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AVIATION SECURITY

Enhancements Made in Passenger and Checked Baggage Screening, but Challenges Remain

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Homeland Security and Justice Issues

April 4, 2006

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Highlights

Highlights of GAO-06-371T, a testimony before the Committee on Commerce, Science, and Transportation, U.S. Senate

Why GAO Did This Study

Securing commercial aviation is a daunting task—with hundreds of airports, thousands of aircraft, and thousands of flights daily carrying millions of passengers and pieces of checked baggage. It has been over 3 years since the Transportation Security Administration (TSA) assumed responsibility for passenger and baggage screening at commercial airports. This testimony focuses on the progress TSA is making in strengthening airline passenger and checked baggage screening and the challenges that remain. Particularly, this testimony highlights TSA's efforts to (1) enhance the performance, management, and deployment of the transportation security officer (TSO) workforce; (2) strengthen procedures for screening passengers and checked baggage; and (3) leverage and deploy screening technologies.

What GAO Recommends

In prior reports, GAO has made numerous recommendations designed to strengthen aviation security, to include passenger and checked baggage screening operations. TSA generally agreed with our recommendations and is taking actions to implement them. GAO also has several ongoing reviews related to the issues addressed in this testimony, and will issue separate reports related to these areas at later dates, with additional recommendations as appropriate.

www.gao.gov/cgi-bin/getrpt?GAO-06-371T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Cathleen A. Berrick at (202) 512-3404 or berrickc@gao.gov.

What GAO Found

TSA has taken steps to enhance the TSO workforce's performance, management, and deployment, yet continues to face challenges in allocating staff and ensuring that training is available. For example, TSA developed a Screening Allocation Model to determine TSO staffing levels at commercial airports. However, some assumptions in the model—such as that 20 percent of the TSO workforce will be part-time—may be flawed, given that federal security directors (the lead TSA authorities at U.S. airports) have had difficulty filling this quota and some said they have not been able to hire up to their authorized staffing levels. In addition, while TSA has taken steps to improve the training offered to its TSO workforce, insufficient staffing and a lack of electronic connectivity to access on-line learning have prevented TSOs from taking full advantage of training opportunities.

TSA is proposing changes to its screening procedures to enhance detection capabilities in part based on risk assessments, as GAO has previously advocated. Since April 2005, TSA has gathered, vetted, and tested a variety of new procedures for passenger and baggage screening. Some passenger screening procedure changes are based on risk-related factors, including results of covert (undercover, unannounced) tests that are designed to reveal system vulnerabilities. Our ongoing work on how TSA makes these changes indicates that TSA could do more evaluation to ensure the changes achieve the desired results.

TSA has taken steps to develop and deploy technologies to strengthen commercial aviation security; however, challenges in funding and planning have created impediments to implementation. For example, TSA has deployed explosives detection systems—either stand-alone or incorporated in-line with baggage conveyor systems—to detect explosives in checked baggage. A TSA cost-benefit analysis of the in-line systems being installed at 9 airports showed that they could yield significant savings for the federal government. However, their deployment has been hampered by a lack of planning and funding strategies. TSA is currently assessing financing options to support the deployment of in-line systems and has begun prioritizing which airports would benefit from their deployment.

Source: FAA.

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to participate in today's hearing to discuss the progress made and challenges remaining in the physical screening of airline passengers and their checked baggage, and in the deployment of explosive detection technologies. Securing commercial aviation is a daunting task—with hundreds of airports, thousands of aircraft, and thousands of flights daily carrying millions of passengers and pieces of checked baggage. The Aviation and Transportation Security Act (ATSA), enacted on November 19, 2001, created the Transportation Security Administration (TSA) and mandated actions designed to strengthen aviation security, including requiring that TSA assume responsibility for conducting passenger and checked baggage screening at over 400 commercial airports in the United States by November 19, 2002. It has been over 3 years since TSA assumed this responsibility, and the agency has spent billions of dollars and implemented a wide range of initiatives to strengthen the key components of its passenger and checked baggage screening systems—people, processes, and technology. These components are interconnected and are critical to the overall security of commercial aviation.

My testimony today focuses on the progress TSA is making in strengthening airline passenger and checked baggage screening, and the challenges that remain. In particular, my testimony highlights four key areas, including TSA's efforts to (1) enhance the performance of the transportation security officer (TSO—formerly referred to as screeners) workforce and manage and deploy the TSO workforce; (2) strengthen procedures for screening passengers and checked baggage on passenger aircraft; (3) leverage and deploy screening technologies; and (4) measure the effectiveness of its passenger and checked baggage screening systems.

My comments are based on issued GAO reports and testimonies addressing the security of the U.S. commercial aviation system and our preliminary observations from ongoing work on TSA's passenger checkpoint screening procedures and staffing standards for TSOs. We did our work in accordance with generally accepted government auditing standards. Appendix I contains a list of related GAO products released since September 11, 2001.

Summary

TSA has taken steps to enhance the performance, management, and deployment of its TSO workforce, but it continues to face staffing and training challenges. Acknowledging imbalances in the screener workforce, TSA developed standards for determining TSO staffing for all airports at

which federal screening is required and developed a Screening Allocation Model (SAM) to determine airport staffing levels. In determining staffing allocations, the SAM takes into account not only flight and passenger data, but also data unique to each airport—including flight schedules, load factors, passenger and baggage distribution curves, and TSA passenger and baggage screening configurations. However, in interviewing several Federal Security Directors (FSD)—the ranking authorities responsible for the leadership and coordination of TSA security activities at the nation's commercial airports—we identified some preliminary concerns about the SAM. For example, one assumption of the SAM is that 20 percent of the TSO workforce at airports will be part-time. However, FSDs whom we spoke to said that it has been a challenge to attract, hire, and retain TSA's part-time TSO workforce, which has made this goal difficult to achieve. Further, several of the FSDs we interviewed stated that they had not been able to hire up to their authorized staffing levels, and that the SAM did not take into account that TSOs were also being routinely used to carry out non-screening and administrative duties. TSA has established the National Screening Force to provide screening support to all airports in times of special need, and implemented a number of initiatives to reduce attrition among its TSO workforce. In addition to having an adequate number of screeners, effective screening involves screeners being properly trained to do their job. TSA has taken numerous steps to expand training beyond the basic training requirement to include self-guided courses on its Online Learning Center; a recurrent training requirement of 3-hours per week, averaged over a quarter; and training on threat information, explosives detection, and new screening approaches. However, insufficient TSO staffing and a lack of high-speed Internet/intranet connectivity create impediments to the TSO workforce taking full advantage of training opportunities.

TSA is proposing changes to its screening procedures to enhance detection capabilities, but could strengthen its evaluation of these procedures. Since April 2005, TSA has gathered proposals for passenger screening procedural changes from a variety of sources within the agency. Based on preliminary observations from our ongoing review, we found that most of these proposed changes for passenger screening were intended to improve efficiency or TSA's ability to detect prohibited items. Other security-related changes to passenger screening procedures are made based on several risk-based factors, including results of covert (undercover, unannounced) tests that are designed to reveal vulnerabilities in the screening system. TSA also recently piloted additional procedures that would incorporate unpredictability into the screening system and allow TSOs to determine the level of screening passengers should receive based on suspicious behavior. TSA vets

proposed screening procedural changes through various TSA offices and tests significant proposed changes in an operational environment. However, our preliminary observations indicate that TSA's evaluation of procedural changes could be strengthened to include how the procedure would reduce vulnerability to a terrorist attack.

TSA is supporting the development and deployment of technologies to strengthen commercial aviation security but faces management and funding challenges. Effective screening depends on having the right technology in place to detect threats, and TSA has taken steps to deploy and develop technologies to strengthen commercial aviation security. However, challenges in funding and planning created impediments to the technology's implementation. For example, to improve explosives detection at some passenger screening checkpoints, TSA has deployed explosives trace portal machines, which use puffs of air to help detect the presence of explosives on individuals. The Department of Homeland Security's (DHS) fiscal year 2007 budget request states that about 434 explosive trace portal machines will be in operation throughout the country during fiscal year 2007.

However, limited progress has been made in fielding other explosives detection technology at passenger checkpoints. At baggage screening checkpoints, TSA has been effective in deploying explosive trace detection systems (in which TSOs collect samples by rubbing bags with swabs, which are chemically analyzed to identify any traces of explosive materials) and the more efficient explosive detection systems (in which probing radiation is used to examine objects inside baggage and identify characteristic signatures of threat explosives). Now that the initial deployment of this equipment has been completed, however, TSA must focus on deploying enhanced explosive detection systems, including larger or smaller models depending on the needs of a particular airport, and on incorporating explosive detection systems in-line with baggage conveyer systems, to further enhance efficiency and security. In looking to the future, DHS has agreed with our recommendations to improve its research and development (R&D) management and planning, including completing basic research, strategic planning, and risk assessment efforts; coordinating R&D efforts with transportation stakeholders; and assessing the costs and benefits of deploying explosive detection systems—either in-line or stand-alone at the nation's airports. In February 2006, TSA took a positive step forward by completing a strategic framework for its checked baggage screening operations that will help ensure the efficient allocation of limited resources to maximize technology's effectiveness in detecting threats. However, additional work will be needed to determine funding

and deployment strategies to support the implementation of in-line baggage screening systems.

TSA has measures in place to assess the effectiveness of passenger and checked baggage screening systems. TSA headquarters has conducted covert testing of passenger and checked baggage screening by having inspectors attempt to pass threat objects through checkpoints in order to measure vulnerabilities and identify systematic problems affecting TSO performance in the areas of training, procedures, and technology. These tests have identified that, overall, weaknesses and vulnerabilities exist in the passenger and checked baggage screening systems. Implemented in September 2002, the testing protocols for passenger and checked baggage screening changed in September 2005 to implement a more risk-based approach and focus on catastrophic threats to aircraft. Additionally, in February 2004 and February 2005, for passengers and checked baggage, respectively, TSA issued protocols to help FSDs conduct covert testing of local airport screening activities. Other ways TSA tests the effectiveness of passenger and baggage screening include the use of the Threat Image Projection system, which projects threat images onto a screen as the bag is screened to test the screener's ability to positively identify the threat; annual screener recertification testing; and passenger and checked baggage performance indexes. These performance indexes reflect indicators of effectiveness, efficiency, and customer satisfaction. However, due to a lack of targets for each component of the index, TSA may have difficulty performing meaningful analyses of the parts of the index.

Background

Following the terrorist attacks of September 11, the President signed the Aviation and Transportation Security Act into law on November 19, 2001, with the primary goal of strengthening the security of the nation's aviation system. To this end, ATSA created TSA as an agency with responsibility for securing all modes of transportation, including aviation.[1] As part of this responsibility, TSA oversees security operations at the nation's more than 400 commercial airports, including passenger and checked baggage screening operations. Prior to the passage of ATSA, the screening of

[1]ATSA created TSA as an agency within the Department of Transportation (DOT) with responsibility for securing all modes of transportation, including aviation. Pub. L. No. 107-71, § 101, 115 Stat. 597 (2001). The Homeland Security Act of 2002, signed into law on November 25, 2002, transferred TSA from the DOT to the new Department of Homeland Security Pub. L. No. 107-296, § 403, 116 Stat. 2135, 2178.

passengers and checked baggage had been performed by private screening companies under contract to the airlines. The Federal Aviation Administration (FAA) was responsible for ensuring compliance with screening regulations. Today, TSA security activities, including passenger and checked baggage screening at airports, are overseen by Federal Security Directors—the ranking authorities responsible for the leadership and coordination of TSA security activities at the nation's commercial airports. Each FSD is responsible for overseeing security activities, including passenger and checked baggage screening, at one or more commercial airports.

TSA reported that between October 2004 and September 2005, about 735 million passengers were physically screened. In addition, 550 million bags were screened using explosive detection systems with standard screening procedures.

Passenger and Checked Baggage Screening

In addition to establishing TSA and giving it responsibility for passenger and checked baggage screening operations, ATSA set forth specific enhancements to screening operations for TSA to implement, with deadlines for completing many of them. These requirements included

- assuming responsibility for screeners and screening operations at more than 400 commercial airports by November 19, 2002;
- establishing a basic screener training program composed of a minimum of 40 hours of classroom instruction and 60 hours of on-the-job training;
- conducting an annual proficiency review of all screeners;
- conducting operational testing of screeners;[2]
- requiring remedial training for any screener who fails an operational test; and
- screening all checked baggage for explosives using explosives detection systems by December 31, 2002.[3]

Passenger screening is a process by which authorized TSA personnel inspect individuals and property to deter and prevent the carriage of any unauthorized explosive, incendiary, weapon, or other dangerous item

[2]TSA defines an operational screening test as any covert test of a screener conducted by TSA, on any screening function, to assess the screener's threat item detection ability or adherence to TSA-approved procedures.

[3]Pursuant to the Homeland Security Act, the deadline for screening all checked baggage using explosive detection systems was, in effect, extended until December 31, 2003.

onboard an aircraft or into a sterile area.[4] TSOs (formerly referred to as screeners) must inspect individuals for prohibited items at designated screening locations.[5] The four passenger screening functions are (1) X-ray screening of property, (2) walk-through metal detector screening of individuals, (3) hand-wand or pat-down screening of individuals, and (4) physical search of property and trace detection for explosives.

Checked baggage screening is a process by which authorized security screening personnel inspect checked baggage to deter, detect, and prevent the carriage of any unauthorized explosive, incendiary, or weapon onboard an aircraft. Checked baggage screening is accomplished through the use of explosive detection systems[6] (EDS) or explosive trace detection (ETD) systems,[7] and through the use of other means, such as manual searches, canine teams, and positive passenger bag match,[8] when EDS and ETD systems are unavailable.

The conference report accompanying the fiscal year 2006 DHS appropriations act allocates about $3.6 billion to TSA for passenger and checked baggage screening operations, of which about $2.4 billion is for the TSO workforce and the remaining amount is for private sector TSOs,[9]

[4]Sterile areas are areas located within the terminal where passengers wait after screening to board departing aircraft. Access to these areas is generally controlled by TSA screeners at checkpoints where they conduct physical screening of passengers and their carry-on baggage for weapons and explosives.

[5]TSOs must deny passage beyond the screening location to any individual or property that has not been screened or inspected in accordance with passenger screening standard operating procedures. If an individual refuses to permit inspection of any item, that item must not be allowed into the sterile area or aboard an aircraft.

[6]Explosive detection systems use probing radiation to examine objects inside baggage and identify the characteristic signatures of threat explosives. EDS equipment operates in an automated mode.

[7]Explosive trace detection works by detecting vapors and residues of explosives. Human operators collect samples by rubbing bags with swabs, which are chemically analyzed to identify any traces of explosive materials.

[8]Positive passenger bag match is an alternative method of screening checked baggage that requires that the passenger be on the same aircraft as the checked baggage.

[9]ATSA required that TSA begin allowing all commercial airports to apply to TSA to transition from a federal to a private TSO workforce. To support this effort, TSA created the Screening Partnership Program to allow all commercial airports an opportunity to apply to TSA for permission to use qualified private screening contractors and private sector screeners. Currently, private screening companies provide passenger and checked baggage screening at six airports.

equipment purchase, installation and maintenance, and support functions associated with the TSO workforce, such as training and other human resource functions.[10] The President's fiscal year 2007 budget request includes about $3.5 billion for passenger and checked baggage screening, of which about $2.5 billion would support the TSO workforce.

TSA Has Taken Steps to Strengthen the Management and Performance of Its TSO Workforce, but Continues to Face Challenges

TSA Has Taken Steps to Better Manage Its TSO Workforce, but Faces Challenges in Hiring, Deploying, and Retaining TSOs

TSA has taken and has planned actions to strengthen its management and deployment of the TSO workforce, but it continues to face challenges in hiring and deploying passenger and checked baggage TSOs. To accomplish its security mission, TSA needs a sufficient number of passenger and checked baggage TSOs trained and certified in the latest screening procedures and technology. We reported in February 2004 that staffing shortages and TSA's hiring process had hindered the ability of some FSDs to provide sufficient resources to staff screening checkpoints and oversee screening operations at their checkpoints without using additional measures such as overtime.[11] TSA has acknowledged that its initial staffing efforts created imbalances in the screener workforce and has since been taking steps to address these imbalances over the past 2 years.

The Intelligence Reform and Terrorism Prevention Act of 2004 required TSA to develop and submit to Congress standards for determining the

[10]Department of Homeland Security Appropriations Act, 2006, Pub. L. No. 109-90, 119 Stat. 2064 (2005); H.R. Conf. Rep. No. 109-241, at 49-50 (2005).

[11]GAO, *Aviation Security: Challenges Exist in Stabilizing and Enhancing Passenger and Baggage Screening Operations*, GAO-04-440T (Washington, D.C.: Feb. 12, 2004).

aviation security staffing for all airports at which screening is required.[12] The act also directed GAO to review these standards, which we are doing. These staffing standards are to provide for necessary levels of airport security, while also ensuring that security-related delays experienced by airline passengers are minimized. In June 2005, TSA submitted its report on aviation security staffing standards to Congress. Known as the Screening Allocation Model (SAM), these standards are intended to provide an objective measure for determining TSO airport staffing levels, while staying within the congressionally mandated limit of 45,000 full-time equivalents (FTE) screeners.[13]

Whereas TSA's prior staffing model was demand-driven based on flight and passenger data, the SAM model analyzes not only demand data but also data on the flow of passenger and baggage through the airport and the availability of the workforce. In determining the appropriate TSO staffing levels, the SAM first considers the workload demands unique to each individual airport—including flight schedules, load factors and connecting flights, and number of passenger bags. These demand inputs are then processed against certain assumptions about the processing of passengers and baggage—including expected passenger and baggage processing rates, required staffing for passenger lanes and baggage equipment, and equipment alarm rates. Using these and various other data, the SAM determines the daily workforce requirements and calculates a work schedule for each airport. The schedule identifies a recommended mix of full-time and part-time staff and a total number of TSO FTE needed to staff the airport, consistent with a goal of 10 minutes maximum wait time for processing passengers and baggage.

For fiscal year 2006, the SAM model estimated a requirement of 42,170 TSO FTEs for all airports nationwide. In order to stay within a 43,000 TSO FTE budgetary limit for fiscal year 2006, TSA officials reduced the number of FTEs allocated to airports to 42,056, which allowed it to fund the 615 TSO FTEs in the National Screener Force—a force composed of TSOs who provide screening support to all airports—and to maintain a contingency of 329 TSO FTEs in reserve to meet unanticipated demands,

[12]Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. No. 108-458, § 4023, 118 Stat 3638, 3723-24.

[13]One full-time-equivalent is equal to one work year or 2,080 non-overtime hours.

such as a new air carrier coming on line at an airport.[14] As of January 2006, there were 37,501 full-time TSOs and 5,782 part-time TSOs on board nationwide, representing an annualized rate of 41,085 TSO FTEs. According to TSA headquarters officials, the SAM can be adjusted to account for the uniqueness of particular airport security checkpoints and airline traffic patterns. Further, it is up to the FSDs to ensure that all of the data elements and assumptions are accurate for their airports, and to bring to TSA's attention any factors that should be reviewed to determine if changes to the SAM are appropriate. The President's fiscal year 2007 budget requests a total of 45,121 FTEs for TSO personnel compensation and benefits.

As part of our ongoing review of the SAM model, we have identified several preliminary concerns about TSA's efforts to address its staffing imbalances and ensure appropriate coverage at airport passenger and checked baggage screening checkpoints, which we are continuing to assess. At the five airports we visited, FSD staff raised concerns about the SAM assumptions as they related to their particular airports.[15] Among other things, they noted that the recommendation for 20 percent part-time TSO workforce—measured in terms of FTEs—often could not be reached, the expected processing rates for passenger and baggage screening were not being realized, non-passenger screening at large airports was higher than assumed, and the number of TSO FTEs needed per checkpoint lane and per baggage screening machine was not sufficient for peak periods. Regarding the SAM assumption of a 20 percent part-time TSO FTE level across all airports, FSD staff we visited stated that the 20 percent goal has been difficult to achieve because of, among other things, economic conditions leading to competition for part-time workers, remote airport locations coupled with a lack of mass transit, TSO base pay that has not changed since fiscal year 2002, and part-time workers' desire to convert to full-time status. According to TSA headquarters officials, while the nationwide annual TSO attrition rate is about 23 percent (compared to a rate of 14 percent reported in February 2004), it is over 50 percent for part-

[14]This budgetary FTE limit is not to be confused with the 45,000 FTE screener cap imposed by Congress in the FY2006 DHS Appropriations Act that limits the total number of FTE screeners available to TSA.

[15]We interviewed FSD staff at 3 category X airports, 1 category I airports, and 1 category III airport. TSA classifies the commercial airports in the United States into one of five security risk categories (X, I, II, III, IV, and V) based on various factors, such as the total number of takeoffs and landings annually, and other special security considerations. In general, category X airports have the largest number of passenger boardings, and category IV airports have the smallest.

time TSOs. TSA has struggled with hiring part-time TSOs since it began actively recruiting them in the summer of 2003. In February 2004, we reported that FSDs at several of the airports we visited stated that they experienced difficulty in attracting needed part-time screeners, which they believed to be due to many of the same factors, such as low pay and benefits, undesirable hours, the location of their airport, the lack of accessible and affordable parking or public transportation, and the high cost of living in the areas surrounding some airports.[16] These FSDs stated that very few full-time screeners were interested in converting to part-time status—a condition that still exists—and TSA officials stated that attrition rates for part-time screeners were considerably higher than those for full-time screeners.

At two of the five airports we visited as part of our ongoing review of the SAM model, FSD staff told us that they had not been able to hire up to their authorized staffing levels. In February 2004, we reported that many of the FSDs we interviewed expressed concern that TSA's hiring process was not responsive to their needs and hindered their ability to reach their authorized staffing levels and adequately staff screening checkpoints. Specifically, FSDs expressed concern with the lack of a continuous hiring process to backfill screeners lost through attrition, and their lack of authority to conduct hiring on an as-needed basis. We reported that TSA was taking steps to make the hiring process more responsive to FSDs' needs. Since then, TSA has provided FSDs with more input into the hiring process in an effort to streamline the process and enable FSDs to more quickly meet their staffing needs.

During our five airport visits, some FSD staff also cited another limitation of the SAM—specifically, that the model does not account for screeners who are performing administrative or other duties. The officials also noted that, because they are not authorized to hire a sufficient number of mission support staff, TSOs are being routinely used—in some cases full time—to carry out non-screening and administrative duties, including supporting payroll, scheduling, uniform supplies, legal support, logistics, and operations center activities. At the five airports we visited in January and February 2006, out of a total of 2,572 TSO FTEs on-board at those airports, roughly 136 FTEs (just over five percent) were being used for administrative duties. FSD staff stated that some of these TSOs are being used on a part-time basis, while others are used on a full-time basis. The

[16] GAO-04-440T.

use of TSOs in these support functions could adversely affect the ability of FSDs to adequately staff their screening checkpoints.

To compensate for screener shortages and to enable operational flexibility to respond to changes in risk and threat, in October 2003, TSA established a National Transportation Security Officer (TSO) Force (formerly known as the Mobile Screening Force established in November 2002) to provide screening support to all airports in times of emergency, seasonal demands, or under other special circumstances that require a greater number of screeners than regularly available to FSDs. In February 2004, we reported that the National Screening Force consisted of over 700 full-time passenger and baggage TSOs. TSA officials stated that while these screeners have a home airport to which they are assigned, they travel to airports in need of screening staff approximately 70 percent of the year.

TSA budgeted for 615 FTEs for the National Screening Force in fiscal year 2006. The President's fiscal year 2007 budget request includes $35 million for operational expenses of the force (not including salaries and benefits of force members). According to the budget request, in fiscal year 2007, the National Screening Force will generally be deployed only to those airports experiencing significant staffing shortfalls associated with increased seasonal traffic or when a special event, such as a Super Bowl or a large national conference, occurs requiring an immediate influx of additional TSO support. At one category X airport we recently visited, the FSD stated that because of challenges in hiring and retaining TSOs for this airport, he currently had 59 members of the National Screening Force deployed to his airport, and had been relying on this force since 2004. The President's fiscal year 2007 budget request states that TSA will continue to review methods for reducing costs associated with this force, including ensuring that each airport has a sufficient staffing program in place to address short-term needs.

In February 2006 in the President's fiscal year 2007 budget request, TSA identified a number of initiatives it has under way to address the management of the TSO workforce, including

- requesting $10 million to support TSO retention programs, including utilizing workforce retention flexibilities to potentially include pay for performance, performance bonuses, retention allowances, college credit reimbursement, and flexible staffing; and
- establishing retention incentives for part-time screeners.

We will continue to examine these efforts as part of our ongoing work on TSA's aviation security staffing standards.

TSA Has Strengthened TSO Training but Faces Challenges in Delivering the Training

Since we reported on TSO training in September 2003,[17] TSA has taken a number of actions designed to strengthen training available to the TSO workforce as part of its efforts to enhance the performance of TSOs. Additionally, TSA's Office of Inspections (OI, formerly the Office of Internal Affairs and Program Review) makes recommendations to TSA leadership in its reports on covert (undercover, unannounced) testing results. These recommendations address deficiencies identified during testing and are intended to improve screening effectiveness. As of December 2005, OI had issued 29 reports to management on the results of its checkpoint and checked baggage covert testing. In total, the reports include 19 distinct recommendations related to passenger and checked baggage screening.[18] Of these 19 recommendations, 11 relate to screener training.

In September 2003, we reported that TSA had not fully developed or deployed a recurrent training program for passenger TSOs. At that time, little training was available to TSOs once they completed their basic TSO training. Since then, TSA has expanded training available to the TSO workforce, such as introducing an Online Learning Center that makes self-guided courses available over TSA's intranet and the Internet and expanding training available to supervisory TSOs. TSA also established a recurrent training requirement of 3 hours per week, averaged over a quarter, and provided FSDs with additional tools to facilitate and enhance TSO training, including at least one modular bomb set kit—containing components of an improvised explosive device (IED)—and at least one weapons training kit. TSA has also instituted a program called "Threat in the Spotlight" that, based on intelligence TSA receives, provides screeners with the latest in threat information regarding terrorist attempts to get threat objects past screening checkpoints. Additionally, in December 2005, TSA reported completing enhanced explosives detection training for over 18,000 TSOs. This training included both classroom and hands-on experiences, and focused particularly on identifying X-ray images of IED component parts, not just a completely assembled bomb. TSA plans for

[17]GAO, *Airport Passenger Screening: Preliminary Observations on Progress Made and Challenges Remaining*, GAO-03-1173 (Washington, D.C.: Sept. 24, 2003).

[18]Some recommendations appear repeatedly in multiple reports issued by OIAPR.

the remaining TSO workforce to receive this training by June 2006 through the Online Learning Center or other delivery methods. TSA also has developed new training curricula to support new screening approaches. For example, TSA recently developed a training curriculum for TSOs in behavior observation and analysis at the checkpoint to identify passengers exhibiting behaviors indicative of stress, fear, or deception.

However, as we reported in May 2005, insufficient TSO staffing and a lack of high-speed Internet/intranet connectivity to access the Online Learning Center have made it difficult for all TSOs at many airports to receive required training and has limited TSO access to TSA training tools.[19] As previously discussed, TSA is taking steps to address the TSO staffing challenges. However, it is too soon to determine whether TSA's efforts will address TSA's ability to provide required training while maintaining adequate coverage for screening operations. In terms of access to the Online Learning Center, TSA plans to complete the deployment of high-speed Internet/intranet connectivity to airports during fiscal year 2007. TSA established its Online Learning Center to provide passenger and baggage screeners with online, high-speed access to training courses. However, effective use of the Online Learning Center requires high-speed Internet/intranet access, which TSA had not been able to provide to all airports. In May 2005, we reported that as of October 2004, about 45 percent of the TSO workforce did not have high speed Internet/intranet access to the Online Learning Center. The President's fiscal year 2007 budget request reports that approximately 220 of the more than 400 airport and field locations have full Information Technology (IT) infrastructure installation, to include high-speed network connectivity, while the rest of the airports operate with dial-up access to TSA systems. According to the budget request, TSA will use $120 million in fiscal year 2006 to deploy high-speed connectivity to all category X and I airports and preliminary high-speed connectivity to all category II, III, and IV airports. The budget request includes a request for a total of $90 million to support this effort in fiscal year 2007, of which $54 million is needed to complete the deployment of high-speed connectivity at category II, III, and IV airports.[20]

[19]GAO, *Aviation Security: Screener Training and Performance Measurement Strengthened but More Work Remains*, GAO-05-457 (Washington D.C.: May 2, 2005).

[20]According to the budget request, the remaining $36 million is needed to support operations and maintenance costs, including recurring costs for routers, switches, circuits, cabinets, racks, and network monitoring.

TSA Is Making Changes to Its Passenger Screening Procedures to Enhance Detection Capabilities Based on Risk and Other Factors, but Could Strengthen Its Evaluation of Proposed Procedures

Proposed Passenger Checkpoint Screening Procedural Changes Are Generally Based on Operational Experience and Risk-Based Assessments

Our preliminary analysis of TSA data indicates that since April 2005, TSA has considered 70 proposed changes to passenger checkpoint screening procedures.[21] Most of these proposed changes were generated by TSA airport officials and TSA's Security Operations division, which is responsible for developing and overseeing the implementation of checkpoint screening procedures. TSA headquarters also formally solicited input from TSA airport staff by initiating a field review of standard operating procedures (SOP), which involved representatives from airports across the nation. This review resulted in 120 suggested revisions to the passenger checkpoint screening procedures. To a lesser extent, changes to checkpoint screening procedures are recommended by TSA senior leadership, such as the Assistant Administrator of Security Operations or the Assistant Secretary. Congress has also proposed and subsequently mandated changes to checkpoint screening procedures, such as adding lighters to the list of items prohibited on aircraft. According to a senior TSA official, recent suggestions for procedural changes, such as removing small scissors from the prohibited items list to allow TSOs to focus on higher risk items, were generated by a TSA task force focused on improving the agency's ability to detect explosives at the screening checkpoint.

[21]In April 2005, TSA began documenting proposed changes to passenger checkpoint screening procedures.

Based on our preliminary analysis, the majority of proposed SOP changes considered by TSA in April 2005, August 2005, September 2005, and December 2005 were not specifically designed to enhance the security of the screening process.[22] Of the 70 proposed checkpoint screening SOP changes considered by TSA, 23 were intended to improve the efficiency of the screening process (e.g. passenger flow) such as modifying the HazMat reporting requirements to exclude torch lighters and pepper spray in quantities less than 4 ounces. Seven of the 70 proposed changes considered by TSA during this period were intended to specify or clarify procedures for passengers requiring special consideration, such as law enforcement officers. Ten of the proposed changes were specifically intended to improve TSA's ability to detect prohibited items. Sixteen proposed changes were intended to enhance customer service or clarify the wording of the SOP. Fourteen of the 70 proposed changes were not included in these categories.[23]

According to TSA, security-related proposed changes to checkpoint screening procedures are based on risk-based factors, including previous terrorist incidents, threat information, vulnerabilities of the screening system, as well as operational experience and stakeholder concerns. For example, according to TSA officials, the initial change to the pat-down procedure in September 2004 was based on the attacks carried out on two Russian aircraft. According to TSA, the pat-down procedure was further revised in response to passenger concerns that the procedure was too invasive. TSA officials stated that the pat-down procedure was changed a third time based on additional threat information. TSA also informed us that reported threat information led them to further amend the pat-down procedure in December 2005.

Recommended changes to passenger checkpoint screening procedures are also generated based on the results of covert testing conducting by TSA's Office of Inspections and the DHS Office of Inspector General (OIG). Covert tests are designed to assess vulnerabilities in the checkpoint screening system to specific threats, such as vulnerability to the various

[22]TSA does not review proposed SOP changes on a regular basis. Rather, the administration accumulates proposed changes and reviews them periodically on an as-needed basis. Since TSA began documenting proposed changes to checkpoint screening procedures, the agency has conducted three reviews of proposed changes, which took place in April 2005, August 2005, and September 2005.

[23]TSA attributed nine proposed changes to senior leadership direction, and TSA did not categorize five proposed changes from 2005.

methods by which terrorists may try to conceal hand guns, knives, or IEDs. OI and the DHS OIG identified vulnerabilities in the checkpoint screening system, which existed, in part, due to deficiencies in screening procedures. To address these vulnerabilities, since March 2005, OI and the DHS OIG recommended four changes to the passenger checkpoint screening procedures.[24] TSA has also made procedure changes in response to operational experience and stakeholder concerns. For example, TSA changed the SOP to specify the "individual tester" instead of "supervisor" to alleviate field confusion that supervisors were the only ones allowed to perform a particular task. Also, based on field input, TSA is changing the SOP to allow TSOs to instruct passengers with long hair to hold their hair during the explosives trace portal (ETP) screening process. TSA also made changes due to stakeholder concern, such as modifications to the pat-down procedure. After passengers expressed discomfort with the invasive nature of the procedure, TSA modified it to be less invasive while maintaining its security effectiveness.

TSA Could Strengthen Its Evaluation of Proposed Screening Procedural Changes Based on our Preliminary Observations

As previously mentioned, TSA airport staff and headquarters officials suggest changes to checkpoint screening procedures to generally improve the efficiency, effectiveness and clarity of screening procedures. These proposed procedural changes are periodically gathered and vetted through various TSA offices, and ultimately the Assistant Administrator of Security Operations, for approval. The offices involved in the review process for SOP changes include Security Operations, Office of Chief Counsel, and the Office of Training. As required, proposed procedural changes are also evaluated by other offices including the Office of Intelligence and Analysis, Office of Civil Rights, and Office of Passengers with Disabilities. Representatives of these component divisions meet informally or formally to discuss proposed changes and determine whether the changes should be incorporated into the checkpoint screening SOP.

In addition, TSA officials informed us that the agency evaluates all significant proposed changes in an operational environment prior to determining whether such changes should be implemented nationwide. Specifically, under the current Assistant Secretary, TSA pilot tests changes that require substantial training or that may generate concerns from the traveling public. The significant changes implemented in December 2005

[24]Office of Inspections recommended two additional changes to checkpoint screening procedures prior to March 2005.

include revisions to the pat-down procedure, the procedure for searching carry-on luggage, the process for screening selectee passengers,[25] and the list of items prohibited on aircraft. The major changes also include a new procedure for screening passengers for IEDs. While TSA evaluated these procedures in an operational environment, our preliminary analysis suggests that the evaluations primarily focused on the operational feasibility of the procedures, and less on how these procedures would reduce vulnerability to a terrorist attack. TSA assesses the vulnerability of the existing checkpoint screening system by conducting covert tests in which persons attempt to carry prohibited items through the checkpoint without the items being detected. However, TSA officials questioned whether covert testing could be used to assess statistically whether new procedures would decrease the vulnerability of the screening system. For example, TSA officials stated that since some procedures are only piloted in the operational environment for a few days, TSA could not run enough covert tests for the results to allow for comprehensive analysis of reduced vulnerability. TSA officials also stated that because the agency implements a layered approach to passenger screening, it would be difficult to determine the extent to which any one layer reduces vulnerability of the checkpoint screening system.

During the course of our review, we met with five aviation security experts, four of which identified covert testing as the best way to assess the security effectiveness of new and existing procedures. However, they also acknowledged the difficulty of using covert testing to assess the extent to which specific procedures would reduce vulnerabilities, especially considering that the effectiveness of a procedure also relies on the capability of TSOs and screening equipment.

TSA also recently piloted additional procedures that would incorporate unpredictability into the screening system and that would allow TSOs to determine the level of screening passengers should receive based on suspicious behavior. While TSA has not yet determined whether to incorporate these new procedures into the SOP, our preliminary observations indicate that TSA did not have a formal evaluation plan in place when piloting these procedures. Regarding screening passengers based on suspicious behavior, TSA officials stated that this method has been successful for law enforcement officials, including those operating in

[25]A selectee is a person identified for additional screening by a computer-assisted passenger screening system or another process as determined and approved by TSA.

airports, as well as aviation officials in other countries such as Israel. FSD staff at three airports that participated in the piloting of these procedures identified factors TSA headquarters should consider prior to implementing these procedures, one of which is the lack of TSOs to conduct these procedures. FSD staff at one airport said that they had to close a screening lane in order to have a sufficient number of TSOs to implement the piloted procedure. FSD staff at all three airports also reported that some TSOs had to work overtime so that other TSOs could be trained to implement these procedures. TSA headquarters staff stated that the prohibited items list and changes to other programs would offset the additional TSO resources needed to implement these procedures. However, FSD staff with whom we spoke at 2 of the airports that piloted these procedures stated that the changes made did not free up screening resources as was planned.

TSA Is Supporting the Development and Deployment of Technologies to Strengthen Commercial Aviation Security, but Faces Management and Funding Challenges

DHS and TSA Are Taking Steps to Develop and Deploy Technologies for Screening Passengers and Checked Baggage, but Further Planning Is Needed to Focus R&D Efforts

DHS's and TSA's research and development efforts for passenger and checked baggage screening are part of a broader DHS program focused on researching and developing technologies to detect, prevent, and mitigate terrorist threats. History has shown that terrorists will adapt their tactics and techniques in an attempt to bypass increased security procedures, and are capable of developing increasingly sophisticated measures in an attempt to avoid detection. This ever changing threat necessitates the need for continued R&D of new technologies and the fielding of these technologies to strengthen aviation security.

In March 2005, the DHS OIG reported that significant improvement in screener performance may not be possible without greater use of new technology. The DHS OIG encouraged TSA to expedite its testing programs and give priority to technologies that will enable the screening workforce to better detect both weapons and explosives. In addition, the President's fiscal year 2007 budget request states that checkpoints do not currently have the ability to accurately and quickly detect explosives on all passengers, and only a minimal number of airline passengers are directed to a selectee lane for further inspection in which they are manually searched for explosives. The request further states that "many travelers are allowed to pass through the checkpoints without complete testing and detection," and recognizes the importance of filling this detection gap. TSA officials stated that the agency is addressing this issue through a variety of security measures. TSA has recently put increased focus on the threats posed by IEDs and is investing in technology for this purpose. For example, about 60 explosives trace portal machines have been installed at over 20 airports. This new technology uses puffs of air to help detect the presence of explosives on individuals. DHS's fiscal year 2007 budget request states that TSA expects that about 434 explosive trace portal machines will be in operation throughout the country by September 2007. TSA is also developing backscatter technology, in which backscatter signals interact with explosives, plastics and metals, giving them shape and form and making them easy to visually interpret. However, limited progress has been made in fielding this technology at airport passenger screening checkpoints. We will soon begin a review of DHS's and TSA's progress in planning for, managing, and deploying their R&D programs in support of passenger checkpoint screening operations.

To enhance checked baggage screening, TSA is developing and testing next-generation EDS machines. Most of the currently deployed EDS technology was developed prior to the passage of ATSA and was based on criteria set forth by Congress in the Aviation Security Improvement Act of 1990. According to TSA, since the large-scale deployment of EDS machines in 2002 and 2003, manufacturers have only marginally improved false alarm rates and throughput capabilities of the equipment. The maximum number of bags an EDS machine can screen per hour is 500, which can be achieved only when the machines are integrated in-line with the baggage conveyor system. New EDS equipment was certified in 2005, including a smaller EDS machine designed to replace ETD machines used for primary screening and an upgraded large EDS machine. In September 2005, TSA entered into a $24.8 million contract to purchase 72 smaller EDS machines to be installed at 24 airports. The President's fiscal year 2007 budget request for TSA includes funding to support

research and development for EDS machines that can operate at up to 900 bags per hour and employ new threat detection concepts. In its February 2006 strategic framework for checked baggage screening, TSA identified development of high-throughput EDS machines and lowering of false alarm rates as key arenas for improving investment management of next-generation technologies.

We reported in September 2004 that DHS and TSA have made some progress in managing transportation security R&D programs according to applicable laws and R&D best practices. However, we found that their efforts were incomplete in several areas, including preparing strategic plans for R&D efforts that contain measurable objectives, preparing and using risk assessments to select and prioritize R&D projects, and coordinating with stakeholders—a condition that increases the risk that their R&D resources will not be effectively leveraged. We also found that TSA and DHS delayed several key R&D projects and lacked both estimated deployment dates for the vast majority of their R&D projects and adequate databases to effectively manage their R&D portfolios. We recommended that DHS and TSA (1) conduct some basic research in the transportation security area; (2) complete their strategic planning and risk assessment efforts; (3) develop a management information system that will provide accurate, complete, current, and readily accessible project information for monitoring and managing their R&D portfolios; and (4) develop a process with the Department of Transportation to coordinate transportation security R&D efforts and share this information with transportation stakeholders. DHS and TSA agreed that the recommendations were key to a successful R&D program. We will examine DHS's and TSA's efforts to implement these recommendations as part our upcoming review of TSA's checkpoint R&D program.

TSA Is Focusing Its Checked Baggage Strategic Planning Efforts on Deployment of In-line EDS Systems, but Faces Challenges in Funding These Systems on a Large-Scale Basis

TSA has made substantial progress in installing EDS and ETD systems at the nation's airports—mainly as part of interim lobby screening solutions—to provide the capability to screen all checked baggage for explosives, as mandated by Congress. Although TSA made progress in fielding EDS and ETD equipment at the nation's airports, TSA placed this equipment in a stand-alone mode—usually in airport lobbies—to conduct the primary screening of checked baggage for explosives, rather than integrating EDS machines in-line with airports' baggage conveyor systems. TSA officials stated that they employed these interim solutions because of the significant costs required to install in-line systems and the need to reconfigure many airports' baggage conveyor systems to accommodate the equipment. These interim screening solutions led to operational

inefficiencies, including requiring a greater number of screeners and screening fewer bags for explosives each hour, as compared with using EDS machines in-line with baggage conveyor systems. Performing primary screening using ETD machines, as is the case for more than 300 airports, is more labor intensive and less efficient than screening using the EDS process. TSA's placement of stand-alone EDS and ETD machines in airport lobbies also resulted in passenger crowding, which presented unsafe conditions and may have added security risks for passengers and airport workers. In May 2004, TSA conducted a retrospective cost-benefit analysis on nine airports with agreements to install in-line screening systems and found that significant savings and other benefits, including reduced screener staffing requirements and increased baggage throughput, may be achieved through the installation of in-line systems. TSA estimated that in-line baggage screening systems at these nine airports would save the federal government about $1 billion over 7 years,[26] compared with stand-alone EDS systems, and that initial investment would be recovered in a little over 1 year.[27] TSA's analysis also showed that a cost savings may not be achieved for all airports. According to TSA's data, federal cost savings varied from about $50 million to over $250 million at eight of the nine airports, while at one airport, there was an estimated $90 million loss.[28]

With the objective of initially fielding this equipment largely accomplished, TSA is shifting its focus from equipping airports with interim screening solutions to systematically planning for the more optimal deployment of checked baggage screening systems, although identifying the resources to fund the systems on a large-scale basis continues to be a challenge. To assist TSA in planning for the optimal deployment of checked baggage screening systems, we recommended in our March 2005 report that TSA

[26]This figure refers to the net present value saved over 7 years if received up front.

[27]For a basis of comparison, Office of Management and Budget Circular A-94 stipulates using a 7 percent real discount rate to compute the present value of cost savings. TSA used a 4 percent real discount rate. Following Office of Management and Budget guidance, cost savings are $1.14 billion. In addition, in TSA's analysis, the federal government does not pay for $319 million, or 25 percent, of project costs. Accounting for these costs to reflect total costs, as recommended by Circular A-94, lowers overall savings to $820 million.

[28]The relatively large costs for upfront in-line EDS at one airport are not offset by the modest amount of estimated operation and maintenance cost savings; therefore, the in-line EDS system may be more costly than EDS stand-alone. By contrast, at another airport the upfront costs of in-line EDS are lower than for stand-alone EDS, and there is a substantial amount of estimated operation and maintenance cost savings. Therefore, the in-line EDS system for this latter airport may be less costly than stand-alone EDS.

systematically evaluate baggage screening needs at airports, including the costs and benefits of installing in-line baggage screening systems—explosive detection systems integrated in-line with airport baggage conveyor systems—at airports that do not yet have in-line systems installed. We suggested that part of such planning should include analyzing which airports should receive federal support for in-line EDS baggage screening systems based on cost savings that could be achieved from more effective and efficient baggage screening operations and on other factors, including enhanced security. Also, for airports where in-line systems may not be economically justified because of high investment costs, we suggested that a cost-effectiveness analysis be used to determine the benefits of additional stand-alone EDS machines to screen checked baggage in place of the more labor-intensive ETD machines. We also recommended that TSA consider the costs and benefits of the new technologies being developed through its research and development efforts, which could provide smaller EDS machines that have the potential to reduce the costs associated with installing in-line EDS baggage screening systems or to replace ETD machines currently used as the primary method for screening at over 300 airports nationwide. DHS agreed with our recommendations and stated that TSA had initiated an analysis of deploying in-line EDS machines and was in the process of formulating criteria to identify those airports that would benefit from an in-line EDS system. DHS also stated that TSA had begun conducting an analysis of the airports that rely heavily on ETD machines as the primary checked baggage screening technology to identify those airports that would benefit from augmenting ETDs with stand-alone EDS equipment.

On February 8, 2006, TSA issued a report to Congress outlining a framework for a strategic plan for its TSA Checked Baggage Screening Program. TSA plans to finalize the plan, including funding and cost-sharing strategies for in-line baggage screening systems, in Spring 2006. The framework introduces a strategy intended to increase security through deploying EDS to as many airports as practicable, lower life-cycle costs for the program, minimize impacts to TSA and airport/airline operations, and provide a flexible security infrastructure for accommodating growing airline traffic and potential new threats. The framework addresses the following issues:

- Optimized checked baggage screening solutions—finding the ideal mix of higher-performance and lower-cost alternative screening solutions.
- Funding prioritization schedule by airport—which airports should receive funding for an in-line baggage screening system based on quantitative modeling of security, economic, and other factors.

- Deployment strategy—a plan for the acquisition of next-generation EDS systems, the redeployment of existing EDS assets, and investment in life-cycle extension programs.
- EDS Life-Cycle Management Plan—structured guidelines for EDS R&D investment, procurement specifications for next-generation EDS systems, and the redeployment of existing EDS assets and investment in life-cycle extension programs that minimize the cost of ownership of the EDS systems.
- Stakeholder collaboration plan—TSA plans to work closely with airport operators and other key stakeholders to develop airport-specific screening solutions, refine the nationwide EDS deployment strategy, and investigate alternative funding programs that may allow for innovative as well as non-federal sources of funding or financing, including formulas for sharing costs between different government entities and the private sector.

This strategic framework is a positive step forward in systematically planning for TSA's checked baggage screening program. The completion of a strategic plan for this program should help TSA ensure that it is efficiently allocating its limited resources to maximize the effectiveness of its checked baggage screening operations. However, it will be important for TSA to complete their analysis and plans for the funding of in-line EDS systems, which has been the primary obstacle to the deployment of these systems over the past few years.

TSA Has Strengthened Its Efforts to Measure the Effectiveness of Screening Systems

TSA has strengthened its efforts to measure the performance of the various components of the passenger and checked baggage screening systems—people, processes, and technology—but results of covert testing identified that weaknesses and vulnerabilities continue to exist. In November 2003, we reported on the need for TSA to strengthen its efforts to measure the performance of its aviation security system.[29] At that time, TSA had collected limited data on the effectiveness of its aviation security programs and initiatives. Specifically, limited covert testing had been performed, the Threat Image Projection (TIP) system[30] was not fully operational at passenger screening checkpoints and was not available for checked baggage screening systems, and TSA had not fully implemented a

[29]GAO, *Aviation Security: Efforts to Measure Effectiveness and Address Challenges*, GAO-04-232T, (Washington, D.C.: Nov. 5, 2003).

[30]The Threat Image Projection system is designed to test TSOs' detection capabilities by projecting threat images, including images of guns and explosives, into bags as they are screened. TSOs are responsible for positively identifying the threat image and calling for the bag to be searched.

congressionally mandated annual screener proficiency review (referred to as the recertification program). Since then, TSA has implemented and strengthened efforts to collect performance data in these areas.

In the area of covert testing, TSA headquarters increased the amount of passenger and checked baggage screening covert tests it performs and recently changed its approach to covert testing to focus its resources on catastrophic threats—threats that can take down an airplane or blow up an airplane. These tests, in which undercover OI inspectors attempt to pass threat objects through passenger screening checkpoints and in checked baggage, are designed to measure vulnerabilities in passenger and checked baggage screening systems and to identify systematic problems affecting performance of TSOs in the areas of people (training), processes (procedures), and technology. OI began conducting covert testing in September 2002, conducting test scenarios for the passenger checkpoint and for checked baggage. These scenarios were carried over from tests developed and conducted under FAA, but OI reported using more updated weapons than those used by FAA and more robust tests. TSA considers its covert testing as a snapshot of a TSO's ability to detect threat objects at a particular point in time, as one of several indicators of systemwide screener performance, and as an important mechanism for identifying areas in passenger and checked baggage screening needing improvement.

In September 2003, we reported that OI had conducted limited covert testing, but planned to double the amount of tests it conducted during fiscal year 2004, based on an anticipated increase in its staff from about 100 full-time equivalents to about 200 full-time equivalents.[31] TSA officials stated that based on budget constraints, OI's fiscal year 2004 staffing authorization was limited to 183 full-time-equivalents.[32] Despite a smaller than expected staff increase, by the end of the second quarter of fiscal year 2004, OI had already surpassed the number of tests it had performed

[31]GAO-03-1173 .

[32]Covert testing is an ancillary duty and not a full-time assignment for the majority of OI staff. According to OI, 14 full-time-equivalent positions in headquarters are dedicated fully to the covert testing program, which includes covert testing of all modes of transportation, not just airports. These 14 full-time-equivalents are in a special group that forms the core of team leaders for the covert testing trips.

during fiscal year 2003—conducting a total of 836 tests in fiscal year 2003 and 1,233 in the first two quarters of fiscal year 2004.[33]

Our analysis of TSA's covert testing results for tests conducted between September 2002 and September 2005 identified that overall, weaknesses existed in the ability of screeners to detect threat objects on passengers, in their carry-on bags, and in checked baggage. Covert testing results in this analysis cannot be generalized either to the airports where the tests were conducted or to airports nationwide.[34]

During the first 3 years of covert testing, OI decided to maintain the same test scenarios and same level of difficulty so that test results would be comparable over time.[35] In July 2005, OI began revamping its covert testing program based on the results of the Secretary of DHS's Second Stage Review—a review of the department's programs, policies, operations, and structure.[36] Specifically, the Assistant Secretary of DHS, TSA, instructed OI to implement a more risk-based approach and focus its resources on catastrophic threats—threats that can take down an airplane or blow up an airplane. In August 2005, the Assistant Secretary of DHS, TSA, further instructed OI to discontinue its former covert testing program and implement the revamped covert testing program. OI began implementation of its revamped testing in September 2005. OI conducted 117 tests over a 1-week period at one airport focusing on catastrophic threats and incorporated additional testing elements that had not previously been included. According to OI officials, this testing involved over 50 personnel

[33]OI conducted a total of 2,369 passenger and checked baggage covert tests in fiscal year 2004.

[34]Test results cannot be generalized because sample tests were not identified using the principles of probability sampling. In a probability sample to assess screener detection of threat objects, each screening of a passenger or baggage would have to have a chance of being selected. A well-designed probability sample would enable failure rates to be generalized to all airports. However, for cost and operational reasons, probability sampling may not be feasible for passenger and checked baggage screening because it would require a very large sample size and an exhaustive examination of each sampled passenger or baggage to determine if there was a threat object to detect.

[35]In August 2004, OI began piloting various enhanced covert test scenarios based on more current threat information.

[36]The review examined elements of the Department of Homeland Security in order to recommend ways that DHS could better manage risk in terms of threat, vulnerability, and consequence; prioritize policies and operational missions according to this risk-based approach; and establish a series of preventive and protective steps that would increase security at multiple levels.

from various TSA components. Since then, OI has conducted tests at three additional airports.[37] OI officials stated that TSA leadership is considering these initial tests in making final determinations regarding the revised testing program that OI will implement, and that final decisions regarding the structure, content, and frequency of these tests have not yet been made.

In February 2004, TSA provided protocols to help FSDs conduct their own covert testing of local airport passenger screening activities—a practice that TSA had previously prohibited.[38] Between May 2004 and April 2005, FSDs conducted a total of 17,954 local covert tests at 350 airports; as of February 2006, TSA reported that FSDs had conducted a total of 48,826 local covert tests. In February 2005, TSA released a general procedures document for local covert testing at checked baggage screening locations. Between March 2005 and September 2005, 1,370 local tests of EDS screening were conducted at 71 airports. TSA headquarters officials stated that a key challenge FSDs face in conducting local testing is the lack of available federal staff to conduct the testing, particularly at smaller airports. In May 2005, we reported that TSA officials stated that they had not yet begun to use data from local covert testing to identify training and performance needs because of difficulties in ensuring that local covert testing is implemented consistently nationwide.[39] TSA officials stated in March 2006 that data is available for use by FSDs to identify training needs and TSO performance.

Covert testing is one method TSA uses to measure the security effectiveness of passenger and checked baggage screening procedures and technologies in the operating environment in addition to other TSA measures that assess the performance of passenger and checked baggage TSOs. One other source of information on TSO performance in detecting threat objects is the results from the TIP system. TIP is designed to test passenger screeners' detection capabilities by projecting threat images, including images of guns, knives, and explosives, onto bags as they are screened during actual operations. TSOs are responsible for identifying the threat image and calling for the bag to be searched. Once prompted,

[37]OI conducted testing at two of the three airports twice during September 2005 through December 2005.

[38]The local covert testing protocols were updated in June 2004 and August 2004 to provide information on alternative testing methods.

[39]GAO-05-457.

TIP identifies to the screener whether the threat is real and then records the TSO's performance in a database that could be analyzed for performance trends.[40] TIP threat detection results in conjunction with OI covert test results and local testing are intended to assist TSA in identifying specific training and performance improvement efforts.

In May 2005, we reported that in October 2003 TSA reactivated TIP as planned with an expanded library of 2,400 images at all but 1 of the more than 1,800 checkpoint lanes nationwide. In December 2005, TSA reported that it has further expanded the image library to include additional images of IEDs and IED components as part of its effort to improve TSOs' detection of explosives. Additionally, the President's fiscal year 2007 budget request states that TSA plans to maximize the training benefits of the TIP system by tailoring TIP sessions to address individual TSO weaknesses revealed in user performance data. For example, if a TSO has particular difficulty identifying IEDs, the TIP would trigger the projection of a higher proportion of simulated IEDs while that TSO was operating the machine than under standard circumstances. While there have been improvements in TIP for passenger screening, TIP is not yet available for checked baggage screening. In April 2004, we reported that TSA officials stated that they were working to resolve technical challenges associated with using TIP for checked baggage screening on EDS machines and have started EDS TIP image development.[41] However, in December 2004, TSA officials stated that because of severe budget reductions, TSA will be unable to begin implementing a TIP program for checked baggage in fiscal year 2005. Officials did not specify when such a program might begin.

Another measure of TSO performance is the results of annual recertification testing. ATSA requires that each TSO receive an annual proficiency review to ensure he or she continues to meet all qualifications and standards required to perform the screening function. To meet this requirement, TSA established a recertification program. The first recertification program—which was conducted during the period October 2003 through March 2004—was composed of two assessment components,

[40]The TIP database records both the TIP hit rate and TIP false alarm rate. These two results are used to determine the probability of detection and probability of false alarm, which determine overall TIP performance. The TIP performance measure is classified as sensitive security information.

[41]GAO, *Aviation Security: Private Screening Contractors Have Little Flexibility to Implement Innovative Approaches*, GAO-04-505T (Washington, D.C.: April 22, 2004).

one of TSOs' performance and the other of TSOs' knowledge and skills. During the performance assessment component of the recertification program, TSOs are rated on both organizational and individual goals, such as maintaining the nation's air security, vigilantly carrying out duties with utmost attention to tasks that will prevent security threats, and demonstrating the highest levels of courtesy to travelers to maximize their levels of satisfaction with screening services. The knowledge and skills assessment component consists of three modules: (1) knowledge of standard operating procedures, (2) image recognition, and (3) practical demonstration of skills.

Across all airports, TSOs performed well on the recertification testing for the first 2 years the program was in place, with about 1 percent of TSOs subject to recertification failing to complete this requirement. In both years, TSOs faced the greatest difficulty on their first attempt to pass the practical demonstration of skills module—a hands-on simulated work sample used to evaluate a screener's knowledge, skill, and ability when performing specific screener tasks along with the ability to provide customer service.[42] According to TSA officials, at the completion of recertification at an airport, TSA management has access to reports at both the individual TSO and airport level, which identify the specific areas that were missed during testing. National level reports are also available that isolate areas that need improvement and can be targeted in basic and recurrent training. In fiscal year 2004, TSA established a performance measure for the recertification program.[43]

During the first year of recertification testing, dual-function TSOs who were actively working as both passenger and checked baggage TSOs were required to take only the recertification test for passenger TSOs. They were therefore not required to take the recertification testing modules required for checked baggage, even though they worked in that capacity.[44] TSA's second annual recertification testing, which began in October 2004, included components for dual-function TSOs, but did not include an image recognition module for checked baggage TSOs—which would include dual-function screeners performing checked baggage screening. TSA

[42]We cannot reported on the specific results of the testing due to the security classification of this testing.

[43]Information related to the measures is sensitive security information.

[44]As of January 7, 2005, TSA reported that its workforce included approximately 25,947 dual-trained TSOs who were certified to serve as passenger or baggage TSOs.

officials stated that a decision was made to not include an image recognition module for checked baggage TSOs during this cycle because not all checked baggage TSOs would have completed training on the onscreen resolution protocol by the time recertification testing was conducted at their airports.[45] In October 2005, TSA released guidance for screener recertification that included an image recognition module for checked baggage and dual-function screeners trained in the onscreen alarm resolution protocol.

In addition to enhancing its efforts to measure the performance of TSOs, TSA also has developed two performance indexes to measure the effectiveness of the passenger and checked baggage screening systems. These indexes measure overall performance through a composite of indicators and are derived by combining specific performance measures relating to passenger and checked baggage screening, respectively. Specifically, these indexes measure the effectiveness of the screening systems through machine probability of detection and covert testing results;[46] efficiency through a calculation of dollars spent per passenger or bag screened; and customer satisfaction through a national poll, customer surveys, and customer complaints at both airports and TSA's national call center. We reported in May 2005 that the screening performance indexes developed by TSA can be a useful analysis tool, but without targets for each component of the index, TSA will have difficulty performing meaningful analyses of the parts that make up to the index. For example, without performance targets for covert testing, TSA will not have identified a desired level of performance related to screener detection of threat objects. Performance targets for covert testing would enable TSA to focus its improvement efforts on areas determined to be most critical, as 100 percent detection capability may not be attainable. In January 2005, TSA officials stated that the agency planned to track the performance of individual index components and establish performance targets against which to measure these components.

[45]TSA's onscreen resolution protocol requires that when an EDS machine alarm goes off, indicating the possibility of explosives, TSA screeners, by reviewing computer-generated images of the inside of the bag, attempt to determine whether or not a suspect item or items are in fact explosive materials. If the screener is unable to make this determination, the bag is diverted from the main conveyor belt into an area where it receives a secondary screening by a screener with an ETD machine.

[46]According to TSA, the machine probabilities of detection are established by the certification standards for each particular model of machine, and machines are not deployed unless they have met those standards.

Concluding Observations

Since its inception, TSA has achieved significant accomplishments in meeting congressional mandates related to establishing passenger and checked baggage screening operations. With the initial congressional mandates now largely met, TSA has turned its attention to assessing and enhancing the efficiency and effectiveness of its passenger and checked baggage screening systems. As threats and technology evolve, it is vital that TSA continue to enhance training and procedures for the TSO workforce. Over the past several years, TSA has strengthened its TSO training program in an effort to ensure that TSOs have the knowledge and skills needed to successfully perform their screening functions. However, without addressing the challenges to delivering ongoing training, including installing high-speed connectivity at airport training facilities, TSA may have difficulty maintaining a screening workforce that possesses the critical skills needed to perform at a desired level. TSA is also revising existing screening procedures and developing new procedures to enhance security effectiveness, many of which are risk-based, as we have previously advocated. Additionally, TSA has developed a staffing model intended to provide the necessary levels of TSOs to support security activities at the nation's airports. However, given the challenges TSA faces in determining appropriate staffing levels at airports—to include hiring the appropriate mix of part-time TSOs needed to support screening functions—it is critical that TSA carefully consider how it strategically hires, deploys, and manages its TSO workforce to help strengthen its passenger and checked baggage screening programs.

As TSA works towards improving the performance of individual TSOs and screening operations, it will also be important that the agency deploy and leverage screening equipment and technologies, sustain its research and development efforts, and strengthen its R&D management and planning efforts. We are encouraged that TSA is currently undertaking efforts to systematically analyze the cost and benefits of in-line baggage screening systems and to identify innovative funding and financing options. This planning should help TSA support future funding requests by demonstrating enhanced security, improved operational efficiencies, and cost savings to both TSA and the affected airports.

Mr. Chairman, this concludes my statement. I would be pleased to answer any questions that you or other members of the Committee may have at this time.

Contact Information

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Offices of Congressional Relations and Public Affairs may be found on the last page of this statement.

In addition to the contact named above, Kristy Brown, Philip Caramia, Kevin Copping, Katherine Davis, Christine Fossett, Tom Lombardi, Laina Poon, and Maria Strudwick made key contributions to this testimony.

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