3) could rest on a limited empirical justification. In effect, this recommendation may increase the number of instances in which the primary factor determining whether or not to go forward with a safety or security improvement is what might be referred to as a public policy imperative rather than the result of a benefit-cost analysis. One instance of such a decision is the Commission's recommendation to eliminate the exemption in the Federal Aviation Regulations that allows children under 2 to travel without the benefit of an FAA-approved restraint.

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## Air Traffic Control Modernization

The Commission also reviewed the modernization of the air traffic control (ATC) system. FAA is in the midst of a \$34 billion dollar, mission-critical capital investment program to modernize aging ATC equipment. This program includes over 100 projects involving new radars, automated data processing, and navigation, surveillance, and communications equipment. We believe this modernization is also important for attaining the next level of safety by replacing aging equipment and providing controllers and pilots with enhanced communication and better information.

Recognizing that new technology, such as satellite-based navigation and new computers in ATC facilities and in aircraft cockpits, offers tremendous advances in safety, efficiency, and cost-effectiveness for users of the ATC system and for FAA, the Commission recommended accelerating the deployment of this new technology. According to FAA's current plan, many of these elements would not be in place until the year 2012 and beyond. However, the Commission has recommended that these technologies be in place and operational by the year 2005—7 years ahead of FAA's planned schedule. The Commission's goal is commendable, but given FAA's past problems in developing new ATC technology and the technical challenges that lie ahead, there is little evidence that this goal can be achieved.

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We have chronicled FAA's efforts to modernize the air traffic control system for the past decade. Because of the modernization effort's size, complexity, cost, and past problems, we designated it as a high-risk information technology initiative in 1995 and again in 1997.<sup>7</sup> Many of FAA's modernization projects have been plagued by cost-overruns, schedule delays, and shortfalls in performance that have delayed important safety and efficiency benefits. We reported last year that the agency's culture was an underlying cause of FAA's acquisition problems. FAA's acquisitions were impaired because employees acted in ways that did not reflect a strong commitment to, among other things, the focus on and the accountability to the modernization mission.<sup>8</sup> More recently, we have identified other important factors that have contributed to FAA's difficulty in modernizing the ATC system. For example, FAA's lack of effective cost-estimating and -accounting practices forces it to make billion-dollar investment decisions without reliable information. Also, the absence of a complete systems architecture, or overall blueprint, to guide the development and evolution of the many interrelated ATC systems forces FAA to spend time and money to overcome system incompatibilities.<sup>9</sup>

We agree with the Commission's recommendations to integrate the airports' capacity needs into the ATC modernization effort and to enhance the accuracy, availability, and reliability of the Global Positioning System. However, we have two concerns about accelerating the entire modernization effort that focus on the complexities of the technology and the integrity of FAA's acquisition process. First, the complexity of developing and acquiring new ATC technology—both hardware and software—must be recognized. The Commission contends that new ATC technology to meet FAA's requirements is available "off-the-shelf." However, FAA has found that significant additional development efforts have been needed to meet the agency's requirements for virtually all major acquisitions over the past decade. More recently, two new major contracts for systems—the Standard Terminal Automation Replacement System and

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<sup>7</sup>High-Risk Series: An Overview (GAO/HR-95-1, Feb. 1995); and High-Risk Series: Information Management and Technology (GAO/HR-97-9, Feb. 1997).

<sup>8</sup>Aviation Acquisition: A Comprehensive Strategy Is Needed for Cultural Change at FAA (GAO/RCED-96-159, Aug. 1996).

<sup>9</sup>Air Traffic Control: Improved Cost Information Needed to Make Billion Dollar Modernization Investment Decisions (GAO/AIMD-97-20, Jan. 1997); and Air Traffic Control: Complete and Enforced Architecture Needed for FAA Systems Modernization (GAO/AIMD-97-30, Feb. 1997).

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the Wide Area Augmentation System—called for considerable development efforts.<sup>10</sup>

Second, requiring FAA to spend at an accelerated rate could prove to be inconsistent with the principles of the agency's new Acquisition Management System, established on April 1, 1996, in response to the legislation freeing it from most federal procurement laws and regulations.<sup>11</sup>

FAA's acquisition management system calls for FAA to go through a disciplined process of (1) defining its mission needs, (2) analyzing alternative technological and operational approaches to meeting those needs, and (3) selecting only the most cost-effective solutions. Until FAA goes through this analytical and decision-making process, it is premature to predict what new technology FAA should acquire. For example, FAA itself points out that while satellite communications that link the communication and navigation functions offer tremendous potential benefits, the technology is not yet mature enough for civil aviation—significant development is needed to determine the requirements and operational concepts of the technology. In this particular case, accelerating the ATC modernization too much could increase the risk that FAA will make poor investment decisions. Overall, our message in this area is one of caution—accelerating the entire modernization effort will have to overcome a long history of problems that FAA's new acquisition management system was designed to address and a number of obstacles.

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## Aviation Security

Aviation security is another component of ensuring the safety of passengers. It rests on a careful mix of intelligence information, procedures, technology, and security personnel. The Commission strongly presented aviation security as a national security priority and recommended that the federal government commit greater resources to improving it. Many of the Commission's 31 recommendations on security

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<sup>10</sup>The Standard Terminal Automation Replacement System project is expected to replace the aging computers and related equipment used at the FAA facilities that track aircraft in the airspaces surrounding airports. The Wide Area Augmentation System project is refining the use of the Global Positioning System to meet the requirements of civil aviation.

<sup>11</sup>Public Law 104-50, section 348.

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are similar to those that we have made in previous reports.<sup>12</sup> For example, the Commission urged FAA to deploy commercially available systems for detecting explosives in checked baggage at U.S. airports while also continuing to develop, evaluate, and certify such equipment. Similarly, the Commission echoed our recommendation that the government and the industry focus their safety and security research on the human factors associated with using new devices, especially on how operators will work with new technology. The Committee's recommendations address a number of long-standing vulnerabilities in the nation's air transportation system, such as (1) the screening of checked and carry-on baggage, mail, and cargo and (2) unauthorized individuals gaining access to an airport's critical areas. Many of the 20 initial security recommendations that the Commission made on September 9, 1996, are already being implemented by the airlines or by government agencies.

We found, however, that in the past FAA has had difficulty in meeting some of the time frames for implementing the safety improvements recommended by GAO and the Department of Transportation (DOT) Inspector General.<sup>13</sup> Similarly, in the security area, FAA has also had problems meeting the implementation time frames. For example, FAA is just beginning to purchase explosives-detection systems to deploy at U.S. airports, although the Aviation Security Improvement Act of 1990 set an ambitious goal for FAA to have such equipment in place by November 1993. This delay was due primarily to the technical problems slowing the development and approval of the explosives-detection devices. But we also found that FAA did not develop an implementation strategy to set milestones and realistic expectations or to identify the resources to guide the implementation efforts. It is important that FAA sustain the momentum generated by the Commission's report and move forward systematically to implement its recommendations.

Finally, although the Commission concluded that many of its proposals will require additional funding, it did not specifically recommend funding levels for new security initiatives over the long term. Instead, the Commission recommended that the federal government devote at least

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<sup>12</sup>See, for example, Aviation Security: Additional Actions Needed to Meet Domestic and International Challenges (GAO/RCED-94-38, Jan. 27, 1994); Aviation Security: Development of New Security Technology Has Not Met Expectations (GAO/RCED-94-142, May 19, 1994); Aviation Security: Technology's Role in Addressing Vulnerabilities (GAO/T-RCED/NSIAD-96-262, Sept. 19, 1996); Aviation Security: Immediate Action Needed to Improve Security (GAO/T-RCED/NSIAD-96-237, Aug. 1, 1996); and Aviation Security: Urgent Issues Need to be Addressed (GAO/T-RCED/NSIAD-96-251, Sept. 11, 1996).

<sup>13</sup>Aviation Safety: FAA Generally Agrees With but Is Slow in Implementing Safety Recommendations (GAO/RCED-96-193, Sept. 23, 1996).

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\$100 million annually to meet security capital requirements—leaving the decision on how to fund the remaining security costs to the National Civil Aviation Review Commission. The National Civil Aviation Review Commission is charged with looking at FAA funding issues, and we do not want to preempt its report and recommendations. But, for example, the \$144.2 million appropriated by the Congress in 1997 for new security technology represents a fraction of the estimated billions of dollars required to enhance the security of air travel. To improve aviation security, the Congress, the administration, and the aviation industry need to agree on what to do and who will pay for it—and then to take action.

In closing, Mr. Chairman, we face a turning point. The public's concern about aviation safety and security has been heightened. The Congress and the administration have a renewed commitment to addressing this urgent national concern. The Commission's work is a good start toward an evolutionary process of reaching agreement on the goals and steps to improve aviation safety and security. To guide the implementation of the Commission's recommendations, DOT and FAA will need a comprehensive strategy that includes (1) clear goals and objectives, (2) measurable performance criteria to assess how the goals and objectives are being met, and (3) a monitoring, evaluation, and reporting system to periodically evaluate the implementation. This strategy could serve as a mechanism to track progress and establish the basis for determining funding trade-offs and priorities. In addition, successful implementation will require strong, stable leadership at DOT and at FAA. Although several complex questions remain unanswered, we hope that the Commission's work can serve as a catalyst for change and a strengthened commitment to resolving these challenges to improving safety.

This concludes my prepared statement. We would be glad to respond to any questions that you and Members of the Committee might have.

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