Office of Inspector General

Aviation Security
Federal Aviation Administration

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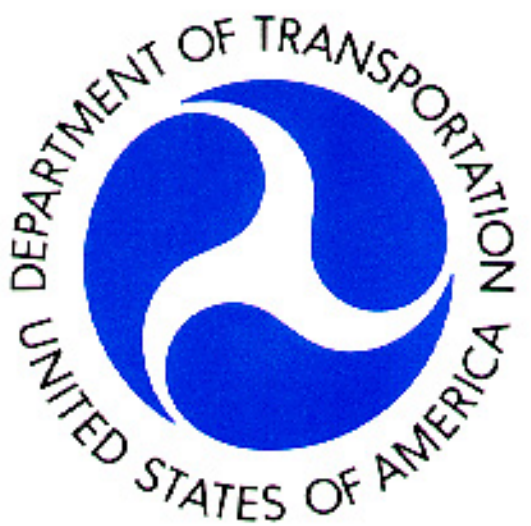

Memorandum

U.S. Department of Transportation
Office of the Secretary of Transportation
Office of Inspector General

Subject: INFORMATION: Aviation Security, Federal Aviation Administration Report No. AV-1999-068

Date:

From: Kenneth M. Mead
Inspector General

Reply to Attn of: J-1

To: Federal Aviation Administrator

On March 10, 1999, at a hearing before the Subcommittee on Transportation and Related Agencies, Committee on Appropriations, U.S. House of Representatives, we provided observations on Aviation Security based on our recent reviews. A copy of our statement is attached for your information.

The testimony addressed the Federal Aviation Administration's (FAA) progress in deploying advanced security technologies, specifically explosives detection equipment, the status of implementation of new security requirements for checked baggage, and the adequacy of FAA's oversight of the industry's compliance with access control requirements to secure areas of the airport.

Specifically, we testified that (1) FAA was making progress in deploying explosives detection equipment, but the equipment used for screening checked baggage continued to be underused by air carriers; (2) automated passenger profiling worked as intended; (3) tests of checked baggage security procedures, including use of explosives detection equipment already deployed for screening checked baggage, identified weaknesses in FAA's oversight and air carriers' implementation of the new security requirements; and (4) FAA inspection and testing of airport security systems and programs needs to be broadened in terms of the numbers, scope, and types of tests.

We concluded that FAA and industry need to continue to work cooperatively to maximize the use of explosives detection equipment, improve the proficiency of explosives detection equipment operators, and increase and support training in security awareness. We did not make specific recommendations in this report. Later this year, we will issue separate reports, with recommendations, on the results of our audits of security of checked baggage and airport access control.

The Office of Inspector General will continue to monitor FAA's progress in improving aviation security. If I can answer any questions or be of further assistance, please contact me at x61959, or Alexis M. Stefani, Deputy Assistant Inspector General for Aviation, at x60500.

Attachment

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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to testify today on Aviation Security. The Federal Aviation Administration's (FAA) Fiscal Year 2000 budget request is $317 million for security programs.

One of the Department of Transportation's (DOT) five strategic goals relates to transportation security. FAA also has a strategic goal to prevent security incidents in the aviation system. To achieve this goal, FAA has established a number of focus areas, one of which is to maximize the performance capability of people working in security for air carriers, for airport operators, and at FAA facilities. FAA's security focus, coupled with the commitment of the U.S. aviation community to continue to make improvements, should enhance the security of the traveling public.

The Office of Inspector General remains committed to aviation security. Consistent with DOT's priorities, we have made the oversight of aviation security a key issue in our Top 10 Management Issues of the DOT.

The recommendations of the 1996 White House Commission on Aviation Safety and Security[1], complemented by congressional direction, have provided FAA with initiatives to enhance security at airports nationwide. To advance these initiatives, FAA has either established or proposed new regulations affecting air carrier and airport security operations; deployed explosives detection equipment to screen passengers' baggage and small packages; and developed and implemented automated passenger profiling[2] to identify high-risk passengers requiring additional security measures.

Working with the aviation industry, FAA has completed implementation of automated passenger profiling, and continues to make progress in deploying explosives detection equipment to airports nationwide. As of February 25, 1999, FAA has installed new security technologies, including 72 FAA-certified[3] explosives detection machines, and 345 trace[4] detection devices, at U.S. airports.

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[1] For additional details, see Final Report to President Clinton, White House Commission on Aviation Safety and Security (February 12, 1997).

[2] Automated passenger profiling uses information in airline reservation systems to separate passengers into a very large majority who present no security risk, and a small minority (known as selectees) who merit additional attention, such as screening selectee checked baggage using explosives detection equipment.

[3] FAA's standards for certifying explosives detection systems for screening checked baggage are classified. The certification standard sets criteria for detection, false alarm, and baggage processing rates.

[4] Trace explosives detection devices are used to detect minute explosive quantities on or inside luggage or articles due either to contamination or vapors emanating from an explosive.

An important message of our testimony today is that aviation security is a layered and integrated system of systems, and effective security relies on a careful blend of technology, procedures, a well-trained security work force, and oversight. FAA and industry need to continue to work cooperatively to maximize the use of explosives detection equipment, improve the proficiency of explosives detection equipment operators, and increase and support training on security awareness.

Our statement today will address the following three security areas:

- *First, FAA's progress in deploying advanced security technologies, specifically explosives detection equipment.* FAA and industry are in the third year of a significant and unprecedented deployment of sophisticated security equipment at U.S. airports that is planned to continue through the Year 2004. The equipment is still underutilized but usage is increasing. The experience FAA has gained and the lessons learned to date from these efforts will affect how FAA and the industry deploy and use this equipment in the future.

- *Second, the status of implementation of new security requirements for checked baggage.* In all our tests of automated passenger profiling, the systems worked as intended and correctly identified our testers as selectees. However, test results of other checked baggage security procedures, including use of explosives detection equipment already deployed for screening checked baggage, identified weaknesses in FAA's oversight and air carriers' implementation of the new security requirements.

- *Third, the adequacy of FAA's oversight of the industry's compliance with access control requirements to secure areas of the airport*. Our work to date indicates that FAA inspection and testing of airport security systems and programs needs to be broadened in terms of the numbers, scope, and types of tests. The human element associated with implementing and enforcing airport access control continues to be the primary system weakness.

DEPLOYMENT OF EXPLOSIVES DETECTION EQUIPMENT

Over the last several years, the changing threat of terrorist and other criminal activities has heightened the need to improve domestic aviation security. FAA and the U.S. aviation industry must remain vigilant and continue to make improvements that will enhance the security of the traveling public.

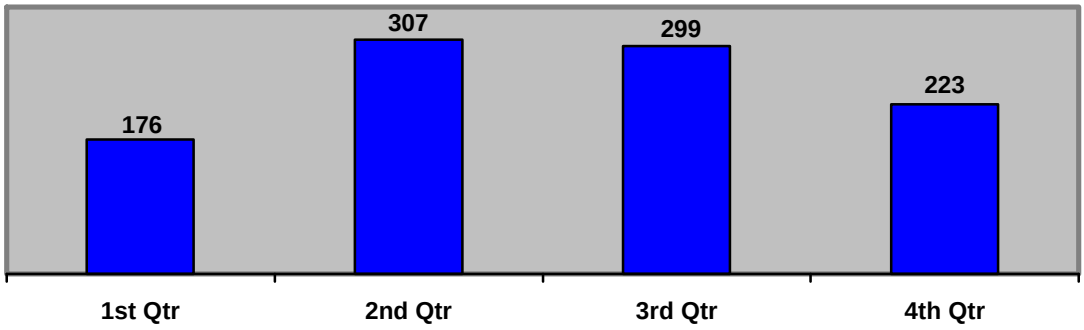
- *FAA and industry are in the third year of a significant and unprecedented deployment of sophisticated technology to enhance security* at U.S. airports that is planned to continue through the Year 2004. The costs associated with this effort

are significant. FAA spent over $150 million in Fiscal Years (FY) 1997 and 1998, and Congress authorized an additional $100 million for FY 1999. For FY 2000, FAA has requested $97.5 million to continue the deployment. FAA also estimates $100 million is required annually through FY 2004 to complete the deployment of advanced security equipment at U.S. airports.

In its February 1997 report, the White House Commission on Aviation Safety and Security recommended complementing technology with automated passenger profiling, but reiterated that profiling should last only until explosives detection systems are reliable and fully deployed. In response to this recommendation, FAA required U.S. air carriers to profile each passenger checking baggage, using FAA-approved profiling criteria. FAA also required that checked baggage belonging to a passenger identified as a selectee be cleared for the flight using an FAA-certified explosives detection machine, if available.

Use of the CTX 5000[5] series machines has increased since our prior report. In May 1998, we reported[6] that for the first quarter of the year, 10 of the 11 CTXs we had reviewed were screening fewer than 200 **bags per day.** Based on FAA's data, the average number of **bags per day** for each quarter in Calendar Year (CY) 1998 is shown below.

1998 - Average Bags Scanned per Machine, per Day

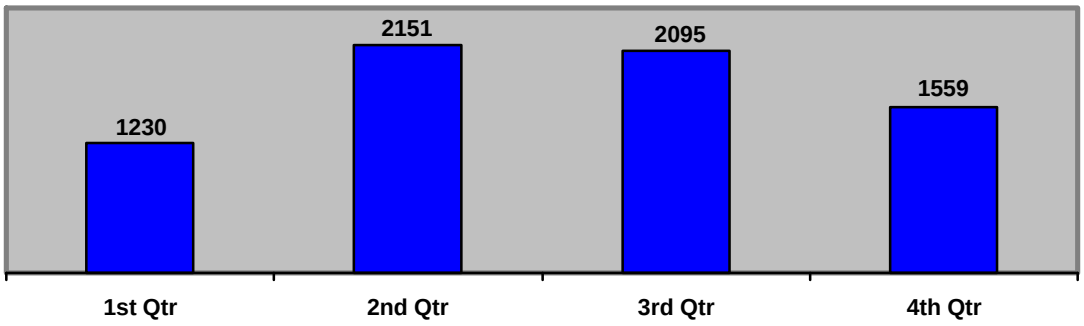


[5] InVision Technologies, Inc. CTX 5000 series is an FAA-certified explosives detection system.

[6] Aviation Security: Federal Aviation Administration (Report No. AV-1998-134, May 27, 1998.)

For the same period, the bags screened **per week** for CY 1998 are shown below.

1998 - Average Bags Scanned per Machine, per Week



Although these figures show an increase over what we reported in May, they are still low when compared to either the certified rate of 225 **bags per hour** per machine, or the effective mean capacity of 125 **bags per hour** per machine obtained in FAA field demonstrations. For example, using the effective mean capacity of 125 bags per hour, and conservatively assuming 6 hours use per day at the airlines' maximum operating capacity, we calculate that the CTX 5000 series machine is capable of screening 750 **bags per day** or (5,250 **bags per week**) versus the actual computed average of **223 bags per day** or (1,559 **bags per week**) for the fourth quarter of 1998.

According to FAA, the major U.S. air carriers have substantially increased their use of FAA-certified explosives detection systems beyond the levels we reported in May 1998. However, this statement should be placed in context and needs perspective.

First, FAA expected that systemwide implementation of automated passenger profiling during 1998 would result in higher volumes of checked baggage screened by CTX 5000 machines deployed. However, statistics show a decrease in the average number of bags scanned per machine per week in both the third and fourth quarters even though the majority of major U.S. air carriers had implemented automated passenger profiling into their reservation systems by the end of the year.

Second, these data are inconsistent with what we would expect. The third quarter--June, July, and August--is a peak family vacation time, and should show an increase in the number of bags scanned over the second quarter simply on the basis of the way automated passenger profiling works: the greater the number of enplanements, the greater the number of selectees. Further, the data show a decline in the number of bags scanned in the fourth quarter, during which the increased holiday travel in November and December should mean more, not fewer, selectees.

Third, in the fourth quarter of 1998, 24 (69 percent) of the 35 machines in operation were screening fewer than 225 **bags per day**, compared to the minimum certified rate of 225 **bags per hour**. The average number of bags screened by **all** machines during the fourth quarter also fell short of the minimum certified capacity. *Clearly, these machines offer the potential to be used much more aggressively than is now the case, especially in light of their significant cost of over $1 million each to purchase and install.*

1998 Fourth Quarter Usage Rate of CTX 5000 Series Machines

Average Bags Per Day	Number of Machines	Percent
Less Than 100	11	31.43%
100 to 224	13	37.14%
225 to 500	7	20.00%
Greater Than 500	4	11.43%
Totals	35[7]	100.00%

FAA has established a goal to have air carriers ultimately screen all checked baggage. To achieve this goal, both the deployment of significant numbers of advanced, sophisticated explosives detection equipment and increased use of the equipment are needed. FAA will be able to make progress toward this goal when it establishes procedures to require air carriers to substantially and consistently screen more checked bags than in the just-completed year. We will begin a follow-up audit to focus on the use of explosives detection systems this year.

SECURITY OF CHECKED BAGGAGE

About 1 billion pieces of checked baggage are processed within the United States each year. The success of the security screening of these bags depends on the interrelationship of many layered and integrated systems.

- *The results of our audit of FAA's oversight of air carriers' implementation of checked baggage security requirements were mixed.* Our tests of automated passenger profiling found the systems worked as intended. In all tests we

[7] Data in the chart represents only the machines that were operational at U.S. airports in the last quarter of 1998.

conducted of automated passenger profiling, air carrier systems identified our testers as selectees.

However, in a number of tests involving automated passenger profiling, airline personnel did not follow security procedures. Airline personnel either overrode the automated systems, or chose not to send specifically identified checked baggage to the explosives detection equipment for screening as required.

We also found that some air carriers were not complying with the requirements for using the explosives detection equipment for screening checked baggage. Our testing disclosed that three major air carriers at three major airports were using positive passenger bag matching[8], even though explosives detection equipment was available. FAA has taken action to correct this problem.

FAA is aware that the human element associated with the new security equipment was a significant problem.[9] FAA test results of new explosives detection equipment indicate the equipment can correctly identify a potential threat but the operator can make a wrong decision and "clear" the bag. This scenario of technology working properly, but with operators improperly "clearing" bags, was confirmed during our recently completed audit regarding the security of checked baggage. In a high percentage of our tests involving explosives detection equipment, threat items were not identified or looked for by the equipment operators. For example, we found operators who could not properly operate the equipment to resolve a threat, or performed insufficient physical searches in trying to locate a threat item.

To help resolve these problems, FAA is funding the implementation of important training tools, such as Threat Image Projection.[10] However, additional human factors research, and data collection and analysis of operator performance, will be necessary to ensure FAA can reach its security goals and meet the challenges of a changing aviation industry.

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[8] Positive passenger bag matching ensures that checked baggage belonging to a ticketed passenger is not transported unless that passenger is onboard the flight.

[9] Committee on Commercial Aviation Security, Second Interim Report to the FAA Technical Center, National Materials Advisory Board, Commission on Engineering and Technical Systems, National Research Council, July 1997.

[10] Threat Image Projection electronically projects fictitious images of bags containing bombs or other threat devices on x-ray screens. This training device keeps the operators alert, provides real world conditions, and measures operator performance.

AIRPORT ACCESS CONTROL

Inadequate implementation of existing controls to prevent unauthorized access to secure areas continues at the airports we reviewed. Improvements in FAA oversight, and airport operator and air carrier programs that foster and reward compliance, are needed.

- *While not completed, our current audit findings of airport access control are similar to the findings of our 1993 work. The human element associated with airport access control continues to be the primary system weakness.*

  In 1993, we reported[11] that FAA oversight of airport access control was not adequate. In a high percentage of tests involving airport access control, we successfully entered secure areas[12] by penetrating emergency exits, following airport personnel through access control points, and penetrating air cargo facilities. In each case, individuals failed to comply with established airport policies and procedures, and permitted us to go unchallenged into secure areas. We also found that FAA inspections and tests of airport security systems and programs should be strengthened. FAA concurred with our findings and stated rules were being developed that would increase individual accountability and improve compliance with access control requirements.

  We are currently reviewing FAA's oversight of the industry's compliance with airport access control requirements. Based on our initial testing of airport access control at five major U.S. airports, we conclude that many of the same conditions we found in 1993 still require attention. In a high percentage of tests involving airport access controls, our successful penetration of secure areas almost always resulted in our boarding an aircraft.

  We also found that FAA inspection and testing of airport security systems and programs still require strengthening. Proposed rules for individual accountability to increase compliance with access controls need to be finalized.

  The human element continues to be the primary access control system weakness. Determining why is a complex issue and requires further review before we issue a

[11] Audit of Airport Security: Federal Aviation Administration, Report No. R9-FA-3-105, dated September 20, 1993.

[12] Secure areas consist of (1) the Air Operations Area, which is within the airport perimeter fencing, and (2) the Security Identification Display Area, which is typically the area surrounding the aircraft ramp at the terminal building but can include the entire Air Operations Area.

recommendation. However, new regulations for individual accountability[13] cannot be considered the sole solution. FAA must improve its oversight, and airport operators and air carriers need to design and implement more programs that foster and reward compliance. FAA, airport operators, air carriers, and individuals must work together to ensure access control systems function as planned, if airport security systems are to be effective.

We have been briefing FAA and the aviation industry on our audit results and will continue to do so as audits progress. FAA and industry have acted responsibly on our audit results and are making plans for or have begun to take corrective actions.

Additional supporting details are attached to this report.

Mr. Chairman, this concludes my statement. I would be happy to answer any questions.

[13] Notice of Proposed Rulemaking, Federal Register, Vol. 62, No. 148, August 1, 1997, pages 41760-41792.

BACKGROUND

The responsibility for aviation security is shared between FAA, the airlines, and airports. FAA sets guidelines, establishes procedures, and relies on the intelligence community for information on threats to aviation and makes judgments on how to meet these threats. Also, FAA sponsors the development of new security technology, such as explosives detection equipment, for industry use. Airlines are responsible for screening baggage, passengers, and cargo. Airports are responsible for the security of the airport environment. Historically, airlines and airports have been responsible for purchasing and maintaining security equipment and systems.

The July 1996 crash of TWA Flight 800 was the catalyst for important advances in aviation security. Although the Federal Bureau of Investigation and the National Transportation Safety Board have ruled out terrorist activity as a potential cause of the crash, the crash prompted the August 1996 creation of the White House Commission on Aviation Safety and Security (known as the Gore Commission). Its reports in September 1996 and February 1997 addressed safety, security, and air traffic control modernization. With respect to security, the Gore Commission made recommendations to (1) deploy new explosives detection equipment, (2) implement automated passenger profiling and positive passenger bag matching, and (3) develop comprehensive and effective means to control unauthorized access to aircraft and airport secure areas.

Funding Status. In the fall of 1996, Congress provided $198 million for aviation security initiatives, including $144.2 million for the deployment of advanced security technologies, $18 million to hire 300 additional FAA security personnel, $8.9 million for additional canine teams, $5.5 million for airport vulnerability assessments, and

$21 million for aviation security research and operational testing. The Secretary of Transportation directed FAA to have most of the equipment in place by September 1997, and to complete the deployment by December 1997.

To continue the deployment, Congress provided FAA an additional $13.6 million in Fiscal Year (FY) 1998 for airport security equipment through a reprogramming action, and $100 million for FY 1999. For FY 2000, FAA has requested $97.5 million to continue the deployment. In addition to funding the deployment of new technology, FAA invests significant funds annually for the research and development of new security technology.[14]

As of February 25, 1999, FAA has purchased 96 "bulk"[15] explosives detection machines and more than 460 "trace" detection devices for airline use. In addition, FAA developed a new computer-based operator training and testing system that helps train and maintain the skills of the airline personnel who operate the explosives detection equipment. FAA also helped to fund the airlines' implementation of an automated passenger profiling system to identify passengers whose checked baggage must be subjected to additional security measures.

Security Requirements. Coinciding with its progress in deploying explosives detection equipment, FAA established new checked baggage security requirements for air carriers to follow. In turn, air carriers have instituted FAA's new requirements as automated passenger profiling came on-line, and when explosives detection equipment became available. All major U.S. air carriers and their affiliates at more than 70 of the nation's busiest airports are using automated passenger profiling. Explosives detection

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[14] FAA spent $46 million in FY 1998, expects to spend $52 million in FY 1999, and has requested $53 million for FY 2000 for aviation security research, engineering, and development.

[15] Bulk technologies attempt to detect main mass or bulk explosives inside baggage or other concealing containers.

equipment continues to be deployed, with more than 90 machines expected to be operational by the end of 1999 at more than 30 of the nation's busiest airports.

In contrast to FAA's new checked baggage security requirements, airport access control requirements have been in practice for more than a decade, and FAA has years of experience testing air carrier compliance with these requirements. FAA requires that airport security systems (1) ensure only authorized persons have access to secured areas of the airport, (2) deny entry immediately at access points to people whose authorization changes, (3) differentiate between persons authorized complete access to secured areas and those with restricted access, and (4) limit an individual's access by time and date. FAA also requires airports to provide security identification, such as badges, for persons authorized access to secured areas. Additionally, training on use, display, and control of identification, and on challenging procedures is required.

DEPLOYMENT AND USAGE OF EXPLOSIVES DETECTION EQUIPMENT

FAA and the industry are deploying significant numbers of new explosives detection equipment at U.S. airports to screen passenger baggage. This is the first large-scale deployment of sophisticated explosives detection equipment at U.S. airports, and represents a commitment on the part of the U.S. Government to make substantial improvements that will increase the safety and security of the traveling public. Congress has provided $257.8 million through FY 1999 for new aviation security technologies, and FAA estimates that an additional $100 million is required annually through FY 2004 to complete the deployment of advanced security equipment at U.S. airports.

Fiscal Years 1997 through 1999 Funding Allocations
(as of January 27, 1999)

EQUIPMENT TYPE	APPROPRIATED	OBLIGATED	COMMITTED	AVAILABLE
Bulk Detection:				
CTX 5000 SP	$149,513,400	$85,470,986	$487,855	$63,554,559
Other	15,550,000	14,720,008	829,200	792
Trace Detection[16]	52,836,600	43,714,894	911,970	8,209,736
Passenger Profiling	10,000,000	10,000,000	0	0
Operator Training	5,300,000	3,812,542	1,327,313	160,145
Operator-Assist X-ray	24,600,000	0	0	24,600,000
TOTALS	$257,800,000	$157,718,430	$3,556,338	$96,525,232

The CTX 5000 SP (and its upgraded version, the 5500 DS) is currently the only FAA-certified bulk explosives detection system being deployed[17], at a cost of around $1 million per machine. It can be installed as a stand-alone system in airport lobbies to screen the checked baggage of passengers as part of the initial check-in process, or integrated into existing baggage handling systems out of public view. Additionally, FAA is evaluating other bulk explosives detection equipment that has not yet been certified. Trace explosives detection devices can be co-located with, and used to complement, bulk detection systems, or located at passenger screening checkpoints to detect minute amounts of explosives on or inside carry-on items. FAA is deploying four different types of trace detection devices.

Explosives Detection Equipment Deployment Progress. As of February 25, 1999, FAA had procured 74 CTX 5000 SP/5500 DS machines at a cost of $81.9 million, and

[16] Includes trace explosives detection devices co-located with bulk explosives detection equipment, devices at passenger screening checkpoints, document scanners, and passenger portals.

[17] The L3 Communications eXaminer 3DX-6000 bulk explosives detection system has been certified by the FAA, but is not in full production yet.

installed 72 of them in 28 airports for use by 17 U.S. and foreign air carriers. Of these 72 installed machines, 51 are operational at 20 airports and being used by 12 carriers. FAA also procured 461 trace explosives detection devices at a cost of $44.6 million, and deployed 345 of them at 50 airports for use by 24 carriers. In addition, 22 pieces of noncertified bulk detection equipment were purchased at a cost of $15.5 million, with 11 units installed at 7 U.S. airports and 3 units operational.

In FY 1999, FAA plans to procure a total of 40 additional bulk explosives detection systems, including at least 21 CTX 5500 DS units and 4 L3 Communications eXaminer 3DX-6000 units. This year, FAA also plans to deploy 90 trace detection devices procured in FY 1998, and to procure an additional 175 units: 135 devices to complete trace deployment at the nation's busiest airports, and 40 devices to be co-located with the bulk explosives detection systems. These acquisitions (plus equipment integration) will cost $70 million.

Explosives Detection Equipment Usage Rates. Analysis we performed on data for the first quarter of FY 1998, and which we described in our Report on Aviation Security in May 1998, indicated that air carriers were underutilizing the CTX 5000 SP. We reported then that daily usage rates on 10 of 11 units installed and operating during our review were significantly less than the CTX 5000 SP certified processing speed of about 225 **bags per hour**. At five locations, 10 CTX 5000 SPs were screening fewer than 200 **bags per day**.

Congress prohibited the obligation of any FY 1999 funds for additional bulk explosives detection systems until 30 days after FAA certified, in writing, that the major air carriers had agreed to assume the operations and

maintenance costs of the machines, and to substantially increase their usage. FAA certified to Congress on January 6, 1999, that the:

> ". . . air carriers will assume the operations costs for all FAA-certified explosives detection systems . . . and have also agreed to pay equipment maintenance costs . . . ."

FAA also certified that:

> "Major U.S. air carriers have increased substantially the use of FAA-certified explosives detection systems operated by them, in accordance with their respective Air Carrier Standard Security Programs and beyond the levels reported by the Department of Transportation Inspector General for the period from January through April 1, 1998."

As evidence of their increases, FAA compared the number of systems, average bags screened per week per system, and total bags screened per quarter (all systems) for the first and third quarters of 1998.

Data provided to us by FAA for all of 1998 shows that the average number of bags scanned per machine **per week** began the year at 1,230, peaked in the second quarter at 2,151, and then declined in both the third and fourth quarters, to 2,095 and 1,559, respectively. To obtain the average number of bags scanned per machine **per day** for 1998, we divided FAA's weekly figures by seven. The results were: 176 bags **per day** on average in the first quarter, 307 in the second quarter, 299 in the third quarter, and 223 in the fourth quarter.

These figures show an increase over what we reported in May, but are still low when compared to either the certified rate of 225 **bags per hour** per machine, or the

effective mean capacity of 125 **bags per hour** per machine obtained in FAA field demonstrations. For example, using the effective mean capacity of 125 bags per hour, and conservatively assuming 6 hours use per day at the airlines' maximum operating capacity, we calculate that the CTX 5000 series machine is capable of screening 750 **bags per day** (or 5,250 **bags per week**) versus the actual computed average of 223 **bags per day** (or 1,559 **bags per week**) for the fourth quarter of 1998.

In the fourth quarter of 1998, 24 (69 percent) of the 35 machines in operation were screening fewer than 225 **bags per day**, compared to the minimum certified capacity of 225 **bags per hour**. The average number of bags screened by **all** machines during the fourth quarter was also below the minimum certified capacity.

The data have shown that (1) the expected steady increase in the volume of checked baggage since automated passenger profiling was introduced in 1998 has not occurred; (2) the average number of bags being screened per machine per week has gone down during the peak travel times of the year; and (3) the average number of bags scanned per machine per day has not increased over time. Clearly, these machines offer the potential to be used much more aggressively than is now the case. FAA's goal is to have air carriers ultimately screen all checked baggage. This goal will not be achieved for domestic flights until greater numbers of advanced, sophisticated explosives detection systems are deployed and air carriers are required to substantially and consistently screen more checked bags than now.

CHALLENGES FACING FAA OVER NEW SECURITY REQUIREMENTS FOR CHECKED BAGGAGE

FAA faces many challenges in providing comprehensive testing of new checked baggage security requirements. These challenges include the ability to evaluate new sophisticated automated passenger profiling procedures, explosives

detection equipment operating procedures, and the personnel who are responsible for operating the equipment. The security of checked baggage involves many systems, which are layered and integrated. These systems need to account for the security of about 1 billion pieces of checked baggage processed within the United States annually.

Air Carriers' Use of Passenger Profiling and Explosives Detection Equipment. Automated passenger profiling worked as intended. In all tests we conducted, the air carrier systems identified our testers as selectees, for whom additional security measures were needed. However, in a number of tests involving automated passenger profiling, airline personnel did not follow security procedures. In these instances, airline personnel either overrode the automated system, or chose not to send specifically identified checked baggage to the explosives detection equipment for screening as required.

For example, we created a passenger profile for a tester that would have required the air carrier to perform additional security measures. However, at a major airport, the air carrier's customer service representative, at the time of check-in, entered incorrect data into the reservation system, changing our tester's profile from a high risk to a no risk passenger. The ability of air carrier employees to override the selectee process defeats the purpose of security measures.

In addition, three major air carriers at three major airports were using positive passenger bag matching, even though explosives detection equipment was available. FAA's Air Carrier Standard Security Program did not clearly state the requirement to use explosives detection equipment. As a result, air carriers were under the impression they could select alternate security measures for screening checked baggage. According to FAA's Director, Office of Civil Aviation Security Policy and Planning, the language in the security program was intended to mandate the use of explosives

detection equipment when the equipment was available for screening checked baggage.

Based on our tests, on January 29, 1999, FAA revised its guidance to the Air Carrier Standard Security Program requiring air carriers to screen baggage of passengers who require additional security measures using explosives detection equipment when the equipment is available. This guidance will go into effect on June 29, 1999.

The Human Element Needs to be Addressed. FAA believes--and we agree--that equipment operators are absolutely critical in improving security. FAA has long been concerned about the low pay and high turnover of security personnel responsible for screening passengers and bags. FAA test results of new explosives detection equipment indicate the equipment can correctly identify a potential threat but the operator can make a wrong decision and "clear" the bag.

Our recent audit confirmed the importance of operator action on the equipment's results. In a high percentage of our tests involving explosives detection equipment, the equipment operators did not identify or look for threat items that were indicated by the machines.

To improve operator alertness and proficiency, FAA is funding the implementation of important tools, such as Threat Image Projection. Threat Image Projection electronically projects fictitious images of bags containing bombs or other threat devices on x-ray screens. This training device keeps the operators alert, provides real world conditions, and measures operator performance. Threat Image Projection is scheduled to be implemented in July 1999. Additional human factors research, and data collection and analysis of operator performance also will be necessary to ensure FAA can reach its security goals and meet the challenges of a changing aviation industry.

Air Carriers' Compliance With Positive Passenger Bag Match Requirements. FAA requires 100 percent positive passenger bag matching on outbound/inbound international flights from/to the United States. This requirement has been in effect for several years and simply requires that passengers travel on the same airplane with their checked baggage. FAA expects the air carriers to be as close as possible to 100 percent compliant with this security requirement. Less than 95 percent compliance by an air carrier will result in FAA enforcement action against the air carrier.

We observed or participated in tests of outbound international flights conducted by FAA field agents. On several flights, the test checked baggage departed on the flight even though the tester (passenger) failed to board the flight.

Positive passenger bag matching requirements provide a sound foundation to prevent the introduction of explosives aboard passenger aircraft through checked baggage. When air carriers do not comply with existing checked baggage security requirements, risks of a criminal act increase.

Validity of FAA's Air Carrier Compliance Testing. We observed FAA's tests of air carriers' checked baggage security operations. Our observations disclosed that the validity of some tests was compromised because field agents were readily known to air carrier employees, provided unnecessary information to air carriers when making reservations for the tests, or accomplished tests without full knowledge of an air carrier's operations. For example, during one test, a field agent was easily recognized. We learned the agent was responsible for inspecting the air carrier and had provided a one-hour training session to the air carrier's customer service representatives just 4 months prior to the test.

AIRPORT ACCESS CONTROL CONTINUES TO NEED IMPROVEMENT

In 1993, we reported that FAA oversight of airport security systems and programs was not adequate. We successfully entered secure areas by penetrating emergency exits, following airport personnel through access control points, and penetrating air cargo facilities. For each penetration, individuals failed to comply with established airport policies and procedures, and permitted us to go unchallenged into secure areas. We also found that FAA inspection and testing of airport security systems and programs were not aggressive. As a result, we concluded that at the airports reviewed, FAA could not rely on existing security systems and programs for safeguarding aircraft, passengers, and property in secure areas and terminals. FAA concurred with our finding and agreed to move beyond our recommendations in its corrective actions. FAA stated rules were being developed that would increase individual accountability and improve compliance with access control requirements.

Current Audit Work. We are currently conducting an audit of FAA's oversight of the industry's compliance with airport access control requirements. Based on our initial testing of airport access control at five major U.S. airports, we conclude the condition found in 1993 still requires attention. We also found that FAA inspection and testing of airport security systems and programs still require strengthening.

To review airport access control, we developed a testing protocol and performed tests to determine the following: (1) ability of unauthorized individuals to penetrate secure areas; (2) number of individuals not displaying ID[18], (3) number of individuals who did not challenge others for not displaying ID; (4) airport security response to emergency door alarms; and (5) ability of unauthorized individuals to by-pass

[18] ID is any form of recognition issued or approved by an airport operator who provides a person unescorted access to secured/restricted areas of an airport as designated in an FAA approved security program.

passenger screening checkpoints. Our test results demonstrate vulnerabilities in the following test areas.

- Penetrations Into Secure Areas: We successfully penetrated secure areas by (1) following individuals through airport terminal doors, (2) riding on elevators, (3) driving through vehicle gates, and (4) walking through cargo facilities, and concourse doors, gates, and jetbridges.

- Challenge: The majority of individuals we encountered failed to challenge us for unauthorized access.

- Emergency Response: In some cases, airport law enforcement failed to respond to emergency door alarms.

- Screening Checkpoint By-Pass: At two airports, we by-passed passenger screening checkpoints and entered the airport concourse.

Once we penetrated secure areas, we boarded a large number of passenger and cargo aircraft. The aircraft boardings were accomplished from the secure areas directly to aircraft, secure areas through unlocked jetbridges, and concourse gates through jetbridges. Air carrier personnel were present during many of the boardings and failed to challenge us a majority of the time.

FAA's oversight of access control continues to be inadequate. Most airport access control assessments were limited in scope, included little testing of controls, and were conducted without using a standard testing protocol. In addition, data collected in the field and maintained in the Airport/Air Carrier Information Reporting System are inaccurate due to data entry and reporting errors, and data administration weaknesses. Further, FAA has not implemented its quality control program to ensure annual

comprehensive assessments are performed adequately and assessment results are reported accurately. As a result, the database does not provide an accurate picture of security at our airports. Also, because a standard protocol is not used, the data cannot be used (and is not used) to identify national problems and allocate FAA resources to remedy the problems.

FAA needs to finalize its proposed rules for individual accountability to increase compliance with access control requirements. The proposed rules would make individuals directly accountable to FAA for violating certain regulations and would require airports to include in their security programs specific disciplinary action and penalties to be assessed when employees or tenants do not comply with security requirements. Through these changes, FAA intends to create a more effective mixture of individual and corporate responsibility for complying with security regulations, particularly those relating to access controls and challenge procedures.

The human element continues to be the primary access control system weakness. Determining why is a complex issue and requires further review before we issue a recommendation. New regulations for individual accountability cannot be considered the sole solution to strengthening airport access control. FAA must improve its oversight and program enforcement, and airport operators and air carriers need to design and implement programs that foster and reward compliance.

We have been briefing FAA and the aviation industry on our audit results and will continue to do so as audits progress. FAA and industry have acted responsibly on our audit results and are making plans for or have begun to take corrective actions. We will be providing FAA reports of our final results for security of checked baggage and airport access control before the end of FY 1999.