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Aviation Security and the Future of the Aviation Industry

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PURPOSE

The purpose of these open hearings is to review the current state of airport and airline security in this country in light of the tragic events of September 11, 2001.

BACKGROUND

The responsibility for aviation security is divided between the airports and the airlines. Airports are responsible for ensuring that only authorized persons have access to the airfield. Airlines are responsible for screening of passengers and their baggage. Airlines usually contract with private security companies to operate the x-rays and other security devices. The Federal Aviation Administration (FAA) regulates the activities of the airlines, airports, and security companies.

Some have suggested that responsibility for security should be transferred entirely to the airports or the Federal government. Section 301 of the Federal Aviation Reauthorization Act of 1996 (Public Law 104-264, 110 Stat. 3250, October 9, 1996) directed FAA to consider this suggestion and report to Congress in 90 days. The FAA issued a report in response to this directive in December 1998. It recommended no change in security responsibilities. On May 11, 2000, the Chairman and Ranking Member of the Aviation Subcommittee asked the General Accounting Office (GAO) to take another look at this issue. GAO is expected to report its findings on March 15, 2002.

Security systems were first required at airports in 1973 in response to a wave of hijackings to Cuba. The security systems were primarily metal detectors designed to prevent passengers from smuggling guns aboard aircraft. In the past, these systems had usually been successful in thwarting hijackers using guns.

Before September 11th, there had not been a hijacking of a U.S. airline since 1991 when a passenger tried to hijack a Southwest Airlines plane. That passenger did not actually have a weapon as he claimed. The last hijacking on board a U.S. airline with a weapon was in 1989 when a passenger used a starter pistol and two folding knives

to hijack an American Airlines plane. Both hijackings were unsuccessful and the hijackers were arrested.

The emphasis of aviation security efforts has shifted over time in response to the most recent incident.

In the mid-eighties, attention shifted from domestic hijackings to security at foreign airports after the hijacking in Greece of TWA flight 847 during which a passenger was murdered. As a result, the International Security and Development Cooperation Act of 1985 (Public Law 99-83) was enacted. Title V of that Act required DOT to conduct periodic assessments of security measures at foreign airports to which U.S. airlines fly. If a problem is found and the airport fails to correct it, DOT must notify the public that that airport does not maintain adequate security.

After the bombing of Pan Am 103 on December 21, 1988 over Lockerbie, Scotland, the attention shifted from guns to bombs. Metal detectors are not always effective in detecting bombs because explosives can be made from plastic, can be relatively small, and can be shaped so as not to look like the typical bomb.

The Pan Am bombing also led to the creation of the President's Commission on Aviation Security and Terrorism. One of the members of that Commission was Congressman Oberstar. The Commission issued a report in May of 1990 with 64 specific recommendations. Congress responded by passing the Aviation Security Improvement Act of 1990 (Public Law 101-604) implementing the Commission's recommendations.

The 1990 Security Act required FAA to begin an accelerated 18-month research and development effort to find an effective explosive detection system (EDS). The Security Act also required FAA to certify an explosive detection system that can "alone or as part of an integrated system detect under realistic air carrier operating conditions the amounts, configurations, and types of explosive material which would be likely to be used to cause catastrophic damage to commercial aircraft."

Security concerns were heightened in 1995 when Abdul Hakim Murad was arrested after fire broke out in his apartment in Manila, Philippines. Murad had been living there with Ramzi Yousef. Police found explosives and bomb-making materials in the apartment. Yousef was later indicted for the 1994 bombing of a Philippine Airline flight. This bombing was determined by authorities to have been a test run for a plot to blow up 11 U.S. planes simultaneously.

When TWA 800 exploded off the coast of New York in July 1996, the FAA had certified only 1 EDS and had hardly begun to deploy it. Although it is now believed that the TWA crash was caused by a center fuel tank explosion, at the time, most people suspected a bomb. In response:

- (1) (1) The White House Commission on Aviation Safety and Security, known as the "Gore Commission" was established in July 1996 and issued its initial report in September (even before all its members were appointed), which included 20 recommendations to enhance security;

- (2) (2) Title III of the Federal Aviation Reauthorization Act of 1996 (Public Law 104-264) was enacted containing several measures designed to beef up aviation security; and
- (3) (3) The 1997 Appropriations Act (Public Law 104-208) provided \$144.2 million for the FAA to purchase and help install bomb detection equipment.

Both the Commission's recommendations and the two public laws changed the FAA's focus from relying on a certified explosive detection system to purchasing and deploying any commercially available explosive detection equipment. Also, for the first time, the FAA purchased the equipment to be deployed rather than directing the airlines to do it.

In addition, section 303 of public law 104-264 directed the National Academy of Sciences to study the explosive detection technologies being deployed. Its report was issued late last year.

EXPLOSIVE DETECTION

The explosion of Pan Am flight 103, which killed 259 passengers and crew and 11 people on the ground in Scotland, was caused by a small amount of semtex, an extremely powerful plastic explosive, concealed in a Toshiba cassette-recorder packed in a suitcase. Shortly after the bombing, FAA issued a rule requiring airlines to purchase advanced technology to detect bombs in checked baggage. The best technology at the time was Thermal Neutron Analysis (TNA) machines. FAA purchased three TNA machines for testing purposes from the only company that made them.

After testing the TNA machines at several airports, FAA realized it could only detect levels of explosives that were twice the amount that is believed to have destroyed Pan Am 103. The TNA machines were also expensive, very large, and extremely heavy making their deployment impractical. One of the recommendations of the 1990 Presidential Commission was that the FAA should not make further investments in TNA machines but instead aggressively research other detection systems.

In December 1994, the FAA awarded its first explosive detection certification to the CTX 5000. InVision, a company based in Foster City, California, makes this machine. Its workings are similar to that of a CAT Scan, as used in the health care industry. More recently, the FAA certified a similar machine made by L3 Communications. L3 has facilities in New York and Clearwater, Florida. FAA has purchased 114 CTX machines from InVision. Of these, 93 are deployed at 36 airports and operated by 20 different airlines. The FAA has also purchased 4 machines from L3 Communications.

Since section 305 of the 1996 Federal Aviation Reauthorization Act and the Gore Commission recommended the use of non-certified commercially available explosive detection equipment, the FAA has purchased 649 trace detection devices and has deployed 550 of them at 81 airports. These usually involve wiping a cloth or blowing air on a person or baggage to detect the presence of explosive residue.

About \$420 million has been appropriated for the purchase of explosive detection systems.

On May 14, 1998, the Subcommittee held a hearing on aviation security to review the deployment of this new equipment. The DOT Inspector General indicated in that hearing and in an October 5, 1998 audit report that –

1. 1. Deployments were slow but were improving;
2. 2. Airlines were significantly underutilizing the equipment already deployed; and
3. 3. The equipment, while effective in detecting explosives, was experiencing high false alarm rates and slow baggage throughput rates which undermined airline and passenger acceptance.

Section 6 of the Airport Security Improvement Act of 2000 (Public Law 106-528, 114 Stat. 2521, November 22, 2000) required the airlines to increase their utilization of explosive detection equipment. These machines had been used to check baggage only of passengers who met a certain profile. The 2000 Security Act required that passenger baggage also be selected at random to be inspected by these machines.

SCREENERS

Screening of passengers and their luggage is the responsibility of the airline. Usually they contract with a private security company to perform this function.

According to the National Academy of Sciences study, there are about 15,000 screeners that work in the U.S. In 1995, they screened about 1.3 billion people at about 700 security checkpoints.

Training for screeners may be different from airport to airport and even from concourse to concourse within an airport. The average pay for employees range from approximately \$5.25 per hour to \$6.75 per hour. Most of these employees turn over every two months. It has been reported that the turnover rate at one airport was about 400 percent a year.

Once screeners are trained, there are systems available that could ensure the accuracy of their detection skills. One of the systems is called TIPs (Threat Image Protection). TIPs can set the screening machine so that after a set number of bags go through the machine a weapon image will show up on the screen in the bag as if it is in the passenger's bag. Once the screener sees the image it is their job to determine if this is a test image or a real weapon.

Section 302 of the 1996 FAA Reauthorization Act directed the FAA to begin certifying screening companies.

The FAA did not issue a proposed rule to certify screening companies until January 5, 2000. In the 2000 Security Act, the FAA was directed to issue the final

rule by May 31, 2001. The FAA did not meet that deadline but was reportedly scheduled to issue the final rule this week.

The purpose of the rule would be to improve aviation security in the United States by: (1) certifying companies that provide security screening; and (2) improving the training and testing of security screeners by developing uniform performance standards for providing security screening services.

The rule is expected to require that carriers install TIP systems on their x-ray machines and EDS's to measure performance. TIP monitors will improve the screeners' ability to detect guns, knives and explosive devices by projecting electrical images of these threats into bags passing through x-ray machines with EDS's. The rule would also require compliance with TIP operating requirements and screening performance measurements and standards specified in the screening companies' security program.

The certification of screening companies is designed to bring about important changes in the way air carriers and contractors conduct screening. It is hoped that this rule will professionalize the screener workforce, improve performance, reduce high turnover, and possibly lead to better pay and benefits for the security. Twenty-six FAA positions are being requested in FY 2001 to oversee and monitor compliance with this initiative.

Under the proposed requirements, carriers would have to install the TIP systems on all their x-ray systems, which the FAA will use to measure screening companies' performance and their compliance with FAA performance standards.

The FAA has estimated that the rule would cost the airlines \$300 million over ten years.

The Air Transport Association (ATA) and its member carriers support the proposed certification rule. The ATA believes that the FAA should directly regulate screening companies to ensure full regulatory compliance and improve screener performance. The airlines also may favor certification of screening companies as it will mean that penalties could be assessed against the screening company rather than against the airline with which they contract, as is now the case.

Originally, for domestic flights, screeners only screened passengers and their carry-on baggage. However, with the increasing concern about bombs and the development of new explosive detection systems (EDSs), checked baggage is now also being screened. About 50% of baggage travels as checked baggage. However, there are not enough screeners or EDSs to screen all of it. Therefore, a profiling system (described below) has been developed to select those passengers whose checked baggage should be subject to further examination.

In 1999, the average number of bags scanned ranged from 1,635 to 1,927 bags per week per machine, equating to an average of 234-275 selectee bags screened per day per machine.

PROFILING

Because of the limitations of existing bomb detection technology and the cumbersome nature of baggage matching, aviation security experts have sought ways to reduce the number of passengers to be screened. This would allow airport security to focus on those passengers who are most likely to pose a threat.

In 1994, Northwest Airlines began to develop a computer-assisted passenger screening (CAPS) system. This automated screening system was designed to separate out that small percentage of passengers who should be subject to additional security measures. These measures could include subjecting their checked bags to screening by more sophisticated explosive detection equipment or ensuring that they actually board the same aircraft as their baggage (i.e. bag matching).

Using CAPS, all passengers would continue to walk through the metal detectors and have their carry-on luggage screened. But only those who “fit the profile” would be subject to search or matching of their checked luggage. Currently, airlines do not have enough equipment, personnel, or time to scan or search all checked bags.

After the TWA flight 800 crash in July 1996 and the initial suspicions that a bomb was involved, interest in passenger profiling generally, and CAPS in particular, increased. Recommendation 3.19 of the Gore Commission recommended that automated passenger profiling be used to complement existing bomb detection technology. Also, section 307 of the 1996 Aviation Reauthorization Act directs FAA to assist airlines in developing a computer-assisted passenger profiling system in conjunction with other security measures and technologies.

Concerns have been raised about how this passenger profiling system will be implemented. The American Civil Liberties Union and Arab-American groups, among others, have expressed concerns that CAPS will discriminate by using factors such as the passenger’s race, religion, and national origin.

Although the profiling factors used are a secret, airlines insist race, religion and national origin are not factors. Published reports indicate that the factors include frequency of travel to certain destinations, whether the passenger is a member of the airline’s frequent flyer program, and whether the ticket was bought with cash or a credit card. The latter two are factors because it is assumed that terrorists would not participate in a program or use methods of payment that would reveal aspects of their identity.

Sam Hussein, a spokesman for the American-Arab Anti-Discrimination Committee, was quoted in the January 2, 1998 *New York Times* as stating that profiling has been going on for 20 years, administered by individual airline employees, and that CAPS would merely eliminate the biases of an individual and substitute the biases of a computer.

Opponents of profiling fear that passengers who fit the profile could face intrusive questioning and public embarrassment, such as having their luggage searched in front of other passengers. However, proponents of profiling insist that

passengers might never know they have been selected. For example, passengers might not know that the airline is running their checked baggage through a sophisticated explosive detection device or double-checking that they actually boarded the flight.

Due to the concerns that had been raised about the potential for discrimination, DOT and the Gore Commission asked the Justice Department to review the CAPS profiling system. Justice issued its report on October 1, 1997. It made the following findings –

- ■ CAPS does not include race, religion, or national origin as a screening factor;
- ■ Neither the Constitution nor any Federal law prohibits the implementation of the CAPS system; and
- ■ To a limited degree, CAPS distinguishes between passengers on the basis of whether or not they are American citizens, but that this is justified and constitutional.

However, Justice did make the following recommendations --

- ■ The FAA should periodically review the screening factors in CAPS to ensure that they are reasonable predictors of risk;
- ■ Justice should undertake a post-implementation review within one year to ensure that passengers are not singled out on the basis of race, religion, or national origin;
- ■ DOT and FAA should undertake efforts to inform the public about the profiling system;
- ■ Airlines should be prohibited from altering CAPS without government approval; and
- ■ FAA should require airlines to establish procedures for implementing CAPS to ensure that it is not done in a discriminatory or insensitive manner.

The Subcommittee also had a hearing (both open and closed sessions) in May 1998 and, after hearing from the FAA, airlines, and Arab-Americans, did not take any further action on the profiling issue.

HARDENED CONTAINERS

If there is no assurance that a bomb can be kept off an aircraft, passengers could still be protected if the aircraft can withstand the explosion. To some extent, this is already possible, as evidenced by the 57% survival rate of aircraft for the 35 in-flight bombing incidents in the past 25 years. However, this protection could be enhanced by the use of blast-resistant or hardened baggage containers. In March 1998, the FAA certified a container designed by a company called Galaxy Scientific. So far, airlines have not been supportive of this approach because of the weight and cost of the containers. The International Air Transport Association (IATA) estimated that using hardened containers would cost airlines \$5 billion per year.

Currently, containers are used only on wide-bodied aircraft. This means containers carry only about 20% of passenger baggage.

The National Academy of Sciences study of explosive detection technologies looked at the hardened container issue. The Academy's greatest concern was that the research and development of hardened containers has not been conducted as part of an integrated system. The Academy also recommended that the FAA implement a more rigorous test plan for certifying hardened containers and develop cost estimates for their deployment and operation.

AIR MARSHAL PROGRAM

The FAA's Federal Air Marshal program is an expansion of the Sky Marshal program of the 1970s designed to stop hijackings to and from Cuba. The current program was created shortly after the hijacking of TWA 847 in June 1985.

In response to that hijacking and the upsurge in terrorism in the Middle East, then-President Ronald Reagan directed the Secretary of Transportation, in cooperation with the Secretary of State, to explore immediately an expansion of the FAA's armed Sky Marshal program aboard international flights for U.S. air carriers. On August 8, 1985, Congress enacted public law 99-83, the International Security and Development Cooperation Act, which established the explicit statutory basis for the Federal Air Marshal program.

Since 1985, the Federal Air Marshal program has provided specially trained, armed teams of FAA civil aviation security specialists for deployment worldwide on anti-hijacking missions. The program is based on minimum use of force, but that force can be lethal. The FAA, therefore, sets a premium on the selection, training and discipline of this elite corps of employees. Those who volunteer for the marshals must first pass initial psychological screening and fitness testing. Those who make the force must then undergo sophisticated, realistic law enforcement training. All Federal Air Marshals must meet stringent physical fitness requirements and firearm proficiency standards. In addition, before every mission they fly, the marshals go through recurrent training and standardized preparation.

The Federal Air Marshal tactical training facility and operational headquarters is located at the William J. Hughes Technical Center in Atlantic City, N.J. The marshals' training facilities include three different outdoor ranges with moving targets, a 360-degree live-fire shoothouse configured as both a narrow-body and a wide-body aircraft with computer-controlled targets and a bulletproof observation platform, an indoor laser disc "judgment pistol shooting" interactive training room and a close-quarters countermeasures/personal defense training room with protective equipment and dummies. The program also uses an inactive five-story air traffic control tower, a retired B-727 narrow-body aircraft and a retired L-1011 wide-body aircraft for on-board exercises, a modern classroom, a state-of-the-art fitness facility, and an operations center capable of secure communications worldwide.

As with most areas of civil aviation security, only limited information about the Federal Air Marshal program is made public. The FAA will not reveal the number or identity of the marshals, the details of their training, nor the routes they fly. No one on board a flight will know an air marshal is present except for the pilot and flight crew. The FAA says that the Federal Air Marshals are a full-time dedicated force that continuously deploys throughout the world on all the major U.S. carriers in areas where terrorist activities indicate the highest probability of attacks and that Federal Air Marshals fly every day of the year.

CURRENT SECURITY ENHANCEMENTS

As a result of the recent tragedy, the FAA has instituted a number of security enhancements. These include –

- • A search of all airports and aircraft before passengers may board;
- • Discontinuance of curbside and off-airport check-in;
- • Allowing only ticketed passengers through security;
- • Banning knives.

ECONOMIC IMPACT

The impact of the September 11th attacks on areas such as general aviation and aircraft and engine manufacturing will also be examined.

WITNESSES

Friday September 21, 2001
PANEL I**

[Dr. Gerald L. Dillingham](#)

Director, Physical Infrastructure Issues
General Accounting Office

Honorable Kenneth M. Mead
Inspector General
Department of Transportation

[Honorable Jane Garvey](#)

Administrator
Federal Aviation Administration

** Following testimony by Panel I, the Subcommittee will move into a closed session for questioning of Panel I. The Subcommittee will then reconvene in open session to take testimony from Panel II.

PANEL II

[Mr. Larry C. Johnson](#)
Managing Director
Business Exposure Reduction Group, LLC

Mr. Isaac Yeffet
Former Director General
El-Al Airlines

Tuesday September 25, 2001
PANEL I

[Captain Duane Woerth](#)
President
Air Line Pilots Association, International

[Mr. David Z. Plavin](#)
President
Airports Council International of North America

[Mr. John W. Douglass](#)
President & CEO
Aerospace Industries Association of America

Mr. John Meenan
Senior Vice-President, Policy
Air Transport Association

[Ms. Patricia A. Friend](#)
International President
Association of Flight Attendants, AFL-CIO

PANEL II

Mr. Phil Boyer
President
Aircraft Owners and Pilots Association

[Mr. James K. Coyne](#)
President
National Air Transportation Association

[Mr. Tom Poberezny](#)
President
Experimental Aircraft Association
on behalf of

National Association of Flight Instructors

Mr. Edward M. Bolen
President & CEO
General Aviation Manufacturers Association

[Mr. Roy Resavage](#)
President
Helicopter Association International

[Mr. John W. Olcott](#)
President
National Business Aviation Association, Inc.

PANEL III

[Mr. Paul M. Ruden](#)
Senior Vice President, Legal and Industry Affairs
American Society of Travel Agents, Inc.

[Mr. Ralph S. Sheridan](#)
President & CEO
American Science & Engineering

Mr. Andreas Kotowski
Chief Technical Officer & Chairman
Rapiscan Security Product, Inc.

Mr. Paul Hudson
Executive Director
Aviation Consumer Action Project

[Mr. Robert G. Monetti](#)
Aviation Security Advisory Committee Representative
on behalf of
Victims of Pan Am Flight 103

[Mr. Jerry B. Epstein](#)
Former President
Board of Airport Commissioners for the City of Los Angeles