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# AVIATION SECURITY

## Risk, Experience, and Customer Concerns Drive Changes to Airline Passenger Screening Procedures, but Evaluation and Documentation of Proposed Changes Could Be Improved





Highlights of [GAO-07-634](#), a report to congressional requesters

## Why GAO Did This Study

The Transportation Security Administration's (TSA) most visible layer of commercial aviation security is the screening of airline passengers at airport checkpoints, where travelers and their carry-on items are screened for explosives and other dangerous items by transportation security officers (TSO). Several revisions made to checkpoint screening procedures have been scrutinized and questioned by the traveling public and Congress in recent years.

For this review, GAO evaluated (1) TSA's decisions to modify passenger screening procedures between April 2005 and December 2005 and in response to the alleged August 2006 liquid explosives terrorist plot, and (2) how TSA monitored TSO compliance with passenger screening procedures. To conduct this work, GAO reviewed TSA documents, interviewed TSA officials and aviation security experts, and visited 25 airports of varying sizes and locations.

## What GAO Recommends

In the March 2007 report that contained sensitive security information, GAO recommended, and the Department of Homeland Security concurred, that TSA develop sound methods to assess whether proposed screening changes would achieve their intended purpose and generate complete documentation on proposed screening changes that are deemed significant.

[www.gao.gov/cgi-bin/getrpt?GAO-07-634](http://www.gao.gov/cgi-bin/getrpt?GAO-07-634).

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

## AVIATION SECURITY

# Risk, Experience, and Customer Concerns Drive Changes to Airline Passenger Screening Procedures, but Evaluation and Documentation of Proposed Changes Could Be Improved

## What GAO Found

Between April 2005 and December 2005, proposed modifications to passenger checkpoint screening standard operating procedures (SOP) were made for a variety of reasons, and while a majority of the proposed modifications—48 of 92—were ultimately implemented at airports, TSA's methods for evaluating and documenting them could be improved. SOP modifications were proposed based on the professional judgment of TSA senior-level officials and program-level staff. TSA considered the daily experiences of airport staff, complaints and concerns raised by the traveling public, and analysis of risks to the aviation system when proposing SOP modifications. TSA also made efforts to balance the impact on security, efficiency, and customer service when deciding which proposed modifications to implement, as in the case of the SOP changes made in response to the alleged August 2006 liquid explosives terrorist plot. In some cases, TSA tested proposed modifications at selected airports to help determine whether the changes would achieve their intended purpose. However, TSA's data collection and analyses could be improved to help TSA determine whether proposed procedures that are operationally tested would achieve their intended purpose. For example, TSA officials decided to allow passengers to carry small scissors and tools onto aircraft based on their review of threat information, which indicated that these items do not pose a high risk to the aviation system. However, TSA did not conduct the necessary analysis of data it collected to assess whether this screening change would free up TSOs to focus on screening for high-risk threats, as intended. TSA officials acknowledged the importance of evaluating whether proposed screening procedures would achieve their intended purpose, but cited difficulties in doing so, including time pressures to implement needed security measures quickly. Finally, TSA's documentation on proposed modifications to screening procedures was not complete. TSA documented the basis—that is, the information, experience, or event that encouraged TSA officials to propose the modifications—for 72 of the 92 proposed modifications. In addition, TSA documented the reasoning behind its decisions for half (26 of 44) of the proposed modifications that were not implemented. Without more complete documentation, TSA may not be able to justify key modifications to passenger screening procedures to Congress and the traveling public.

TSA monitors TSO compliance with passenger checkpoint screening procedures through its performance accountability and standards system and through covert testing. Compliance assessments include quarterly observations of TSOs' ability to perform particular screening functions in the operating environment, quarterly quizzes to assess TSOs' knowledge of procedures, and an annual knowledge and skills assessment. TSA uses covert tests to evaluate, in part, the extent to which TSOs' noncompliance with procedures affects their ability to detect simulated threat items hidden in accessible property or concealed on a person. TSA airport officials have experienced resource challenges in implementing these compliance monitoring methods. TSA headquarters officials stated that they are taking steps to address these challenges.

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### **Abbreviations**

ATSA	Aviation and Transportation Security Act
CAPPS	computer-assisted passenger prescreening system
CBP	Customs and Border Protection
COMPEX	Compliance Examination
DHS	Department of Homeland Security
ETD	explosive trace detection
ETP	explosives trace portal
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FFDO	Federal Flight Deck Officer
FSD	Federal Security Director
HHMD	hand-held metal detector
IED	improvised explosive device
PASS	Performance Accountability and Standards System
PMIS	Performance Management Information System
PWD	person with disabilities
SOP	standard operating procedure
SPOT	Screening Passengers by Observation Technique
STEA	Screener Training Exercises and Assessments
TIP	Threat Image Projection
TSA	Transportation Security Administration
TSO	transportation security officer
USP	Unpredictable Screening Process
WTMD	walk-through metal detector

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United States Government Accountability Office  
Washington, DC 20548

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April 16, 2007

The Honorable Bennie Thompson  
Chairman, Committee on Homeland Security  
House of Representatives

The Honorable John Mica  
Ranking Republican Member  
Committee on Transportation and Infrastructure  
House of Representatives

The alleged August 2006 terrorist plot to detonate liquid explosives onboard multiple commercial aircraft bound for the United States from the United Kingdom has highlighted the continued importance of securing the commercial aviation system. The Transportation Security Administration (TSA) is responsible for, among other things, securing the nation's commercial aviation system while also facilitating the movement of passengers. To protect this system after the September 11, 2001, terrorist attacks, TSA implemented a multilayered system of security—the most publicly visible layer being the physical screening of passengers and their carry-on bags at airport screening checkpoints, which all passengers must pass through prior to entering an airport's sterile area, the area within the terminal that provides passengers access to boarding aircraft.<sup>1</sup>

The passenger checkpoint screening system is composed of three elements: (1) the people responsible for conducting the screening of airline passengers and their carry-on items—Transportation Security Officers (TSO) (formerly known as screeners), (2) the procedures TSOs are to follow to conduct screening, and (3) the technology used in the screening process. Collectively, these elements help to determine the effectiveness and efficiency of passenger checkpoint screening. TSA has made efforts to enhance each of the three elements of the passenger checkpoint screening system.

Since its inception, TSA has issued 25 versions of the passenger checkpoint screening standard operating procedures (SOP), to include

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<sup>1</sup>In addition to passenger checkpoint screening, TSA's layers of aviation security include, among other things, the screening of all checked baggage for explosives and the deployment of Federal Air Marshals on designated high-risk flights.

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new screening procedures as well as changes to existing screening procedures. Several of these revisions have been criticized and scrutinized by the traveling public and Congress. For example, in September 2004, TSA modified its passenger screening procedures in response to the August 2004 midair explosions of two Russian airliners, believed to have been caused by Chechen women who concealed explosive devices under their clothing. Specifically, the revision entailed a more invasive technique for patting down the torso area of passengers. According to TSA officials, in response to complaints raised by airline passengers and TSA's review of additional threat information, TSA further modified the pat-down procedure in December 2004 to entail a more targeted, less intrusive pat-down procedure. In December 2005, TSA allowed passengers to carry small scissors and small tools onto aircraft, resulting in concern by some industry representatives that allowing sharp objects onto planes would put flight crew at risk of attack.<sup>2</sup> This procedural change also resulted in the TSA Assistant Secretary being asked to testify before Congress on the agency's rationale for allowing passengers to carry small scissors and small tools onto planes and a legislative mandate for us to assess the impact of the prohibited items list change on public safety and screening operations.<sup>3</sup>

In light of the potential impact of changes to passenger checkpoint screening procedures, you asked that we assess TSA's process for determining whether and how screening procedures should be modified, to include the creation of new screening procedures and changes to existing screening procedures. Specifically, this report addresses the following questions: (1) How and on what basis did TSA modify passenger screening procedures and what factors guided the decisions to do so? (2) How does TSA determine whether TSOs are complying with the standard procedures for screening passengers and their carry-on items? In March 2007, we issued a report that contained sensitive security information regarding TSA's passenger checkpoint screening procedures, including the factors TSA considered when modifying passenger screening procedures and TSA's efforts to monitor TSO compliance with standard

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<sup>2</sup>Specifically, TSA modified the list of items prohibited and permitted on aircraft by allowing metal scissors with pointed tips and a cutting edge of 4 inches or less, as measured from the fulcrum, and small tools of 7 inches or less, including screwdrivers, wrenches, and pliers, to pass through the passenger screening checkpoint. See 70 Fed. Reg. 72,930 (Dec. 8, 2005).

<sup>3</sup>We plan to issue a report on the impact of the prohibited items list changes on public safety and screening operations later this year.

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passenger screening procedures. This report provides the results of our March 2007 report with sensitive security information removed.

To obtain information on the process used to modify passenger checkpoint screening procedures, we reviewed and analyzed available TSA documentation on proposed procedure modifications that were considered between April 2005 and December 2005, as well as threat assessments and operational studies that supported SOP modifications.<sup>4</sup> We also reviewed and analyzed similar documentation for proposed modifications considered between August 2006 and November 2006 in response to the alleged terrorist plot to detonate liquid explosives onboard multiple aircraft en route from the United Kingdom to the United States. We included modifications to passenger checkpoint screening procedures related to this particular event because they provided the most recent information available of TSA's approach to modifying screening procedures in response to an immediate perceived threat to civil aviation. To assess TSO compliance with standard operating procedures, our work also involved a review of available documentation, including guidance, checklists, and other evaluation tools used by TSA. In addition, we met with TSA headquarters officials who were involved in the process of determining whether proposed changes to passenger checkpoint screening procedures should be implemented, and who were responsible for overseeing efforts to monitor TSO compliance with screening procedures. We also visited or conducted phone interviews with staff at 25 airports, which we selected based on variation in size, geographic location, and level of performance on compliance-related assessments. At each airport, we interviewed Federal Security Directors (FSD),<sup>5</sup> members of their management teams, and TSOs with passenger screening responsibilities. Information from these interviews cannot be generalized to all airports nationwide. Two of the airports we visited were also participants in TSA's

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<sup>4</sup>We began our review period in April 2005 to coincide with TSA's consideration of proposed SOP modifications related to the second major revision of the passenger checkpoint screening SOP since TSA's inception.

<sup>5</sup>TSA security activities at airports are overseen by FSDs. Each FSD is responsible for overseeing security activities, including passenger screening, at one or more commercial airports. We visited or conducted phone interviews with officials at 25 airports. However, we met with only 24 FSDs, as 1 FSD was responsible for 2 of the airports we visited.

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Screening Partnership Program.<sup>6</sup> We also met with officials from the Department of Homeland Security (DHS) Science and Technology Directorate as well as the Federal Bureau of Investigation (FBI) to discuss the methodology and results of their liquid explosives tests, which were used to support TSA's decisions to modify the SOP in September 2006. We also interviewed five experts in the field of aviation security to obtain their perspectives on TSA's approach for deciding whether to implement proposed checkpoint screening procedures.<sup>7</sup> We compared TSA's approach for implementing and revising passenger checkpoint screening procedures, and for monitoring TSO compliance, with the Comptroller General's standards for internal control in the federal government<sup>8</sup> and with risk management guidance. We assessed the reliability of the data we acquired from TSA regarding TSO compliance and found the data to be sufficiently reliable for our purposes.

We conducted our work from March 2005 through January 2007 in accordance with generally accepted government auditing standards. More details about the scope and methodology of our work are presented in appendix I.

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## Results in Brief

During our 9-month review period, proposed modifications to passenger checkpoint screening procedures were made in various ways and for a variety of reasons, and while a majority of the proposed modifications—48 of 92—were ultimately implemented at airports, TSA's methods for evaluating and documenting them could be improved. Some SOP

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<sup>6</sup>The Aviation and Transportation Security Act (ATSA), Pub. L. No. 107-71, 115 Stat. 597 (2001), established TSA and assigned TSA with the responsibility of building a federal workforce to conduct screening of airline passengers and their checked baggage. See 49 U.S.C. §§ 114(a), 44901(a). ATSA also required that TSA allow commercial airports to apply to TSA to transition from a federal to a private screener workforce. See 49 U.S.C. § 44920. 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 screeners. There are currently 6 airports participating in the Screening Partnership Program, including Jackson Hole, Kansas City International, Greater Rochester International, San Francisco International, Sioux Falls Regional, and Tupelo Regional.

<sup>7</sup>We used the following criteria to identify aviation security experts: present and past employment in aviation security, depth of experience in aviation security, and recognition in the aviation industry.

<sup>8</sup>GAO, *Internal Control: Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: August 2001).

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modifications were proposed based on the professional judgment of TSA senior-level officials and program-level staff at headquarters and at airports nationwide, while other modifications were proposed by members of a TSA task force charged with enhancing TSA's ability to detect improvised explosive devices at checkpoints. TSA officials proposed SOP modifications based on risk information (threat and vulnerability information), daily experiences of staff working at airports, and complaints and concerns raised by the traveling public. In addition to these factors, TSA senior leadership made efforts to balance the impact that proposed SOP modifications—such as the changes to the liquids, gels, and aerosols screening procedures—would have on security, efficiency, and customer service when deciding whether proposed SOP modifications should be implemented. In some cases, TSA first tested proposed modifications to screening procedures at selected airports to help determine whether the changes would achieve their intended purpose, such as to enhance detection of prohibited items or to free up TSO resources to perform screening activities focused on threats considered to pose a high risk, such as explosives. However, TSA's data collection and analyses could be improved to help TSA determine whether proposed procedures that are operationally tested would achieve their intended purpose. Specifically, for the seven tests of proposed screening procedures TSA conducted during our review period, although TSA collected some data on the efficiency of and customer response to the procedures at selected airports, the agency generally did not collect the type of data or conduct the necessary analysis that would yield information on whether proposed procedures would achieve their intended purpose. TSA officials acknowledged that they could have made some improvements in the various analyses they conducted related to the decision to allow small scissors and tools onboard aircraft, but cited several difficulties in doing so. Nevertheless, until TSA takes steps to improve its ability to evaluate the potential impact of screening changes on security and TSO resource availability, it may be difficult for TSA to determine how best to allocate limited TSO resources, help ensure the screeners' ability to detect explosives and other high-threat objects, and evaluate whether proposed modifications to screening procedures would have the intended effect. Finally, TSA's documentation on proposed modifications to screening procedures was not always complete. TSA documented the basis—that is, the information, experience, or event that encouraged TSA officials to propose the modifications—for 72 of the 92 proposed modifications. In addition, TSA only documented the reasoning behind its decisions for about half (26 of 44) of the proposed modifications that were not implemented. Our standards for governmental internal controls and associated guidance suggest that agencies should

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document key decisions in a way that is complete and accurate. Without such information, TSA cannot always justify significant SOP modifications to Congress and the traveling public. TSA officials acknowledged that it is beneficial to maintain documentation on the reasoning behind decisions to implement or reject proposed SOP modifications deemed significant, particularly given the organizational restructuring and staff turnover within TSA.

TSA monitors TSO compliance with passenger checkpoint screening SOPs through its performance accountability and standards system and through local and national covert testing.<sup>9</sup> According to TSA officials, the agency developed the performance accountability and standards system in response to our 2003 report that recommended that TSA establish a performance management system that makes meaningful distinctions in employee performance,<sup>10</sup> and in response to input from TSA airport staff on how to improve passenger and checked baggage screening measures. This system is used by TSA to measure TSO compliance with passenger checkpoint screening procedures. Of the 24 FSDs we interviewed about compliance assessments, 9 cited difficulties in implementing the performance accountability and standards system because of a lack of available staff to conduct observations and administer SOP quizzes. When asked whether they planned to address FSDs' concerns regarding a lack of available staff to evaluate TSO compliance with SOPs, TSA headquarters officials said that they have automated many of the data entry functions of the performance accountability and standards system to relieve the field of the burden of manually entering this information into the online system. Furthermore, the TSA Assistant Secretary stated that FSDs were given the option of delaying implementation of the performance accountability and standards system if they were experiencing resource challenges. In addition to implementing the performance accountability and standards system, TSA conducts local and national covert tests to evaluate, in part, the extent to which TSOs' noncompliance with the SOPs affects their ability to detect simulated threat items hidden in accessible property or

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<sup>9</sup>Covert testing involves TSA headquarters officials (national testing) or TSA field staff and other federal employees (local testing) attempting to carry simulated threat objects through the checkpoint without the objects being detected by TSOs. The results of the national covert tests are classified and therefore are not included in this report.)

<sup>10</sup>GAO, *Transportation Security Administration: Actions and Plans to Build a Results Oriented Culture*, [GAO-03-190](#) (Washington, D.C.: January 2003).

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concealed on a person.<sup>11</sup> Even though all 24 FSDs said that they have conducted local covert tests, 10 of these FSDs said that lack of available staff made it difficult to conduct these tests. TSA officials told us that they are considering resource alternatives for implementing these tests, but did not provide us with specific details of these plans. Based on the results of national covert tests conducted between September 2005 and July 2006, which showed that some TSOs did not identify threat objects, in part because they did not comply with SOPs, TSA's Office of Inspection recommended, among other things, that the Office of Security Operations ensure that TSOs adhere to the current passenger checkpoint screening SOPs. However, until the resource limitations that have restricted TSA's use of its compliance monitoring tools have been fully addressed, TSA may not have assurance that TSOs are screening passengers according to standard procedures.

To help improve TSA's ability to evaluate proposed SOP modifications and to justify its decisions regarding whether proposed SOP modifications should be implemented, in the March 2007 report that contained sensitive security information, we recommended that the Secretary of the Department of Homeland Security direct the Assistant Secretary of Homeland Security for TSA to (1) develop sound evaluation methods, when possible, that can help TSA determine whether proposed procedures that are operationally tested would achieve their intended purpose, and (2) generate and maintain complete documentation of proposed modifications deemed significant by TSA. DHS generally concurred with our findings and recommendations and outlined actions TSA plans to take to implement the recommendations. For example, TSA intends to improve its methods for evaluating proposed SOP modifications, which may entail randomly selecting the airports that will participate in a study to better isolate the impact of proposed SOP modifications on passenger screening. DHS also stated that TSA is in the process of developing protocols that will require documentation of the source and intent of proposed SOP modifications, as well as documentation of TSA officials' reasoning for implementing or rejecting proposed modifications. The full text of DHS's comments is included in appendix III.

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<sup>11</sup>The results of local covert testing are sensitive security information and, therefore, are not included in this report.

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## Background

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### Passenger Checkpoint Screening System

Passenger screening is a process by which personnel authorized by TSA inspect individuals and property to deter and prevent the carriage of any unauthorized explosive, incendiary, weapon, or other dangerous item onboard an aircraft or into a sterile area.<sup>12</sup> Passenger screening personnel must inspect individuals for prohibited items at designated screening locations.<sup>13</sup> As shown in figure 1, the four passenger screening functions are

- X-ray screening of property,
- walk-through metal detector screening of individuals,
- hand-wand or pat-down screening of individuals, and
- physical search of property and trace detection for explosives.

Typically, passengers are only subjected to X-ray screening of their carry-on items and screening by the walk-through metal detector. Passengers whose carry-on baggage alarms the X-ray machine, who alarm the walk-through metal detector, or who are designated as selectees—that is, passengers selected by the Computer-Assisted Passenger Prescreening System (CAPPS)<sup>14</sup> or other TSA-approved processes to receive additional screening—are screened by hand-wand or pat-down and have their carry-on items screened for explosives traces or physically searched.

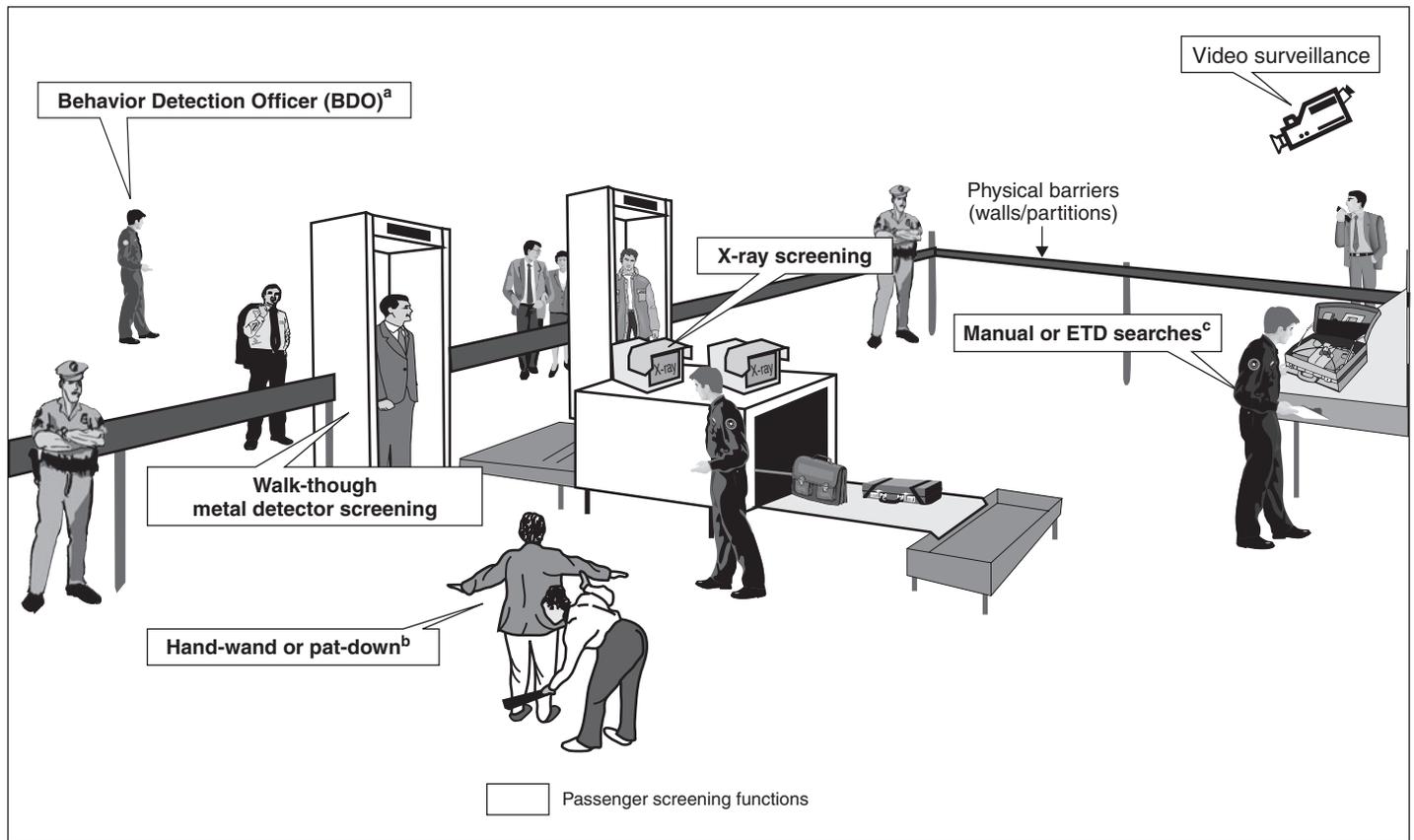
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<sup>12</sup>Sterile areas are located within the terminal where passengers are provided access to boarding aircraft. Access to these areas is controlled by Transportation Security Officers (or by nonfederal screeners at airports participating in the Screener Partnership Program) at checkpoints where they conduct physical screening of individuals and their carry-on baggage for weapons, explosives, and other prohibited items.

<sup>13</sup>Transportation Security Officers 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 onboard an aircraft.

<sup>14</sup>CAPPS is a computer-assisted system that, based on information obtained from airline reservation systems, identifies passengers that may pose a high risk to aviation security. These high-risk passengers and their carry-on baggage are subject to additional and more thorough screening.

**Figure 1: Passenger Checkpoint Screening Functions**



Source: GAO and Nova Development Corporation.

Note: Explosive trace detection (ETD) works by detecting vapors and residues of explosives. Human operators collect samples by rubbing swabs along the interior and exterior of an object that TSOs determine to be suspicious, and place the swabs in the ETD machine, which then chemically analyzes the swab to identify any traces of explosive materials.

Bomb Appraisal Officers (BAO) are available to respond to unresolved alarms at the checkpoint that involve possible explosive devices. The BAO may contact appropriate law enforcement or bomb squad officials if review indicates possible or imminent danger, in which case the BAO ensures that the security checkpoint is cleared. The BAO approves reopening of security lane(s) if no threat is posed.

<sup>a</sup>BDOs are TSOs specially trained to detect suspicious behavior in individuals approaching the checkpoint. Should the BDO observe such behavior, he or she may refer the individual for additional screening or to a law enforcement officer.

<sup>b</sup>The hand-wand or pat-down is conducted if a passenger is identified or randomly selected for additional screening because he or she met certain criteria or alarmed the walk-through metal detector.

<sup>c</sup>Manual or ETD searches of accessible property occur if the passenger is identified or randomly selected for additional screening or if the screener identified a potential prohibited item on X-ray.

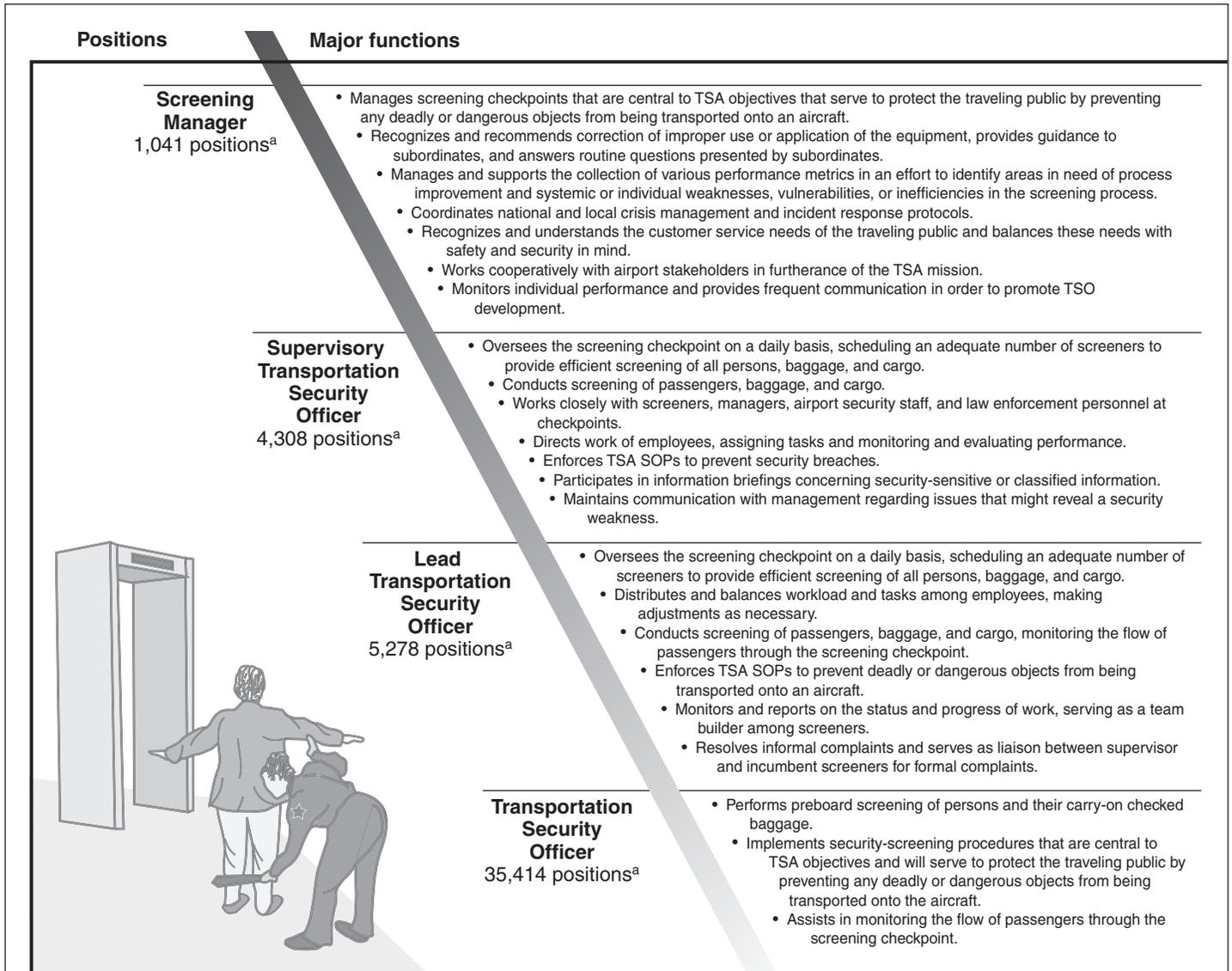
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Transportation Security  
Officers

The passenger checkpoint screening system is composed of three elements: the people responsible for conducting the screening of airline passengers and their carry-on items—TSOs, the technology used during the screening process, and the procedures TSOs are to follow to conduct screening. Collectively, these elements help to determine the effectiveness and efficiency of passenger checkpoint screening.

TSOs screen all passengers and their carry-on baggage prior to allowing passengers access to their departure gates. There are several positions within TSA that perform and directly supervise passenger screening functions. Figure 2 provides a description of these positions.

**Figure 2: TSA Airport Screening Positions**



Source: GAO analysis of TSA data.

<sup>a</sup>Number of annualized TSA screening positions for fiscal year 2006. These positions do not include private screener positions at the six airports that participated in the Screening Partnership Program during fiscal year 2006.

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In May 2005, we reported on TSA's efforts to train TSOs and to measure and enhance TSO performance.<sup>15</sup> We found that TSA had initiated a number of actions designed to enhance passenger TSO, checked baggage TSO, and supervisory TSO training. However, at some airports TSOs encountered difficulty accessing and completing recurrent (refresher) training because of technological and staffing constraints. We also found that TSA lacked adequate internal controls to provide reasonable assurance that TSOs were receiving legislatively mandated basic and remedial training, and to monitor the status of its recurrent training program. Further, we reported that TSA had implemented and strengthened efforts to collect TSO performance data as part of its overall effort to enhance TSO performance. We recommended that TSA develop a plan for completing the deployment of high-speed Internet/intranet connectivity to all TSA airport training facilities, and establish appropriate responsibilities and other internal controls for monitoring and documenting TSO compliance with training requirements. DHS generally concurred with our recommendations and stated that TSA has taken steps to implement them.

## Screening Technology

There are typically four types of technology used to screen airline passengers and their carry-on baggage at the checkpoint:

- walk-through metal detectors,
- X-ray machines,
- hand-held metal detectors, and
- explosive trace detection (ETD) equipment.

The President's fiscal year 2007 budget request noted that emerging checkpoint technology will enhance the detection of prohibited items, especially firearms and explosives, on passengers. As of December 2006, TSA plans to conduct operational tests of three types of passenger screening technologies within the next year. TSA has conducted other tests in the past; for example, during fiscal year 2005, TSA operationally tested document scanners, which use explosive trace detection technology to detect explosives residue on passengers' boarding passes or identification cards. TSA decided not to expand the use of the document scanner, in part because of the extent to which explosives traces had to be sampled manually. TSA also plans to begin operational tests of technology

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<sup>15</sup>GAO, *Aviation Security: Screener Training and Performance Measurement Strengthened, but More Work Remains*, [GAO-05-457](#) (Washington, D.C.: May 2, 2005).

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that would screen bottles for liquid explosives. We are currently evaluating the Department of Homeland Security's and TSA's progress in planning for, managing, and deploying research and development programs in support of airport checkpoint screening operations. We expect to report our results in August 2007.

## Standard Operating Procedures

TSA has developed checkpoint screening standard operating procedures, which are the focus of this report, that establish the process and standards by which TSOs are to screen passengers and their carry-on items at screening checkpoints.<sup>16</sup> Between April 2005 and December 2005, based on available documentation, TSA deliberated 189 proposed changes to passenger checkpoint screening SOPs, 92 of which were intended to modify the way in which passengers and their carry-on items are screened.<sup>17</sup> TSA issued six versions of the passenger checkpoint screening SOPs during this period.<sup>18</sup>

TSA modified passenger checkpoint screening SOPs to enhance the traveling public's perception of the screening process, improve the efficiency of the screening process, and enhance the detection of prohibited items and suspicious persons. As shown in table 1, 48 of the 92 proposed modifications to passenger checkpoint screening SOPs were implemented, and the types of modifications made or proposed generally

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<sup>16</sup>Private screeners conduct passenger and checked baggage screening at six airports as part of TSA's Screening Partnership Program. TSA requires that private screeners screen passengers using the same standard operating procedures as TSOs.

<sup>17</sup>Between April 2005 and December 2005, TSA considered a total of 189 proposed modifications to passenger checkpoint screening SOPs. However, 97 of the proposed modifications were not intended to alter the way in which passengers and their carry-on items are screened; rather, these modifications were generally intended to correct, edit, or clarify SOP language. For example, TSA modified SOP language to ensure that TSA field staff were aware that tribal law enforcement officers should be granted the same screening exemptions as other law enforcement officers. TSA also amended the SOP to help ensure the occupational safety of TSOs. For example, TSA headquarters officials proposed that procedures for reporting potential radiation hazards regarding X-ray equipment be incorporated into the SOP. The remaining 92 proposed SOP modifications were intended to alter the way in which passengers and their carry-on items were screened, and 48 of those proposed modifications were subsequently implemented.

<sup>18</sup>TSA issued six revised versions of the passenger checkpoint screening SOP during the 9-month period under review: April 7, 2005; July 7, 2005; August 26, 2005; September 12, 2005; October 25, 2005; and December 7, 2005. However, we did not include the April 2005 revised SOP in our review since the changes incorporated in that revision were deliberated by TSA officials outside of our 9-month period of review.

fell into one of three categories—customer satisfaction, screening efficiency, and security.

**Table 1: Categories of Proposed and Implemented Passenger Checkpoint Screening Changes Considered between April 2005 and December 2005**

<b>Category of proposed changes</b>	<b>Description of category</b>	<b>Proposed SOP changes</b>	<b>Implemented SOP changes</b>
Customer satisfaction	Changes that will improve the traveling public's perception of the screening process or reduce or exempt categories of authorized individuals from certain aspects of the screening process.	42	22
Screening efficiency	Changes that will improve screening flow, clarify screener duties, update equipment procedures, or enhance the working environment of screening locations.	31	17
Security	Changes that will improve TSA's ability to detect prohibited items and suspicious persons.	19	9
<b>Total</b>		<b>92</b>	<b>48</b>

Source: GAO analysis of TSA data.

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## TSA Considered Risk, Experience, and Customer Concerns when Modifying Passenger Screening Procedures, but Could Improve Its Evaluation and Documentation of Proposed Procedures

TSA used various processes between April 2005 and December 2005 to modify passenger checkpoint screening SOPs, and a variety of factors guided TSA's decisions to modify SOPs. TSA's processes for modifying SOPs generally involved TSA staff recommending proposed modifications, reviewing and commenting on proposed modifications, and TSA senior leadership making final decisions as to whether proposed modifications should be implemented. During our 9-month review period, TSA officials considered 92 proposed modifications to the way in which passengers and their carry-on items were screened, and 48 were implemented.<sup>19</sup> TSA officials proposed SOP modifications based on risk factors (threat and vulnerability information), day-to-day experiences of airport staff, and concerns and complaints raised by passengers. TSA then made efforts to balance security, efficiency, and customer service when deciding which proposed SOP modifications to implement. Consistent with our prior work that has shown the importance of data collection and analyses to support agency decision making, TSA conducted data collection and analysis for certain proposed SOP modifications that were tested before they were implemented at all airports. Nevertheless, we found that TSA could improve its data collection and analysis to assist the agency in determining whether the proposed procedures would enhance detection or free up TSO resources, when intended. In addition, TSA did not maintain complete documentation of proposed SOP modifications; therefore, we could not fully assess the basis for proposed SOP modifications or the reasons why certain proposed modifications were not implemented. TSA officials acknowledged that it is beneficial to maintain documentation on the reasoning behind decisions to implement or reject SOP modifications deemed significant.

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## TSA's Processes for Modifying SOPs Were Driven by Input from TSA Field and Headquarters Staff

Proposed SOP modifications were submitted and reviewed under two processes during our 9-month review period, and for each process, TSA senior leadership made the final decision as to whether the proposed modifications would be implemented. One of the processes TSA used to modify passenger checkpoint screening SOPs involved TSA field staff or headquarters officials, and, to a lesser extent, TSA senior leadership, suggesting ways in which passenger checkpoint screening SOPs could be modified. These suggestions were submitted through various mechanisms,

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<sup>19</sup>Of the 48 proposed modifications that were implemented, TSA made the decision to implement 16 of these modifications following our 9-month review period. However, because much of TSA's deliberation of these 16 procedures occurred during our review period, we included these procedures among those that were implemented.

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including electronic mail and an SOP panel review conducted by TSA airport personnel. (These methods are described in more detail in app. II.) Eighty-two of the 92 proposed modifications were considered under this process.

If TSA officials determined, based on their professional judgment, that the recommended SOP modifications—whether from headquarters or the field—merited further consideration, or if a specific modification was proposed by TSA senior leadership, the following chain of events occurred:

- First, the procedures branch of the Office of Security Operations drafted SOP language for each of the proposed modifications.<sup>20</sup>
- Second, the draft language for each proposed modification was disseminated to representatives of various TSA divisions for review, and the language was revised as needed.
- Third, TSA officials tested proposed modifications in the airport operating environment if they found it necessary to:
  - assess the security impact of the proposed modification,
  - evaluate the impact of the modification on the amount of time taken for passengers to clear the checkpoint,
  - measure the impact of the proposed modification on passengers and industry partners, or
  - determine training needs created by the proposed modification.
- Fourth, the revised SOP language for proposed modifications was sent to the heads of several TSA divisions for comment.
- Fifth, considering the comments of the TSA division heads, the head of the Office of Security Operations or other TSA senior leadership made the final decision as to whether proposed modifications would be implemented.

Another process for modifying passenger checkpoint screening SOPs during our 9-month review period was carried out by TSA's Explosives Detection Improvement Task Force. The task force was established in October 2005 by the TSA Assistant Secretary to respond to the threat of improvised explosive devices (IED) being carried through the checkpoint. The goal of the task force was to apply a risk-based approach to screening passengers and their baggage in order to enhance TSA's ability to detect

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<sup>20</sup>The Office of Security Operations is the TSA division responsible for overseeing the implementation of passenger and property screening at airport checkpoints.

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IEDs.<sup>21</sup> The task force developed 13 of the 92 proposed SOP modifications that were considered by TSA between April 2005 and December 2005.<sup>22</sup> The task force solicited and incorporated feedback from representatives of various TSA divisions on these proposed modifications and presented them to TSA senior leadership for review and approval. TSA senior leadership decided that 8 of the 13 proposed modifications should be operationally tested—that is, temporarily implemented in the airport environment for the purposes of data collection and evaluation—to better inform decisions regarding whether the proposed modifications should be implemented. Following the testing of these proposed modifications in the airport environment, TSA senior leadership decided to implement 7 of the 8 operationally tested changes.<sup>23</sup> (The task force’s approach to testing these procedures is discussed in more detail below.) Following our 9-month period of review, the changes that TSA made to its passenger checkpoint screening SOPs in response to the alleged August 2006 liquid explosives terror plot were decided upon by DHS and TSA senior leadership, with some input from TSA field staff, aviation industry representatives, and officials from other federal agencies.

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### Risk Factors, Day-to-Day Experiences, and Customer Concerns Were the Basis for Proposed SOP Modifications

Based on available documentation,<sup>24</sup> risk factors (i.e., threats to commercial aviation and vulnerability to those threats), day-to-day experiences of airport staff, and complaints and concerns raised by passengers were the basis for TSA staff and officials proposing modifications to passenger checkpoint screening SOPs.

Fourteen of the 92 procedure modifications recommended by TSA staff and officials were based on reported or perceived threats to commercial aviation, and existing vulnerabilities to those threats. For example, the

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<sup>21</sup>In order to achieve its goal of improving IED detection, in addition to modifying passenger checkpoint screening SOPs, the task force established several initiatives, including enhanced bomb detection training for TSOs and increased use of explosives detection canine teams.

<sup>22</sup>Three of the 92 proposed SOP modifications were considered by TSA under both processes.

<sup>23</sup>The number of airports at which any one proposed change was pilot tested ranged from 3 to 14, and the duration of the pilot testing ranged from 5 days to several weeks.

<sup>24</sup>The number of proposed SOP modifications that fall under the various “basis” categories (e.g., threat and vulnerability information) does not total 92 because documentation was not available for all proposed modifications and some of the proposed modifications had more than one basis.

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Explosives Detection Improvement Task Force proposed SOP modifications based on threat reports developed by TSA's Intelligence and Analysis division. Specifically, in an August 2005 civil aviation threat assessment, the division reported that terrorists are likely to seek novel ways to evade U.S. airport security screening.<sup>25</sup> Subsequently, the task force proposed that the pat-down procedure performed on passengers selected for additional screening be revised to include not only the torso area, which is what the previous pat-down procedure entailed, but additional areas of the body such as the legs.<sup>26</sup> The August 2005 threat assessment also stated that terrorists may attempt to carry separate components of an IED through the checkpoint, then assemble the components while onboard the aircraft. To address this threat, the task force proposed a new procedure to enhance TSOs' ability to search for components of improvised explosive devices. According to TSA officials, threat reports have also indicated that terrorists rely on the routine nature of security measures in order to plan their attacks. To address this threat, the task force proposed a procedure that incorporated unpredictability into the screening process by requiring designated TSOs to randomly select passengers to receive additional search procedures. Following our 9-month review period, TSA continued to use threat information as the basis for proposed modifications to passenger checkpoint screening SOPs. In August 2006, TSA proposed modifications to passenger checkpoint screening SOPs after receiving threat information regarding an alleged terrorist plot to detonate liquid explosives onboard multiple aircraft en route from the United Kingdom to the United States. Regarding vulnerabilities to reported threats, based on the results of TSA's own covert tests (undercover, unannounced tests), TSA's Office of Inspection

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<sup>25</sup>We did not assess the quality of the intelligence information used by TSA's Office of Intelligence and Analysis to generate its civil aviation threat assessments.

<sup>26</sup>The pat-down procedure is performed for three purposes: (1) as a substitute for walk-through metal detector screening, (2) to resolve walk-through metal detector alarms, and (3) as a standard procedure for screening passengers selected for additional screening. The details of the pat-down procedures are sensitive security information and are not discussed in this report.

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recommended<sup>27</sup> SOP modifications to enhance the detection of explosives at the passenger screening checkpoint.<sup>28</sup>

TSA officials also proposed modifications to passenger checkpoint screening SOPs based on their professional judgment regarding perceived threats to aviation security. For example, an FSD recommended changes to the screening of funeral urns based on a perceived threat. In some cases, proposed SOP modifications appeared to reflect threat information analyzed by TSA officials. For example, TSOs are provided with *Threat in the Spotlight*, a weekly report that identifies new threats to commercial aviation, examples of innovative ways in which passengers may conceal prohibited items, and pictures of items that may not appear to be prohibited items but actually are. TSOs are also provided relevant threat information during briefings that take place before and after their shifts. In addition, FSDs are provided classified intelligence summaries on a daily and weekly basis, as well as monthly reports of suspicious incidents that occurred at airports nationwide. TSA's consideration of threat and vulnerability—through analysis of current documentation and by exercising professional judgment—is consistent with a risk-based decision-making approach.<sup>29</sup> As we have reported previously, and DHS and TSA have advocated, a risk-based approach, as applied in the homeland security context, can help to more effectively and efficiently prepare defenses against acts of terrorism and other threats.

TSA headquarters and field staff also based proposed SOP modifications—specifically, 36 of the 92 proposed modifications—on experience in the airport environment. For example, TSA headquarters officials conduct reviews at airports to identify best practices and deficiencies in the checkpoint screening process. During one of these reviews, headquarters officials observed that TSOs were not fully complying with the pat-down procedure. After discussions with TSOs, TSA headquarters officials

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<sup>27</sup>The recommendations made by the Office of Inspection are sensitive security information or classified information. Therefore, they are not discussed in this report.

<sup>28</sup>The DHS Office of Inspector General conducts similar covert tests, and historically has recommended changes to the passenger checkpoint screening SOP as a result of these tests. However, the Office of Inspector General did not make any recommendations that resulted in procedural changes between April 2005 and December 2005.

<sup>29</sup>A risk-based approach generally involves consideration of the following when making decisions: threat—capability and intent of terrorists to carry out an attack, vulnerability—weakness that may be exploited by identified threats, and criticality or consequence—the impact of an attack if it were to be carried out.

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determined that the way in which TSOs were conducting the procedure was more effective. In addition, TSA senior leadership, after learning that small airports had staffing challenges that precluded them from ensuring that passengers are patted down by TSOs of the same gender, proposed that opposite-gender pat-down screening be allowed at small airports.

Passenger complaints and concerns shared with TSA also served as a basis for proposed modifications during our 9-month review period. Specifically, of the 92 proposed SOP modifications considered during this period, TSA staff and officials recommended 29 modifications based on complaints and concerns raised by passengers. For example, TSA headquarters staff recommended allowing passengers to hold their hair while being screened by the Explosives Trace Portal,<sup>30</sup> after receiving complaints from passengers about eye injuries from hair blowing in their eyes and hair being caught in the doors of the portal.

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### TSA Balanced Security, Efficiency, and Customer Service when Deciding whether to Implement Proposed SOP Modifications

When deciding whether to implement proposed SOP modifications, TSA officials also made efforts to balance the impact of proposed modifications on security, efficiency,<sup>31</sup> and customer service. TSA's consideration of these factors reflects the agency's mission to protect transportation systems while also ensuring the free movement of people and commerce. As previously discussed, TSA sought to improve the security of the commercial aviation system by modifying the SOP for conducting the pat-down search. (TSA identified the modified pat-down procedure as the "bulk-item" pat-down.) When deciding whether to implement the proposed modification, TSA officials considered not only the impact that the bulk-item pat-down procedure would have on security, but also the impact that the procedure would have on screening efficiency and customer service. For example, TSA officials determined that the bulk-item pat-down procedure would not significantly affect efficiency because it would only add a few seconds to the screening process. Following our 9-month review period, TSA continued to make efforts to balance security, efficiency, and customer service when deciding whether to implement proposed SOP

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<sup>30</sup>Explosives Trace Portal screening entails a passenger stepping into the portal, after which puffs of air are emitted onto the passenger. The portal then draws in any residue that was loosened as a result of the puffs of air, and analyzes the residue to determine if there are explosive traces.

<sup>31</sup>TSA defines SOP modifications related to efficiency as changes that will improve screening flow, clarify TSO duties, update equipment procedures, or enhance the working environment of screening locations.

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modifications, as illustrated by TSA senior leadership's deliberation on proposed SOP modifications in response to the alleged August 2006 liquid explosives terrorist plot. TSA modified the passenger checkpoint screening SOP four times between August 2006 and November 2006 in an effort to defend against the threat of terrorists' use of liquid explosives onboard commercial aircraft.<sup>32</sup> While the basis for these modifications was to mitigate risk, as shown in table 2, TSA senior leadership considered several other factors when deciding whether to implement the modifications.

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<sup>32</sup>The SOP modifications made by TSA on August 10, 2006, August 12, 2006, September 26, 2006, and November 21, 2006, were designed to address only one particular hydrogen peroxide-based liquid explosives mixture, which, according to TSA officials, was the same mixture that the alleged terrorists had planned to detonate on U.S.-bound flights originating in the United Kingdom. DHS and FBI have identified additional liquid explosives mixtures that could pose a threat to commercial aviation. DHS has ongoing evaluations of the additional mixtures to determine their explosive potential and the extent of damage that detonation of these mixtures could cause to an aircraft. DHS is also evaluating explosives detection technology to determine the extent to which it can be used at the checkpoint to defend against the liquid explosives threat. We are currently evaluating DHS's and TSA's progress in planning for, managing, and deploying research and development programs in support of airport checkpoint screening operations. We expect to report on our results in August 2007.

**Table 2: Factors Considered by TSA When Deciding How to Modify Passenger Checkpoint Screening SOPs in Response to the Alleged August 2006 Terrorist Plot to Detonate Liquid Explosives on U.S.-Bound Aircraft**

Procedures	Impact on security
<p><b>August 10, 2006:</b> Total ban on liquids and gels in accessible property or onboard aircraft. Exceptions:</p> <ul style="list-style-type: none"> <li>• baby formula/milk if infant is traveling;</li> <li>• prescription medication with name matching passenger's ticket;</li> <li>• insulin and other essential nonprescription medications;</li> <li>• liquids and gels carried by passengers with disabilities, after screening for explosive materials, with Supervisory TSO/Screening Manager concurrence;</li> <li>• supplies brought into retail area by approved vendors for restocking of retail operations.</li> </ul>	<p><i>Benefits</i></p> <ul style="list-style-type: none"> <li>• Terrorists less likely to successfully carry liquid explosives onto aircraft using container.</li> <li>• Terrorists less likely to successfully carry liquid explosives onto aircraft in shoes (e.g., gel-based insoles).</li> </ul> <p><i>Drawbacks</i></p> <ul style="list-style-type: none"> <li>• None identified</li> </ul>
<p>Passengers required to remove shoes at checkpoints for X-ray screening.</p>	
<p><b>August 12, 2006<sup>a</sup>:</b> Aerosols prohibited. Following additional items allowed past checkpoints:</p> <ul style="list-style-type: none"> <li>• baby food in small containers, if baby/small child is traveling;</li> <li>• essential nonprescription medications (e.g., contact lens saline solution, eye care products), not to exceed 4 fluid ounces per container;</li> <li>• liquids and gels for diabetic passengers, no greater than 8 fluid ounces per container;</li> <li>• gels, saline solutions, and other liquids used to augment portions of body for medical/cosmetic reasons;</li> <li>• life support/life sustaining liquids (e.g., bone marrow and blood products).</li> </ul>	<p><i>Benefits</i></p> <ul style="list-style-type: none"> <li>• Terrorists less likely to successfully carry liquid explosives onto aircraft using container.</li> <li>• Terrorists less likely to successfully carry liquid explosives onto aircraft in shoes (e.g., gel-based insoles).</li> </ul> <p><i>Drawbacks</i></p> <ul style="list-style-type: none"> <li>• None identified</li> </ul>



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## Procedures

**September 26, 2006:** Liquids, gels, aerosols (not on prohibited items list or considered hazardous materials) permitted in accessible property in 3-fluid ounce bottles fit comfortably in one quart-size, clear plastic, zip-top bag per passenger. Plastic bags screened by X-ray. Items purchased in sterile area of airports permitted onboard aircraft.

Items allowed past checkpoints in amounts larger than 3 fluid ounces; must be declared and cleared by TSO:

- baby formula/milk /food in small containers if baby/small child is traveling,
- medications (liquid, gel, aerosol),
- liquids and gels for passengers indicating need to address diabetic or other medical condition.

TSOs conducting declaration process positioned ahead of checkpoint to assess liquids, gels, and aerosols to determine reasonable quantity for passenger's itinerary, and to advise passengers on procedures related to liquids, gels and aerosols that are either prohibited (requiring disposal or abandonment of items) or permitted but outside of plastic bag (TSO marks boarding pass or travel document to indicate items).

Items newly permitted past checkpoints in any amount:

- liquid, gel, and aerosol cleaning supplies required by airport employees servicing sterile area,
- gels and frozen liquids required to cool any other items permitted past checkpoints, provided no unresolved suspicious items or activities.

Random ETD sampling of plastic bags, containers within plastic bags, and other containers holding liquids, gels, and aerosols.

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## Impact on security

### *Benefits*

- Plastic bags present deterrent and operational complexities for terrorists—attempts to combine liquids increase probability of detection.
- Requirement to remove and submit plastic bags for X-ray screening serves as deterrent to terrorists, and provides TSOs opportunity to view and examine all liquids, gels, and aerosols.
- Plastic bags hinder terrorists from carrying large enough amounts of liquid explosives that could potentially cause catastrophic damage to an aircraft.
- Declaration process thought to deter terrorists from attempting to carry liquid explosives onboard aircraft.
- Random ETD sampling enables TSOs to determine whether the small amounts of liquids and gels being carried through the checkpoint are, in fact, explosives. This procedure may also deter terrorists from attempting to carry liquid explosives onboard aircraft.

### *Drawbacks*

- Possibility that terrorists could combine liquids in small bottles to generate an amount large enough to potentially cause catastrophic damage to an aircraft.
- The additional drawbacks related to the impact on security are sensitive security information. Therefore, we do not discuss those drawbacks in this report.

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**Impact on efficiency of screening process***Benefits*

- Enables TSOs to focus resources on detecting explosives, rather than small amounts of liquids and gels that do not represent serious threat.
- Checked baggage screening expected to return to sustainable levels.
- Requirement to remove and submit plastic bags for X-ray screening encourages passengers to reduce clutter in bags, making it easier for TSOs to screen for prohibited and threat items.

*Drawbacks*

- Increase in number of items X-rayed per passenger, which may slow down screening process.

**Impact on customer service***Benefits*

- Procedures easily learned by public and TSOs.
- Accommodates many passengers with legitimate needs for small quantities of liquids during flights.

*Drawbacks*

- Possible negative public reaction to passengers having to provide their own plastic bags.

**Other considerations**

- The results of liquid explosives tests conducted by DHS and the FBI. The results of these tests are sensitive security information and are not discussed in this report.
- TSA gathered data to test its assumption regarding sustainability of the total ban on liquids, gels, and aerosols and found that following the total ban, there was approximately a 27 percent increase in the number of bags checked per passenger.

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**Procedures**

**November 21, 2006:** Same as the procedures implemented on September 26, 2006, with the exception of the following:

Liquids, gels, and aerosols allowed in 3.4-fluid-ounce (100-milliliter) “travel size” bottles.

Declaration process eliminated; TSA employee ahead of checkpoint offers public advisements and assessments on procedures.

(Additional modifications were made to the liquids, gels, and aerosols screening procedures. However, these additional modifications are sensitive security information. Therefore, we do not discuss these modifications in this report.)

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**Impact on security***Benefits*

No additional security benefits identified.

*Drawbacks*

No additional drawbacks to security identified.

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Source: GAO analysis of TSA documentation

\*The August 12, 2006, SOP change incorporates clarifications implemented on August 16, 2006.

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**Impact on efficiency of screening process***Benefits*

- Elimination of the declaration process will reduce unnecessary redundancy in the examination of exempted liquids and gels, which previously occurred both prior to and following x-ray screening.

(TSA identified additional efficiency benefits of this modification to the liquids, gels, and aerosols screening procedures. These additional benefits are sensitive security information. Therefore, we do not discuss these benefits in this report.)

*Drawbacks*

No additional efficiency drawbacks identified.

**Impact on customer service***Benefits*

- Allowing for risk-based discretion on the part of Supervisory TSOs enhances customer service for passengers who have legitimate reasons for carrying liquids, gels, or aerosols onboard planes.

*Drawbacks*

No additional customer service drawbacks identified.

**Other considerations**

- The European Union allowed passengers to carry liquids, gels, and aerosols in travel sized containers up to 100 milliliters, approximately 3.4 fluid ounces.
  - The results of liquid explosive testing conducted by FBI and DHS.
  - TSA recognized that no procedure could be written to address every possible scenario involving liquids, gels, and aerosols. Therefore, TSA enabled Supervisory TSOs to use their discretion, while also considering security risks.
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As TSA senior leadership obtained more information about the particular threat posed by the liquid explosives through tests conducted by DHS's Science and Technology Directorate and FBI, TSA relaxed the restrictions to allow passengers to carry liquids, gels, and aerosols onboard aircraft in 3-fluid-ounce bottles—and as of November 2006, 3.4-fluid-ounce bottles—that would easily fit in a quart-sized, clear plastic, zip-top bag. TSA senior leadership identified both benefits and drawbacks to this SOP modification, but determined that the balance of security, efficiency, and customer service that would result from these SOP changes was appropriate. As shown in table 2, TSA officials recognize that there are security drawbacks—or vulnerabilities—associated with allowing passengers to carry even small amounts of liquids and gels onboard aircraft. For example, two or more terrorists could combine small amounts of liquid explosives after they pass through the checkpoint to generate an amount large enough to possibly cause catastrophic damage to an aircraft. However, TSA officials stated that doing so would be logistically challenging given the physical harm that the specific explosives could cause to the person handling them, and that suspicion among travelers, law enforcement officials, and airport employees would likely be raised if an individual was seen combining the liquid contents of small containers stored in two or more quart-sized plastic bags. TSA officials stated that at the time of the modifications to the liquid, gels, and aerosols screening procedures, there was consensus among explosives detection experts, both domestically and abroad, regarding TSA's assumptions about how the explosives could be used and the damage they could cause to an aircraft.<sup>33</sup> TSA officials also stated that after reviewing the intelligence information related to the alleged August 2006 London terror plot—particularly with regard to the capability and intent of the terrorists—TSA determined that allowing small amounts of liquids, gels, and aerosols onboard aircraft posed an acceptable level of risk to the commercial aviation system.<sup>34</sup> Moreover, TSA officials acknowledged that there are vulnerabilities with allowing passengers to carry liquids that are exempted from the 3.4-fluid-ounce limit—such as baby formula and medication—onboard aircraft.

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<sup>33</sup>In February 2007, DHS Science and Technology directorate conducted aircraft vulnerability tests to determine the extent of damage the liquid explosives that were to be used in the alleged August 2006 London terror plot would cause to an aircraft. The results of these tests, however, are sensitive security information and are not included in this report.

<sup>34</sup>The intelligence information regarding the August 2006 London terror plot is classified and, therefore, is not included in this report.

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TSA officials stated that the enhancements TSA is making to the various other layers of aviation security will help address the security vulnerabilities identified above. For example, TSA has increased explosives detection canine patrols, deployed Federal Air Marshals on additional international flights, increased random screening of passengers at boarding gates, and increased random screening of airport and TSA employees who pass through the checkpoint. TSA also plans to expand implementation of its Screening Passengers by Observation Technique (SPOT) to additional airports. SPOT involves specially trained TSOs observing the behavior of passengers and resolving any suspicious behavior through casual conversation with passengers and referring suspicious passengers to selectee screening.<sup>35</sup> TSA intends for SPOT to provide a flexible, adaptable, risk-based layer of security that can be deployed to detect potentially high-risk passengers based on certain behavioral cues.

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### TSA's Analysis of the Impact of Certain Proposed Screening Changes on Security and TSO Resources Could Be Strengthened

While professional judgment regarding risk factors, experience in the operating environment, and customer feedback have guided many of the decisions TSA leadership made about which screening procedures to implement, TSA also sought to use empirical data as a basis for evaluating the impact some screening changes could have on security and TSO resources. The TSA Assistant Secretary stated in December 2005 that TSA sought to make decisions about screening changes based on data and metrics—a practice he said TSA would continue. The use of data and metrics to inform TSA's decision making regarding implementing proposed screening procedures is consistent with our prior work that has shown the importance of data collection and analyses to support agency decision making. Between October 2005 and January 2006, TSA's Explosives Detection Improvement Task Force sought to collect data as part of an effort to test the impact of seven proposed procedures at selected airports, as noted earlier.<sup>36</sup> These seven proposed procedures were selected because officials believed they would have a significant impact on how TSOs perform daily screening functions, TSO training, and

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<sup>35</sup>In the event that TSOs cannot determine the reason for a passenger's suspicious behavior, the TSO refers the passenger to law enforcement officials. TSA officials responsible for SPOT told us that in designing the implementation of SPOT, they worked closely with FBI staff, Secret Service staff, Israeli security experts, and state police with experience in recognizing suspicious behaviors.

<sup>36</sup>Another SOP change was operationally tested and subsequently rejected. TSA did not provide documentation or other information on the reason it was rejected.

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customer acceptability. According to TSA's chief of security operations, the purpose of testing these procedures in the airport environment was to ensure that TSA was "on the right path" in implementing them. These particular procedures were considered by senior TSA officials as especially important for enhancing the detection of explosives and for deterring terrorists from attempting to carry out an attack. According to TSA, some of the proposed procedures could also free up TSOs so that they could spend more time on procedures for detecting explosives and less time on procedures associated with low security risks, such as identifying small scissors in carry-on bags. The seven proposed procedures tested by the task force reflect both new procedures and modifications to existing procedures, as shown in table 3.

**Table 3: Proposed Procedures Operationally Tested by the Explosives Detection Improvement Task Force, October 2005-January 2006**

<b>Title of proposed procedure</b>	<b>New or revised procedure</b>	<b>Previous procedure</b>	<b>Proposed procedure</b>
Screening Passengers by Observation Technique <sup>a</sup>	New	N/A	Designated TSOs will observe the behavioral patterns of passengers, and based on their observations, TSOs will conduct casual conversations, refer suspicious passengers to secondary screening, and in some cases refer some individuals to law enforcement officers
Unpredictable Screening Process (USP)	Revised	Selectee, or additional, screening of passengers must be conducted continuously. If the number of individuals that alarm the walk-through metal detector or if the number of bags that alarm is not enough to ensure continual additional screening, individuals and bags must be randomly selected to meet this requirement.	Random selectee screening is to be replaced by the USP, which entails random selection of passengers across two screening lanes to be subjected to a predetermined element of the selectee screening process. The specific elements are sensitive security information and are not discussed in this report.
Bulk-item pat-down search	Revised	The pat-down procedure included only the torso area of the body.	The pat-down is to include not only the torso, but also from the waistline down.
IED components search	New	N/A	TSOs are to implement additional measures if they find an IED component, such as a battery, when screening.
Selectee screening changes	Revised	There was a rigid set of procedures for resolving alarms set off by selectees.	More flexibility is to be provided for resolving alarms set off by selectees.
Threat area search	Revised	For bags that appear to pose a security threat, various searches were conducted, where some of the searches were not directly focused on the reason for suspicion.	For bags that appear to pose a security threat, the searches that are conducted are intended to focus more on the reason for suspicion.
Prohibited items list changes	Revised	Scissors (metal with pointed tips, except ostomy scissors with pointed tips with an overall length, including blades and handle, of 4 inches or less, when accompanied by an ostomate supply kit containing related supplies, such as collection pouches, wafers, positioning plates, tubing, or adhesives) and tools (including, but not limited to, wrenches and pliers) were not permitted on aircraft.	Allow scissors with pointed tips and blades less than 4 inches and tools less than 7 inches in length onto aircraft.

Source: TSA

Note: N/A stands for “not applicable,” meaning that no previous procedure existed prior to the new procedure.

<sup>a</sup>Implementation of SPOT did not involve a revision to the passenger checkpoint screening SOP; rather, TSA developed a separate set of standard operating procedures for SPOT. However, we included SPOT in our review because it modifies the way in which TSOs screen passengers and their carry-on items at the checkpoint.

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Our analysis of TSA's data collection and data analysis for the seven procedures that were operationally tested identified several problems that affected TSA's ability to determine whether these procedures, as designed and implemented by TSA, would have the intended effect—to enhance the detection of explosives during the passenger screening process or to free up resources so that explosives detection procedures could be implemented. Although the deterrence of persons intending to do harm is also an intended effect of some proposed SOP modifications, TSA officials said that it is difficult to assess the extent to which implementation of proposed procedures would deter terrorists. The Office of Management and Budget has also acknowledged the difficulty in measuring deterrence, particularly for procedures intended to prevent acts of terrorism. While we agree that measuring deterrence is difficult, opportunities exist for TSA to strengthen its analyses to help provide information on whether the proposed procedures would enhance detection or free up TSO resources, when intended.

**Screening Passengers by Observation Technique.** TSA officials stated that SPOT is intended to both deter terrorists and identify suspicious persons who intend to cause harm while on an aircraft. While we recognize that it is difficult to assess the extent to which terrorists are deterred by the presence of designated TSOs conducting behavioral observations at the checkpoint, we believe that there is an opportunity to assess whether SPOT contributes to enhancing TSA's ability to detect suspicious persons that may intend to cause harm on an aircraft. One factor that may serve as an indicator that a person intends to do harm on an aircraft is whether that individual is carrying a prohibited item. TSA collected and assessed data at 14 airports for various time periods on the number of prohibited items found on passengers who were targeted under SPOT and referred to secondary screening or law enforcement officials.<sup>37</sup> However, these data collection efforts, alone, did not enable TSA to determine whether the detection of prohibited items would be enhanced if SPOT were implemented because TSA had no means of comparing whether persons targeted by SPOT were more likely to carry prohibited items than persons not targeted by SPOT. To obtain this information, the task force would have had to collect data on the number of passengers not targeted by SPOT that had prohibited items on them. This information

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<sup>37</sup>SPOT was operationally tested at 1 airport beginning in December 2003, at 2 additional airports beginning in October 2004, and at 2 other airports beginning in October 2005. The remaining 9 airports began participating in the operational testing of SPOT in December 2005.

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could be used to determine whether a greater percentage of passengers targeted under SPOT are found to have prohibited items than those passengers who are not targeted by SPOT, which could serve as one indicator of the extent to which SPOT would contribute to the detection of passengers intending to cause harm on an aircraft.

Although it has not yet done so, it may be possible for TSA to evaluate the impact of SPOT on identifying passengers carrying prohibited items. There is precedent in other federal agencies for evaluating the security benefits of similar procedures. For instance, U.S. Customs and Border Protection (CBP) within DHS developed the Compliance Examination (COMPEX) system to evaluate the effectiveness of its procedures for selecting international airline passengers for secondary screening. Specifically, COMPEX compares the percentage of targeted passengers on which prohibited items are found to the percentage of randomly selected passengers on which prohibited items are found. The premise is that targeting is considered to be effective if a greater percentage of targeted passengers are found to possess prohibited items than the percentage of randomly selected passengers, and the difference between the two percentages is statistically significant.<sup>38</sup> CBP officials told us in May 2006 that they continue to use COMPEX to assess the effectiveness of their targeting of international airline passengers.<sup>39</sup> When asked about using a method such as COMPEX to assess SPOT, TSA officials stated that CBP and TSA are seeking to identify different types of threats through their targeting programs. CBP, through its targeting efforts, is attempting to identify passengers with contraband and unauthorized aliens, whereas TSA, through SPOT, is attempting to identify potential high-risk passengers. Additionally, in commenting on a draft of this report, DHS stated that, according to TSA, the possession of a prohibited item is not a good measure of SPOT effectiveness because an individual may not intend to use a prohibited item to cause harm or hijack an aircraft. While it may be possible for a terrorist to cause harm or hijack an aircraft without using a prohibited item, as in the case of the September 11 terrorist attacks,<sup>40</sup>

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<sup>38</sup>Statistically significant means that it is highly unlikely to obtain a difference of a given size or more by chance, assuming that there is actually no difference in the probability of finding prohibited items between targeted and randomly selected passengers.

<sup>39</sup>CBP officials could not comment on whether a similar methodology could be used by TSA, since they were not familiar with the SPOT procedure.

<sup>40</sup>Following the September 11 terrorist attacks, the items terrorists reportedly used to carry out the attacks—box cutters—were subsequently prohibited onboard aircraft.

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other terrorist incidents and threat information identify that terrorists who carried out or planned to carry out an attack on a commercial aircraft intended to do so by using prohibited items, including explosives and weapons. Therefore, we continue to believe that comparing the percentage of individuals targeted and not targeted under SPOT on which prohibited items are found could be one of several potential indicators of the effectiveness of SPOT. Such a measure may be most useful with regard to the prohibited items that could be used to bring down or hijack an aircraft. TSA officials stated that the agency agrees in principle that measuring SPOT effectiveness, if possible, may provide valuable insights.

**Unpredictable Screening Process, Bulk-Item Pat-Down Search, and IED Component Search.** We found that the task force also could have strengthened its efforts to evaluate the security impact of other proposed procedures—specifically, USP, the bulk-item pat-down search, and the IED component search. For all three of these procedures, the task force did not collect any data during the operational testing that would help determine whether they would enhance detection capability. TSA officials told us that they did not collect these data because they had a limited amount of time to test the procedures because they had to make SOP modifications quickly as part of the agency’s efforts to focus on higher threats, such as explosives, and the TSA Assistant Secretary’s goal of implementing the SOP modifications before the 2005 Thanksgiving holiday travel season. Nevertheless, TSA officials acknowledged the importance of evaluating whether proposed screening procedures, including USP and the bulk-item pat-down, would enhance detection capability. TSA officials stated that covert testing has been used to assess TSOs’ ability to detect prohibited items, but covert testing was not implemented during operational testing of proposed procedures. Office of Inspection officials questioned whether covert testing could be used to test, exclusively, the security benefit of proposed procedures, because TSO proficiency and the capability of screening technology also factor into whether threat objects are detected during covert tests. Four of the five aviation security experts we interviewed acknowledged this limitation but stated that covert testing is the best way to assess the effectiveness of passenger checkpoint screening.<sup>41</sup> In commenting on a draft of this report, DHS stated that, according to TSA, USP is intended to disrupt terrorists’ planning of an attack by introducing unpredictability into the passenger checkpoint

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<sup>41</sup>The fifth expert we interviewed said that he was uncertain how to assess the effectiveness of passenger checkpoint screening procedures.

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screening process, and tools such as covert testing could not be used to measure the effectiveness of USP to this end. While we agree that covert testing may not be a useful tool to assess the impact USP has on disrupting terrorists' plans and deterring terrorists from attempting to carry out an attack, we continue to believe that covert testing could have been used to assess whether USP would have helped to enhance detection capability during the passenger screening process, which TSA officials stated was another intended result of USP.

Although TSA did not collect data on the security impact of the USP and bulk-item pat-down procedures, the task force did collect data on the impact these procedures had on screening efficiency—the time required to perform procedures—and on the reaction of TSOs, FSDs, and passengers to the proposed procedures. These data indicated that the USP procedure took less time, on average, for TSOs to conduct than the procedure it replaced (the random continuous selectee screening process); the revised pat-down procedure took TSOs about 25 seconds to conduct; and that passengers generally did not complain about the way in which both procedures were conducted.

With respect to operational testing of the IED component search procedure, TSA was unable to collect any data during the testing period because no IEDs were detected by TSOs at the airports where the testing took place. As with the USP and bulk-item pat-down procedures, TSA could have conducted covert tests during the operational testing period to gather simulated data for the IED search procedure, in the absence of actual data.

**Selectee Screening Changes and Threat Area Search.** Recognizing that some of the proposed procedures intended to enhance detection would require additional TSO resources, TSA implemented several measures aimed collectively at freeing up TSOs' time so that they could focus on conducting more procedures associated with higher threats—identifying explosives and suspicious persons. For example, TSA modified the selectee screening procedure and the procedure for searching carry-on items—the threat area search—in order to reduce screening time. During an informal pilot of these proposed procedures at 3 airports in November 2005, TSA determined that the proposed selectee screening procedure would reduce search time of each selectee passenger, on average, by about 1.17 minutes at these airports. TSA also determined through this study that the proposed threat area search, on average, took 1.83 minutes to conduct at the participating airports, as compared to the existing target

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object search that took, on average, 1.89 minutes, and the existing whole bag search that took, on average, 2.37 minutes.

**Prohibited Items List Changes.** Another measure TSA implemented to free up TSO resources to focus on higher threats involved changes to the list of items prohibited onboard aircraft. According to TSA, TSOs were spending a disproportionate amount of TSA's limited screening resources searching for small scissors and small tools, even though, based on threat information and TSA officials' professional judgment, such items no longer posed a significant security risk given the multiple layers of aviation security. TSA officials surmised that by not having to spend time and resources physically searching passengers' bags for low-threat items, such as small scissors and tools, TSOs could focus their efforts on implementing more effective and robust screening procedures that can be targeted at screening for explosives.

To test its assumption that a disproportionate amount of TSO resources was being spent searching for small scissors and tools, TSA collected information from several sources. First, TSA reviewed data maintained in TSA's Performance Management Information System (PMIS),<sup>42</sup> which showed that during the third and fourth quarters of fiscal year 2005 (a 6-month period), TSOs confiscated a total of about 1.8 million sharp objects other than knives or box cutters. These sharp objects constituted 19 percent of all prohibited items confiscated at the checkpoint. Second, based on information provided by FSDs, TSOs, and other screening experts, TSA determined that scissors constituted a large majority of the total number of sharp objects found at passenger screening checkpoints. Third, TSA headquarters officials searched through confiscated items bins at 4 airports and found that most of the scissors that were confiscated had blades less than 4 inches in length. Based on these collective efforts, TSA concluded that a significant number of items found at the checkpoint were low-threat, easily identified items, such as small scissors and tools, and that a disproportionate amount of time was spent searching for these items—time that could have been spent searching for high-threat items, such as explosives. TSA also concluded that because TSOs can generally easily identify scissors, if small scissors were no longer on the prohibited

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<sup>42</sup>TSA's Performance Management Information System is designed to collect, analyze, and report passenger and baggage screening performance data, such as wait times at selected airports, workload data, and the performance and utilization of passenger and baggage screening equipment. TSA headquarters uses PMIS data to support external reporting on performance and internal decision-making processes.

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items list, TSOs could avoid conducting time-consuming physical bag searches to locate and remove these items.

While we commend TSA's efforts to supplement professional judgment with data and metrics in its decision to modify passenger checkpoint screening procedures, TSA did not conduct the necessary analysis of the data collected to determine the extent to which the removal of small scissors and tools from the prohibited items list could free up TSO resources. Specifically, TSA did not analyze the data on sharp objects confiscated at the checkpoint along with other relevant factors, such as the amount of time taken to search for scissors and the number of TSOs at the checkpoint conducting these searches, to determine the extent to which TSO resources could actually be freed up. Based on our analysis of TSA's data for the 6-month period, where we considered these other relevant factors, we determined that TSOs spent, on average, less than 1 percent of their time—about 1 minute per day over the 6-month period—searching for the approximately 1.8 million sharp objects, other than knives and box cutters, that were found at passenger screening checkpoints between April 2005 and September 2005.<sup>43</sup> If the average amount of time TSOs spent searching for sharp objects per day over a 6-month period was less than 1 minute per TSO, and sharp objects constituted just 19 percent of all prohibited items confiscated at checkpoints over this period, then it may not be accurate to assume that no longer requiring TSOs to search for small scissors and tools would significantly contribute to TSA's efforts to free up TSO resources that could be used to implement other security measures.

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<sup>43</sup>To conduct our analysis we used TSA data that showed (1) it takes, on average, about 1.89 minutes to conduct a bag search that was initiated because a TSO identified a prohibited item (such as a pair of scissors) in the X-ray image of a carry-on bag—this average search time was derived from an informal TSA property search time study conducted at 9 airports—and (2) there were 28,785 actual full-time-equivalent (FTE) passenger screening TSOs during fiscal year 2005. One FTE is equal to 1 work year or 2,080 nonovertime hours. To determine the number of minutes per day, on average, each TSO spent searching for sharp objects found during the 6-month period, we took the following steps. First, we calculated the total amount of time (in minutes) taken to conduct the searches by multiplying the number of sharp objects found (1,762,571) by the average time to conduct targeted searches (1.89 minutes), assuming that one item was found per search. This totaled 55,521 hours. Next, we calculated the amount of time, on average, each TSO spent searching for the sharp objects found by dividing 55,521 hours by 28,785 TSO FTEs. The result was 1.93 hours per TSO. Finally, we converted average hours per TSO to minutes and divided by 130 days—the number of days worked by a TSO for 26 weeks over a 6-month period (assuming 5 work days per week at 8 hours per day). The result was an average of 0.89 minutes per day per TSO over the 6-month period.

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To further support its assertion that significant TSO resources would be freed up as a result of removing small scissors and tools from the list of prohibited items, TSA officials cited the results of an informal study conducted in October 2005—which was intended to provide a general idea of the types of prohibited items TSOs were finding as a result of their searches and how long various types of searches were taking TSOs to conduct. Specifically, according to the study conducted at 9 airports over a 14-day period, TSA determined that 24 percent of items found during carry-on bag searches were scissors. However, based on data regarding the number of bags searched, removing scissors may not significantly contribute to TSA’s efforts to free up TSO resources.<sup>44</sup>

TSA conducted additional informal studies 30, 60, and 90 days after the prohibited items list change went into effect to determine whether the change had resulted in reductions in the percentage of carry-on bags that were searched and overall screening time. However, we identified limitations in TSA’s methodology for conducting these studies.<sup>45</sup> In February 2007, a TSA official stated that some FSDs interviewed several TSOs after the prohibited items list change went into effect, and these TSOs reported that the change did save screening time. However, TSA could not identify how many TSOs were interviewed, at which airports the TSOs were located, and how the TSOs were selected for the interview; nor did TSA document the results of these interviews. TSA also did not use random selection or representative sampling when determining which TSOs should be interviewed. Therefore, the interview results cannot be generalized.

TSA officials acknowledged that they could have made some improvements in the various analyses they conducted on the prohibited

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<sup>44</sup>The number of bags searched is sensitive security information.

<sup>45</sup>The results of the informal follow-on studies, which were conducted at 6 to 9 airports, show that the percentage of carry-on bags searched increased slightly at the time of the 30-day study, then decreased slightly at the time of the 60-day and 90-day studies, respectively. However, the results of these informal studies may not be reliable due to the limitations in the methodology TSA used to conduct the studies. Specifically, TSA did not use a methodology that would control for factors other than the prohibited items list change that may influence the percentage of carry-on bags searched by TSOs. To do this, TSA would have had to develop a formal, systematic methodology for randomly selecting various times of day, location of checkpoints, number of checkpoints, and so on for data collection. By not controlling for such factors, TSA may not know the extent to which a reduction in the percentage of carry-on bags searched is due to the prohibited items list changes.

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items list change. However, they stated that they had to make SOP modifications quickly as part of the agency's efforts to focus on higher threats, such as explosives, and the TSA Assistant Secretary's goal of implementing the SOP modifications before the 2005 Thanksgiving holiday travel season. Additionally, officials stated that they continue to view their decision to remove small scissors and tools from the prohibited items list as sound, particularly because they believe small scissors and tools do not pose a significant threat to aviation security. TSA officials also stated that they believe the prohibited items list change would free up resources based on various sources of information, including the professional judgment of TSA airport staff, and their analysis of PMIS data on prohibited items confiscated at checkpoints. The TSA Assistant Secretary told us that even if TSA determined that the proposed SOP modifications would not free up existing TSO resources to conduct explosives detection procedures, he would have implemented the modifications anyway considering the added security benefit of the explosives detection procedures. Additionally, a TSA headquarters official responsible for airport security operations stated that to help strengthen the agency's analysis of future proposed SOP changes, the agency plans to provide the Explosives Detection Improvement Task Force with the necessary resources to help improve its data collection and analysis.

An additional measure intended to free up TSO resources<sup>46</sup> involved changes to CAPPS rules.<sup>47</sup> TSA's assumption is that these changes could allow TSOs who were normally assigned to selectee screening duties to be reassigned to new procedures, such as USP, which may require new screening positions. (Both USP and SPOT require TSO positions: USP requires one screening position for every two screening lanes, while SPOT

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<sup>46</sup>TSA officials told us that TSA's Office of Intelligence assessed the potential impact each of these CAPPS changes would have on security and, based in its analysis, determined that none of the CAPPS changes would compromise security.

<sup>47</sup>Passengers can be selected for secondary screening through CAPPS or other TSA-approved processes, such as the Selectee List. CAPPS rules are sensitive security information and, therefore, are not discussed in this report.

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typically uses more than one screening position per ticket checker at the checkpoint.<sup>48</sup>)

According to FSDs we interviewed, the changes made to the prohibited items list and the CAPPs rules had not freed up existing TSO resources, as intended. Specifically, as of August 2006, 13 of 19 FSDs we interviewed at airports that tested USP or SPOT said that TSO resources were not freed up as a result of these changes. In addition, 9 of the 19 FSDs said that in order to operationally test USP or SPOT, TSOs had to work overtime, switch from other functions (such as checked baggage screening), or a screening lane had to be closed. TSA's Explosives Detection Improvement Task Force reported that nearly all of the FSDs at airports participating in operational testing of USP believed that the procedure had security value,<sup>49</sup> though the task force also reported that 1 FSD dropped out of the operational testing program for USP due to insufficient staffing resources and another could only implement the procedure during off-peak travel periods. Additionally, most of the FSDs we interviewed stated that the changes to the prohibited items list and CAPPs rules did not free up TSOs, as intended, to better enable TSOs to take required explosives detection training. Specifically, as of August 2006, of the 19 FSDs we interviewed at airports that implemented USP and SPOT, 13 said that they did not experience more time to conduct explosives training as a result of changes to the prohibited items list and CAPPs rules.<sup>50</sup> Three of the 13 FSDs said that they used overtime to enable TSOs to take the explosives training. As previously stated, the TSA Assistant Secretary stated that even if existing TSO resources are not freed up to conduct explosives detection procedures, longer lines and wait times at airport checkpoints are an acceptable consequence, considering their added security benefit. With

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<sup>48</sup>Ticket checkers are aircraft operator or TSA employees who are positioned before the screening checkpoint to perform identification check and sterile area access responsibilities as required by TSA. For passengers, ticket checkers verify travel documents and make sure the identifying information on the travel document is consistent with the information on the individual's personal identification documents (e.g., licenses, passport, etc.). Ticket checkers are also responsible for directing passengers designated as selectees to the appropriate screening lane. For nonpassengers, ticket checkers verify required identification before allowing access to the sterile area.

<sup>49</sup>The task force reported that 1 FSD was unsure of the security benefits provided by USP, though this FSD did support the concept of introducing unpredictability into the screening process.

<sup>50</sup>Of the remaining 6 FSDs, 5 said that TSO resources were freed up as a result of the prohibited items list and CAPPs rules changes, and 1 was uncertain whether TSO resources were actually freed up.

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regard to explosives training, he stated that it is acceptable for FSDs to use overtime or other methods to ensure that all TSOs participated in the required explosives detection training. He further noted that even if one screening change does not free up TSO resources, all of the changes intended to accomplish this—when taken together—should ultimately help to redirect TSO resources to where they are most needed.

TSA's efforts to add data and metrics to its tool kit for evaluating the impact of screener changes are a good way to supplement the use of professional judgment and input from other experts and sources in making decisions about modifying screening procedures. However, TSA's methods for data collection and analysis could be improved. We recognize the challenges TSA faces in evaluating the effectiveness of proposed procedures, particularly when faced with time pressures to implement procedures. However, by attempting to evaluate the potential impact of screening changes on security and resource availability, TSA could help support its decision making on how best to allocate limited TSO resources and ensure that the ability to detect explosives and other high-threat objects during the passenger screening process is enhanced.

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### Documentation of the Reasoning behind Proposed SOP Modifications Was Incomplete

While we were able to assess TSA's reasoning behind certain proposed SOP modifications considered during our review period, our analysis was limited because TSA did not maintain complete documentation of proposed SOP modifications. Documentation of the reasoning behind decisions to implement or reject proposed modifications was maintained in various formats, including spreadsheets developed by TSA officials, internal electronic mail discussions among TSA officials, internal memorandums, briefing slides, and reports generated based on the results of operational testing. TSA did improve its documentation of the proposed SOP modifications that were considered during the latter part of our 9-month review period. Specifically, the documentation for the SOP modifications proposed under the Explosives Detection Improvement Task Force provided more details regarding the basis of the proposed modifications and the reasoning behind decisions to implement or reject the proposed modifications.

Of the 92 proposed SOP modifications considered during our 9-month review period that TSA documented, TSA provided the basis for 72. More specifically, TSA documented the basis—that is, the information, experience, or event that encouraged TSA officials to propose an SOP modification—for 35 of the 48 that were implemented and for 37 of the 44 that were not implemented. However, TSA only documented the

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reasoning behind TSA senior leadership's decisions to implement or not implement proposed SOP modifications for 43 of 92 proposed modifications. According to TSA officials, documentation that explains the basis for recommending proposed modifications can also be used to explain TSA's reasoning behind its decisions to implement proposed modifications. However, the basis on which an SOP modification was proposed cannot always be used to explain TSA senior leadership's decisions not to implement a proposed modification. In these cases, additional documentation would be needed to understand TSA's decision making. However, TSA only documented the reasoning behind its decisions for about half (26 of 44) of the proposed modifications that were not implemented. TSA officials told us that they did not intend to document all SOP modifications that were proposed during our review period. Officials stated that, in some cases, the reasoning behind TSA's decision to implement or not implement a proposed SOP modification is obvious and documentation is not needed. TSA officials acknowledged that it is beneficial to maintain documentation on the reasoning behind decisions to implement or reject proposed SOP modifications deemed significant, particularly given the organizational restructuring and staff turnover within TSA.<sup>51</sup> However, TSA officials could not identify which of the 92 proposed SOP modifications they consider to be significant because they do not categorize proposed modifications in this way.

Our standards for governmental internal controls and associated guidance suggest that agencies should document key decisions in a way that is complete and accurate, and that allows decisions to be traced from initiation, through processing, to after completion.<sup>52</sup> These standards further state that documentation of key decisions should be readily available for review. Without documenting this type of information, TSA cannot always justify significant modifications to passenger checkpoint screening procedures to internal or external stakeholders, including Congress and the traveling public. In addition, considering the ongoing personnel changes, without sufficient documentation, future decision

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<sup>51</sup>Since its inception in November 2001, TSA has had multiple Assistant Secretaries (originally titled Under Secretaries of Transportation for Security). In addition, between January 2005 and August 2006, TSA issued seven press releases regarding senior-level personnel changes within the agency.

<sup>52</sup>GAO, *Internal Control: Internal Control Management and Evaluation Tool*, [GAO-01-1008G](#) (Washington, D.C.: August 2001).

makers in TSA may not know on what basis the agency historically made decisions to develop new or revise existing screening procedures.

Following our 9-month review period, TSA continued to make efforts to improve documentation of agency decision making, as evidenced by decisions regarding the August 2006 and September 2006 SOP modifications related to the screening of liquids and gels. For example, TSA senior leadership evaluated the actions taken by the agency between August 7 and August 13, 2006, in response to the alleged liquid explosives terrorist plot, in order to identify lessons learned and improve the agency's reaction to future security incidents. As a result of this evaluation, as shown in table 4, TSA made several observations and recommendations for improving documentation of agency decision making when considering modifications to screening procedures.

**Table 4: TSA Evaluation of Documentation of Agency Decisions Made between August 7 and August 13, 2006, Regarding the Alleged Liquid Explosives Terrorist Plot**

Observations	Recommendations for improvement
There was no tracking of the overall timing and progress of deliberations of the various decision options.	Track and record key issues raised and the timing of deliberations.
There was no formal tracking of the decision options that were discussed or the rationale that was used when selecting among the various decision options.	Formally document options discussed, decisions made, and the rationale behind the decisions.
There were no formal requirements for the type of information that needed to be documented or the format used to document the information on agency decisions.	For each decision that is made, standardize the type of information that should be documented and develop an appropriate mechanism to store the information.
The documentation that was used to support agency decisions did not contain basic audit trail information, such as the origin of the document and how the document was used. This may prevent decision makers from understanding the relevancy of the documentation to agency decisions.	For each document used to support agency decisions, identify the origin of the document and how the document was used by decision makers.

Source: TSA.

Documentation of TSA's decisions regarding the September 26, 2006, modifications to the liquid screening procedures showed that TSA had begun implementing the recommendations in table 4. TSA's documentation identified the various proposed liquid screening

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procedures that were considered by TSA, the benefits and drawbacks of each proposal, and the rationale behind TSA's final decision regarding which proposal to implement. The documentation also tracked the timing of TSA's deliberations of each of the proposed liquid screening procedures. However, the documentation of TSA's decisions was not always presented in a standard format, nor was the origin and use of supporting documentation always identified. TSA officials acknowledged that documentation of the September 2006 SOP modifications could have been improved and stated that efforts to improve documentation, through implementation of the recommendations in table 4, will continue to be a high priority.

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## TSA Has Several Methods in Place to Monitor TSO Compliance with Passenger Checkpoint Screening SOPs

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### A New Performance Accountability System Helps TSA Monitor TSO Compliance with SOPs

TSA implemented a performance accountability system in part to strengthen its monitoring of TSO compliance with passenger checkpoint screening SOPs. Specifically, in April 2006, TSA implemented the Performance Accountability and Standards System (PASS) to assess the performance of all TSA employees, including TSOs.<sup>53</sup> According to TSA officials, PASS was developed in response to our 2003 report that recommended that TSA establish a performance management system that makes meaningful distinctions in employee performance,<sup>54</sup> and in response to input from TSA airport staff on how to improve passenger and checked

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<sup>53</sup>In July 2005, prior to the implementation of PASS, TSA required all FSDs to implement an audit program of screening checkpoint operations, primarily focused on assessing TSO compliance with checkpoint screening SOPs. Specifically, each airport is to have an audit program that evaluates TSOs' ability to detect threat objects taken through the checkpoint, as well as TSOs' compliance with SOPs for screening passengers and their accessible property. The audit program is also intended to evaluate screening supervisors' and lead TSOs' compliance with the SOP.

<sup>54</sup>[GAO-03-190](#).

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baggage screening measures. With regard to TSOs, PASS is not intended solely to measure TSO compliance with SOPs. Rather, PASS will be used by TSA to assess agency personnel at all levels on various competencies, including training and development, readiness for duty, management skills, and technical proficiency.

There are three elements of the TSO technical proficiency component of PASS that are intended to measure TSO compliance with passenger checkpoint screening procedures: (1) quarterly observations conducted by FSD management staff of TSOs' ability to perform particular screening functions in the operational environment, such as pat-down searches and use of the hand-held metal detector, to ensure they are complying with checkpoint screening SOPs; (2) quarterly quizzes given to TSOs to assess their knowledge of the SOPs; and (3) an annual, multipart knowledge and skills assessment. While the first two elements are newly developed, the third element—the knowledge and skills assessment—is part of the annual TSO recertification program that is required by the Aviation and Transportation Security Act (ATSA) and has been in place since October 2003.<sup>55</sup> Collectively, these three elements of PASS are intended to provide a systematic method for monitoring whether TSOs are screening passengers and their carry-on items according to SOPs. TSA's implementation of PASS is consistent with our internal control standards, which state that agencies should ensure that policies and procedures are applied properly.<sup>56</sup>

The first component of PASS (quarterly observations) is conducted by screening supervisors or screening managers, using a standard checklist developed by TSA headquarters, with input from TSA airport staff. There is one checklist used for each screening function, and TSOs are evaluated on one screening function per quarter. For example, the hand-held metal detector skills observation checklist includes 37 tasks to be observed, such as whether the TSO conducted a pat-down search to resolve any suspect areas. The second component of PASS (quarterly quizzes) consists of multiple-choice questions on the standard operating procedures. For example, one of the questions on the PASS quiz is "What is the correct place to start an HHMD outline [a hand-held metal detector search] on an

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<sup>55</sup>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 screening functions. See 49 U.S.C. § 44935(f)(5).

<sup>56</sup>[GAO-01-1008G](#).

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individual: (a) top of the head, (b) top of the feet, or (c) top of the shoulder?”

The third component of PASS is the annual knowledge and skills assessment, a component of the annual recertification program that evaluates the technical proficiency of TSOs. This assessment is composed of three modules: (1) knowledge of standard operating procedures, (2) recognition of threat objects on an X-ray image, and (3) demonstration of screening functions. According to TSA officials, while recertification testing is not a direct measure of operational compliance with passenger checkpoint screening SOPs, recertification testing, particularly module 1 and module 3, is an indicator of whether TSOs are capable of complying with SOPs. TSA officials stated that if a TSO does not have knowledge of SOPs and if the TSO cannot demonstrate basic screening functions as outlined in the SOPs, then the TSO will likely not be able to comply with SOPs when performing in the operating environment. Table 5 provides a summary of each of these modules.

**Table 5: Modules Included in Recertification Knowledge and Skills Assessment**

Testing module	Description
Knowledge of standard operating procedures	Computerized 50-question multiple-choice test. It is either passenger- or baggage-specific.
Image recognition	Computerized test that consists of 100 images and is used to evaluate a TSO's skill and ability in detecting threat or prohibited objects within X-ray images.
Practical demonstration of skills	Hands-on simulated work sample to evaluate a TSO's knowledge, skills, and ability when performing specific screening tasks along with ability to provide customer service.

Source: TSA.

FSDs we interviewed reported that they have faced resource challenges in implementing PASS. Specifically, as of July 2006, 9 of 24 FSDs we interviewed said they experienced difficulties in implementing PASS due to lack of available staff to conduct the compliance-related evaluations. TSA officials stated that they have automated many of the data-entry functions of PASS to relieve the field of the burden of manually entering this information into the PASS online system. For example, all scores related to the quarterly quiz and skill observation components are automatically uploaded, and PASS is linked to TSA's online learning center database to eliminate the need to manually enter TSOs' learning history. In addition, the TSA Assistant Secretary said that FSDs were given the option

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of delaying implementation of PASS if they were experiencing resource challenges.

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### TSA Uses Local and National Covert Testing, in Part, to Assess TSO Compliance with SOPs

TSA also conducts local and national covert tests, which are used to evaluate, in part, the extent to which noncompliance with the SOPs affects TSOs' ability to detect simulated threat items hidden in accessible property or concealed on a person. TSA first issued guidance on its local covert testing program—known as Screener Training Exercises and Assessments (STEA)—in February 2004. STEA testing is conducted by FSD staff at airports, who determine the frequency at which STEA tests are conducted as well as which type of STEA tests are conducted. According to the STEA results reported by TSA between March 2004 and February 2006,<sup>57</sup> TSOs' noncompliance with the SOP accounted for some of the STEA test failures.<sup>58</sup> TSOs' lack of proficiency in skills or procedures, which may affect TSOs' ability to comply with procedures, was also cited as the reason for some of the STEA test failures. TSOs who fail STEA tests are required to take remedial training to help them address the reasons for their failure.

FSDs we interviewed reported that they have faced resource challenges in conducting STEA tests. Specifically, even though all 24 FSDs we interviewed as of July 2006 said that they have conducted STEA tests, 10 of these FSDs said that the lack of available staff made it difficult to conduct these tests. When asked how they planned to address FSDs' concerns regarding a lack of available staff to complete STEA tests, TSA headquarters officials told us that they are considering resource alternatives for implementing the STEA program, but could not provide us with the specific details of these plans.<sup>59</sup> Until the resource limitations that have restricted TSA's use of its compliance monitoring tools have been fully addressed, TSA may not have assurance that TSOs are screening passengers according to the SOP.

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<sup>57</sup>As of February 2006, STEA test results had been recorded for a total of 417 airports.

<sup>58</sup>The results of STEA testing are sensitive security information and, therefore, are not included in this report.

<sup>59</sup>As of December 2006, TSA was in the process of modifying STEA into a performance measurement program. TSA plans to implement the new STEA program during the second quarter of fiscal year 2007.

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As previously discussed, TSA's Office of Inspection initiated its national covert testing program in September 2002. National covert tests are conducted by TSA headquarters-based inspectors who carry simulated threat objects hidden in accessible property or concealed on their person through airport checkpoints, and in cases where TSOs fail to detect threat objects, the inspectors identify the reasons for failure. During September 2005, TSA implemented a revised covert testing program to focus more on catastrophic threats—threats that can bring down or destroy an aircraft. According to Office of Inspection officials, TSOs may fail to detect threat objects during covert testing for various reasons, including limitations in screening technology, lack of training, limitations in the procedures TSOs must follow to conduct passenger and bag searches, and TSOs' noncompliance with screening checkpoint SOPs. Office of Inspection officials also said that one test could be failed due to multiple factors, and that it is difficult to determine the extent to which any one factor contributed to the failure. TSOs who fail national covert tests, like those who fail STEA tests, are also required to take remedial training to help them address the reasons for failure.<sup>60</sup>

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## Conclusions

The alleged August 2006 terrorist plot to detonate liquid explosives onboard multiple U.S.-bound aircraft highlighted the need for TSA to continuously reassess and revise, when deemed appropriate, existing passenger checkpoint screening procedures to address threats against the commercial aviation system. In doing so, TSA faces the challenge of securing the aviation system while facilitating the free movement of people. Passenger screening procedures are only one element that affects the effectiveness and efficiency of the passenger checkpoint screening system. Securing the passenger checkpoint screening system also involves the TSOs who are responsible for conducting the screening of airline passengers and their carry-on items, and the technology used to screen passengers and their carry-on items.

We believe that TSA has implemented a reasonable approach to modifying passenger checkpoint screening procedures through its consideration of risk factors (threat and vulnerability information), day-to-day experience of TSA airport staff, and complaints and concerns raised by passengers and by making efforts to balance security, efficiency, and customer

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<sup>60</sup>The covert testing results, including the reasons for failure, and the recommendations made by the Office of Inspection are classified and cannot be discussed in this report.

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service. We are also encouraged by TSA's efforts to conduct operational testing and use data and metrics to support its decisions to modify screening procedures. We acknowledge the difficulties in assessing the impact of proposed screening procedures, particularly with regard to the extent to which proposed procedures would deter terrorists from attempting to carry out an attack onboard a commercial aircraft. However, there are existing methods, such as covert testing and CBP's COMPEX—a method that evaluates the effectiveness of CBP's procedures for selecting international airline passengers for secondary screening—that could be used by TSA to assess whether proposed screening procedures enhance detection capability. It is also important for TSA to fully assess available data to determine the extent to which TSO resources would be freed up to perform higher-priority procedures, when this is the intended effect. Without collecting the necessary data or conducting the necessary analysis that would enable the agency to assess whether proposed SOP modifications would have the intended effect, it may be difficult for TSA to determine how best to improve TSOs' ability to detect explosives and other high-threat items and to allocate limited TSO resources. With such data and analysis, TSA would be in a better position to justify its SOP modifications and to have a better understanding of how the changes affect TSO resources. Additionally, because TSA did not always document the basis on which SOP modifications were proposed or the reasoning behind decisions to implement or not implement proposed modifications, TSA may not be able to justify SOP modifications to Congress and the traveling public. While we are encouraged that TSA's documentation of its decisions regarding the SOP modifications made in response to the alleged August 2006 liquid explosives terrorist plot was improved compared to earlier documentation, it is important for TSA to continue to work to strengthen its documentation efforts. Such improvements would enable TSA officials responsible for making SOP decisions in the future to understand how significant SOP decisions were made historically—a particular concern considering the restructuring and staff turnover experienced by TSA.

As shown by TSA's covert testing results, the effectiveness of passenger checkpoint screening relies, in part, on TSOs' compliance with screening procedures. We are, therefore, encouraged by TSA's efforts to strengthen its monitoring of TSO compliance with passenger screening procedures. We believe that TSA has implemented a reasonable process for monitoring TSO compliance and that this effort should assist TSA in providing reasonable assurance that TSOs are screening passengers and their carry-on items according to screening procedures. Given the resource challenges FSDs identified in implementing the various methods for

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monitoring TSO compliance, it will be important for TSA to take steps, such as automating PASS data entry functions, to address such challenges.

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## Recommendations for Executive Action

To help strengthen TSA's evaluation of proposed modifications to passenger checkpoint screening SOPs and TSA's ability to justify its decisions to implement or not implement proposed SOP modifications, in the March 2007 report that contained sensitive security information, we recommended that the Secretary of Homeland Security direct the Assistant Secretary of Homeland Security for TSA to take the following two actions:

- when operationally testing proposed SOP modifications, develop sound evaluation methods, when possible, that can be used to assist TSA in determining whether proposed procedures would achieve their intended result, such as enhancing TSA's ability to detect prohibited items and suspicious persons and freeing up existing TSO resources that could be used to implement proposed procedures, and
- for future proposed SOP modifications that TSA senior leadership determines are significant, generate and maintain documentation to include, at minimum, the source, intended purpose, and reasoning behind decisions to implement or not implement proposed modifications.

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## Agency Comments and Our Evaluation

On March 6, 2007, we received written comments on the draft report, which are reproduced in full in appendix III. DHS generally concurred with our recommendations and outlined actions TSA plans to take to implement the recommendations.

DHS stated that it appreciates GAO's conclusion that TSA has implemented a reasonable approach to modifying passenger checkpoint screening procedures through its assessment of risk factors, the expertise of TSA employees, and input from the traveling public and other stakeholders, as well as TSA's efforts to balance security, operational efficiency, and customer service while evaluating proposed changes.

With regard to our recommendation to develop sound evaluation methods, when possible, to help determine whether proposed SOP modifications would achieve their intended result, DHS stated that TSA plans to make better use of generally accepted research design principles and techniques when operationally testing proposed SOP modifications. For example,

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TSA will consider using random selection, representative sampling, and control groups in order to isolate the impact of proposed SOP modifications from the impact of other variables. DHS also stated that TSA's Office of Security Operations is working with subject matter experts to ensure that operational tests are well designed and executed, and produce results that are scientifically valid and reliable. As discussed in this report, employing sound evaluation methods for operationally testing proposed SOP modifications will enable TSA to have better assurance that new passenger checkpoint screening procedures will achieve their intended purpose, which may include improved allocation of limited TSO resources and enhancing detection of explosives and other high-threat objects during the passenger screening process. However, DHS stated, and we agree, that the need to make immediate SOP modifications in response to imminent terrorist threats may preclude operational testing of some proposed modifications.

Concerning our recommendation regarding improved documentation of proposed SOP modifications, DHS stated that TSA intends to document the source, intent, and reasoning behind decisions to implement or reject proposed SOP modifications that TSA senior leadership deems significant. Documenting this type of information will enable TSA to justify significant modifications to passenger checkpoint screening procedures to internal and external stakeholders, including Congress and the traveling public. In addition, considering the ongoing personnel changes TSA has experienced, such documentation should enable future decision makers in TSA to understand on what basis the agency historically made decisions to develop new or revise existing screening procedures.

In addition to commenting on our recommendations, DHS provided comments on some of our findings, which we considered and incorporated in the report where appropriate. One of DHS's comments pertained to TSA's evaluation of the prohibited items list change. Specifically, while TSA agrees that the agency could have conducted a more methodologically sound evaluation of the impact of the prohibited items list change, TSA disagrees with our assessment that the prohibited items list change may not have significantly contributed to TSA's efforts to free up TSO resources to focus on detection of high-threat items, such as explosives. As we identified in this report, based on interviews with FSDs, airport visits to determine the types of items confiscated at checkpoints, and a study to determine the amount of time taken to conduct bag searches and the number of sharp objects collected as a result of these searches, TSA concluded that the prohibited items list change would free up TSO resources. DHS also stated that interviews with TSOs following

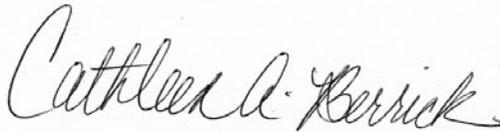
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the prohibited items list change confirmed that the change had freed up TSO resources. However, based on our analysis of the data TSA collected both prior to and following the prohibited items list change, we continue to believe that TSA did not conduct the necessary analysis to determine the extent to which the removal of small scissors and tools from the prohibited items list would free up TSA resources.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 21 days from the date of this report. At that time, we will send copies of the report to the Secretary of the Department of Homeland Security, the TSA Assistant Secretary, and interested congressional committees as appropriate. We will also make copies available to others on request.

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If you or your staff have any questions about this report, please contact me at (202) 512-3404 or [berrickc@gao.gov](mailto:berrickc@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff that made major contributions to this report are listed in appendix IV.



Cathleen A. Berrick  
Director, Homeland Security and Justice Issues

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# Appendix I: Objectives, Scope and Methodology

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To assess the Transportation Security Administration's (TSA) process for modifying passenger checkpoint screening procedures and how TSA monitors compliance with these procedures, we addressed the following questions: (1) How and on what basis did TSA modify passenger screening procedures and what factors guided the decisions to do so? (2) How does TSA determine whether TSOs are complying with the standard procedures for screening passengers and their carry-on items?

To address how TSA modified passenger screening procedures and what factors guided the decisions to do so, we obtained and analyzed documentation of proposed standard operating procedures (SOP) changes considered between April 2005 and September 2005, as well as threat assessments and operational studies that supported SOP modifications.<sup>1</sup> The documentation included a list of proposed changes considered, as well as the source, the intended purpose, and in some cases the basis for recommending the SOP modification—that is, the information, experience, or event that encouraged TSA officials to propose the modifications—and the reasoning behind decisions to implement or reject proposed SOP modifications. We also obtained documentation of the proposed SOP changes considered by TSA's Explosives Detection Improvement Task Force, which was the deliberating body for proposed changes that were considered between October 2005 and December 2005. We also reviewed and analyzed similar documentation for proposed SOP modifications considered between August 2006 and November 2006 in response to the alleged terrorist plot to detonate liquid explosives onboard multiple aircraft en route from the United Kingdom to the United States. We included modifications to passenger checkpoint screening procedures related to this particular event because they provided the most recent information available of TSA's approach to modifying screening procedures in response to an immediate perceived threat to civil aviation. The documentation included notes from internal meetings, slides for internal and external briefings on proposed SOP modifications, data on customer complaints and screening efficiency, and the results of liquid explosives testing conducted by the Department of Homeland Security (DHS) Science and Technology Directorate and the Federal Bureau of Investigation (FBI). We also obtained each revision of the passenger checkpoint screening SOP that was generated between April 2005 and

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<sup>1</sup>We began our review period in April 2005 to coincide with TSA's consideration of proposed SOP modifications related to the second major revision of the passenger checkpoint screening SOP since TSA's inception.

December 2005 and August 2006 and November 2006,<sup>2</sup> as well as accompanying documentation that highlighted all of the changes made in each revision. In addition, we met with TSA headquarters officials who were involved in the process for determining whether proposed passenger checkpoint screening procedures should be implemented. We also met with officials in the DHS Science and Technology Directorate as well as the FBI to discuss the methodology and results of their liquid explosives tests, which were used to support TSA's decisions to modify the SOP in September 2006. We also met with TSA Office of Inspection and DHS Office of Inspector General staff to discuss their covert testing at passenger checkpoints and the recommended changes to the passenger checkpoint screening SOP that were generated based on testing results. We also obtained and analyzed data and information collected by TSA on the proposed procedures that were evaluated in the operational environment. In addition, we met or conducted phone interviews with Federal Security Directors (FSD) and their management staff, including Assistant FSDs and Screening Managers, and Transportation Security Officers (TSO) with passenger screening responsibilities, at 25 commercial airports to gain their perspectives on TSA's approach to revising the passenger checkpoint screening SOP. We also met with officials from four aviation associations—the American Association of Airport Executives, Airports Council International, the Air Transport Association, and the Regional Airline Association—to gain their perspectives on this objective. Finally, we met with five aviation security experts to obtain their views on methods for assessing the impact of proposed passenger checkpoint screening procedures. We selected these experts based on their depth of experience in the field of aviation security, employment history, and their recognition in the aviation security community. However, the views of these experts may not necessarily represent the general view of other experts in the field of aviation security. We compared TSA's approach to revising its passenger checkpoint screening SOP with the Comptroller General's standards for internal control in the federal government<sup>3</sup> and risk management guidance.

To address how TSA determines whether TSOs are complying with the standard procedures for screening passengers and their carry-on items, we

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<sup>2</sup>We did not assess all of the proposed SOP modifications associated with the SOP revisions issued between August 2006 and November 2006; rather, we only reviewed the proposed modifications associated with screening for liquids, gels, and aerosols.

<sup>3</sup>[GAO/AIMD-00-21.3.1](#).

obtained documentation of compliance-related initiatives, including guidance, checklists, and SOP quizzes used to assess TSO compliance under the Performance Accountability and Standards System (PASS), and guidance provided to FSDs for developing local compliance audit programs. We also obtained the fiscal year 2005 recertification and Screener Training Exercises and Assessments (STEAs) test results, which were used, in part, to assess TSO compliance with and knowledge of the passenger checkpoint screening SOP. In addition, we reviewed the results of covert testing conducted by TSA's Office of Inspection, which were also used, in part, to assess TSO compliance with the passenger checkpoint screening SOP. We assessed the reliability of the compliance-related data we received from TSA, and found the data to be sufficiently reliable for our purposes. In addition, we interviewed TSA headquarters officials who were responsible for overseeing efforts to monitor TSO compliance with standard operating procedures. This included officials in the Office of Security Operations, Office of Human Capital, and the Office of Operational Process and Technology. Our audit work also included visits to or phone conferences with 25 airports, where we interviewed FSDs, members of their management teams, and Transportation Security Officers with passenger screening responsibilities.<sup>4</sup> However, the perspectives of these FSDs and their staff cannot be generalized across all airports. In July 2006, we submitted two sets of follow-up questions to FSD staff, related to their experiences with implementing PASS and STEA tests. We also obtained documentation of local compliance audit programs from the FSD staff at several of these airports. We compared TSA's approach for monitoring TSO compliance with the Comptroller General's standards for internal control in the federal government.<sup>5</sup>

As previously mentioned, we conducted site visits and/or phone interviews at 25 airports<sup>6</sup> (8 category X airports, 7 category I airports, 4 category II airports, 4 category III airports, and 2 category IV airports) to discuss issues related to TSA's approach to revising the passenger checkpoint screening SOP, and the agency's approach to monitoring TSO compliance

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<sup>4</sup>We visited 25 airports. However, we met with only 24 FSDs, as 1 FSD was responsible for 2 of the airports we visited.

<sup>5</sup>GAO/AIMD-00-21.3.1.

<sup>6</sup>The list of airports we visited is sensitive security information. Therefore, we do not identify those airports in this report.

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with the SOP.<sup>7</sup> We visited 7 of these airports during the design phase of our study. These airports were selected based on variations in size and geographic location, and whether they were operationally testing any proposed passenger checkpoint screening procedures or passenger screening technology. We also selected 2 airports that participated in the Screening Partnership Program.<sup>8</sup>

After visiting the 7 airports during the design phase of our review, we selected an additional 15 airports to visit based on variations in size, geographic distribution, and performance on compliance-related assessments. Specifically, we obtained and analyzed fiscal year 2005 Screener Training Exercise and Assessments results and fiscal year 2005 recertification testing results to identify airports across a range of STEA and recertification scores. Additionally, we visited 3 additional airports that operationally tested the proposed Unpredictable Screening Process (USP) and the Screening Passengers by Observation Technique (SPOT) procedure.

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<sup>7</sup>TSA classifies the more than 400 commercial airports in the United States into one of five categories—X, I, II, III, and IV. Generally, category X airports have the largest number of passenger boardings and category IV airports have the smallest number.

<sup>8</sup>The Aviation and Transportation Security Act (ATSA) required that TSA begin allowing commercial airports to apply to TSA to transition from a federal to a private screener workforce. See 49 U.S.C. § 44920. 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 screeners. There are currently 6 airports participating in the Screening Partnership Program, including Jackson Hole, Kansas City International, Greater Rochester International, San Francisco International, Sioux Falls Regional, and Tupelo Regional.

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In July 2006, we received from 19 FSDs answers to follow-up questions on their experiences with implementing pilot testing of SPOT or USP. This included 14 FSDs that were not part of our initial rounds of interviews. Nine of these 14 FSDs were from airports that participated in SPOT pilots. The remaining 5 of 14 FSDs that were not part of our initial rounds of interviews were from airports that were participants in USP pilots.

We conducted our work from March 2005 through March 2007 in accordance with generally accepted government auditing standards.

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# Appendix II: Sources of SOP Changes

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Of the 92 proposed screening changes considered by TSA between April 2005 and December 2005, 63 were submitted by TSA field staff, including Federal Security Directors and Transportation Security Officers.<sup>1</sup> Thirty proposed screening changes were submitted by TSA headquarters officials. Last, TSA senior leadership, such as the TSA Assistant Secretary, recommended 5 of the 92 proposed screening changes considered during this time period. One SOP modification was also proposed through a congressional inquiry. TSA's solicitation of input from both field and headquarters officials regarding changes to the passenger checkpoint screening SOP was consistent with internal control standards,<sup>2</sup> which suggest that there be mechanisms in place for employees to recommend improvements in operations.

The FSDs with whom we met most frequently identified periodic conference calls with the Assistant Secretary, the SOP Question and Answer mailbox, or electronic mail to Security Operations officials as the mechanisms by which they recommended changes to the SOP. The TSOs with whom we met identified their chain of command and the SOP Question and Answer mailbox as the primary mechanisms by which they submitted suggestions for new or revised procedures. According to TSA officials, the SOP mailbox entails FSDs and their staff, including TSOs, submitting suggestions, questions, or comments to TSA's Security Operations division via electronic mail, either directly or through their supervisors. Submissions are then compiled and reviewed by a single Security Operations official, who generates responses to the questions that have clear answers. However, for submissions for which the appropriate response is not obvious or for submissions that include a suggestion to revise the SOP, this official forwards the submissions to other Security Operations officials for further deliberation. SOP mailbox responses are provided to all TSA airport officials. If TSA headquarters revised a screening procedure based on a mailbox submission, the revision is noted in the mailbox response.

Thirty of the screening changes considered by TSA between April 2005 and December 2005 were proposed by TSA headquarters officials, including

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<sup>1</sup>There were 10 SOP modifications that were proposed both by multiple sources. We attributed 9 of these proposed modifications to each of the relevant sources. TSA did not identify the sources for the 1 remaining modification that was proposed by multiple sources.

<sup>2</sup>[GAO/AIMD-00-21.3.1](#).

Security Operations officials, who are responsible for overseeing implementation of checkpoint screening. According to Security Operations officials, they recommended changes to checkpoint screening procedures based on communications with TSA field officials and airport optimization reviews. Security Operations officials conduct optimization reviews to identify best practices and deficiencies in the checkpoint screening and checked baggage screening processes. As part of these reviews, Security Operations officials may also assess screening efficiency and whether TSOs are implementing screening procedures correctly.

Other TSA headquarters divisions also suggested changes to passenger checkpoint screening procedures. For example, the Office of Law Enforcement recommended that there be an alternative screening procedure for law enforcement officials who are escorting prisoners or protectees. Previously, all armed law enforcement officers were required to sign a logbook at the screening checkpoint, prior to entering the sterile area of the airport. The officials in the Office of Passengers with Disabilities also recommended changes to checkpoint screening procedures. For example, in the interest of disabled passengers, they suggested that TSOs be required to refasten all wheelchair straps and buckles undone during the screening process.

Last, TSA senior leadership suggested 5 of the 92 procedural changes considered by TSA between April 2005 and December 2005. TSA senior leadership also proposed a procedure that would allow TSOs to conduct the pat-down procedure on passengers of the opposite gender at airports with a disproportionate ratio of male and female TSOs.

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# Appendix III: Comments from the Department of Homeland Security

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U.S. Department of Homeland Security  
Washington, DC 20528



**Homeland  
Security**

March 6, 2007

Ms. Cathleen A. Berrick  
Director, Homeland Security and Justice Issues  
U.S. Government Accountability Office  
441 G. Street, NW  
Washington, DC 20548

Dear Ms. Berrick:

Thank you for the opportunity to comment on the draft report: **“Risk, Experience, and Customer Concerns Drive Changes to Airline Passenger Screening Procedures, but Evaluation and Documentation of Proposed Changes Could be Improved (GAO-07-57SU).”** The Department of Homeland Security (DHS) and Transportation Security Administration (TSA) appreciate GAO’s work in planning, conducting, and issuing this report.

The Department and TSA appreciates GAO’s conclusion that we have implemented a reasonable approach to modifying passenger checkpoint screening procedures through our assessment of risk factors, the expertise of TSA employees, and input from the traveling public and other stakeholders, as well as our efforts to balance security, operational efficiency, and customer service while evaluating proposed changes. In its report, GAO recommends that TSA improve its methods to evaluate and document changes to passenger screening procedures. TSA agrees that there is opportunity for improvement and will continue to take steps to use sound evaluation methods, when possible, to assess the impact of proposed changes. However, the urgency and nature of some procedural changes may not always lend themselves to a resource consuming (time and personnel) evaluation.

Above all, TSA must remain flexible and able to respond quickly to disrupt new terrorist threats. TSA demonstrated such flexibility in August 2006, when the challenge presented by the United Kingdom Terrorist Bomb Plot caused us to quickly and effectively implement important changes to airport security. In just a few hours, literally overnight, TSA rolled out a new airport security checkpoint process at every airport in the Nation. We trained tens of thousands of Transportation Security Officers (TSOs) and rewrote dozens of regulations affecting aviation security around the globe. In addition, TSA effected changes world-wide for every flight bound for the United States and silently (as always) deployed hundreds of Federal Air Marshals to saturate affected flights flown by U.S. carriers. TSA accomplished all of this while maintaining effective security – that

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demonstrates flexibility. TSA will continue to be challenged by other terrorist plots and will be prepared for the unknown new threat as well as address all the known threats; this puts a priority on flexibility.

In December 2005, TSA also demonstrated the flexibility necessary to protect the Nation's transportation system by making small but important changes to the Prohibited Items List, which allowed TSOs to focus more effort on detecting high-risk threats which have the ability to cause catastrophic damage to an airplane in flight (e.g., Improvised Explosive Devices [IEDs]). GAO, in its report, states that TSA's data collection and analysis efforts, in this case, do not allow TSA to conclude with certainty that these changes did indeed free-up TSO resources. TSA disagrees as our decision to remove small scissors and small tools from the Prohibited Items List was not only based on an analysis of data but was also firmly rooted in our assessment of risk, professional judgment, and experience. For example, when considering the changes, experienced Federal Security Directors (FSDs) who were interviewed unanimously indicated the changes would free up TSO resources.

To further support this theory, TSA Headquarters officials visited several airports, to observe first hand, the type of items surrendered by passengers. TSA also considered standard values for how long it takes to conduct a bag search along with data indicating how many sharp items are collected. While this particular data collection and analysis effort may not have been methodologically rigorous, it did serve to provide us with insights regarding the type and quantity of items collected at the passenger checkpoint. Perhaps most importantly, post-change interviews with TSOs (TSA personnel with the most hands-on experience concerning prohibited items) confirmed this change did indeed save time. In sum, data collection and analysis, along with several other factors, played a role in TSA's decision-making process.

GAO further states in its report that TSA could use a methodology employed by Customs and Border Patrol (CBP) to assess whether proposed screening procedures enhance detection. GAO suggests that, like CBP, TSA could compare items collected from passengers identified by TSA's program for Screening Passengers by Observation Technique (SPOT) to those collected from a random sample of passengers. TSA agrees in principle, that measuring SPOT effectiveness, if possible, may provide valuable insights. However, CBP's behavior detection program seems to be fundamentally different from TSA's SPOT program; consequently, such a comparison may not be valid.

CBP and TSA are seeking to identify two completely different types of threats: (1) CBP hopes to identify passengers who are attempting to smuggle contraband or attempting to enter the country illegally; while (2) TSA, on the other hand, seeks to identify passengers who intend to cause catastrophic harm onboard an aircraft. In CPB's case, possession of illegal contraband or fraudulent documentation is the target variable. Possession of a prohibited item is not a good measure of SPOT effectiveness, in TSA's case, since it does not include those individuals who would plot to cause harm or commandeer an aircraft without the benefit of a prohibited item. In addition, possession of a prohibited item is often an oversight and not an intentional act. TSA's SPOT

program makes a significant contribution to passenger security as a deterrent. As GAO indicates in its report, deterrence is not readily measured.

GAO also indicates that TSA could have used covert testing to measure the effectiveness of the Unpredictable Screening Process (USP). The basic premise of USP is based on risk and current understanding of terrorist tradecraft. For example, it is thought that terrorists wait for opportunities where the likelihood of success is greater. Based on historical intelligence, we know that terrorists conduct pre-operational surveillance prior to an attack in an attempt to understand all aspects of the security processes and use that knowledge against their enemy. USP is a mechanism which effectively adds a layer of unpredictability to the screening process and ensures the terrorists cannot use standardized and predictable security protocols against us. By its very design, the TSO understands exactly what process they should use at a given time, but the terrorist will not be able to exactly predict the type of screening they will undergo. Because the security process is now unpredictable, terrorists are prevented from ever developing the necessary confidence they require for their efforts to succeed. Deterrence is not measured through covert testing.

Finally, TSA appreciates GAO's conclusion that it is important for TSA to continue taking steps, such as automating Performance Accountability and Standards System (PASS) data-entry functions, to address resource challenges. TSA has organized a multi-disciplined team of subject matter experts (SMEs) under one umbrella, the Optimization Program, to help FSDs improve screening efficiency, effectiveness, and address other resource challenges. SMEs scrutinize aspects of the operation, such as screening processes, manpower allocation, equipment mix, and safety programs. The optimization team develops recommendations and then works with the FSD to ensure implementation achieves the desired efficiency or effectiveness goal.

In summary, TSA is committed to protecting the security of the traveling public. To this end, TSA must be flexible and able to adapt quickly to changes in terrorist tactics. When possible, TSA will continue to supplement our assessment of risk, professional judgment, and experience with empirical data and analysis, while optimizing resources and screening operations.

The following represents our responses to the recommendations.

**Recommendation 1:** When operationally testing proposed SOP modifications, develop sound evaluation methods, when possible, that can be used to assist TSA in determining whether proposed SOP procedures would achieve their intended result, such as enhancing TSA's ability to detect prohibited items and suspicious persons and freeing up existing TSO resources that could be used to implement proposed procedures

**Concur:** TSA will continue to perform operational testing of proposed SOP modifications, when practicable, as a method for determining their impact on passenger checkpoint security effectiveness and efficiency. Moving forward, TSA intends to make

better use of generally accepted research design principles and techniques. Some examples include:

- clearly defined testing protocols and success criteria (independent and dependent variables);
- test objectives which are directly linked to program objectives;
- pre-test/ post-test and longitudinal studies;
- control groups to isolate the effect of chance and other confounding variables;
- use of:
  - representative samples,
  - randomization, and
  - statistical analysis.

TSA Office of Security Operations has already begun partnering with other agency SMEs to ensure operational tests are well designed, executed, and produce results that are scientifically valid and reliable. Of course, the need to dispatch SOP changes to combat an immediate terrorist threat may, at times, preclude operational testing of new procedures.

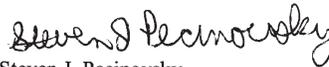
**Recommendation 2:** For future proposed SOP modifications that TSA senior leadership determines are significant, generate and maintain documentation to include, at minimum, the source, intended purpose, and reasoning behind decisions to implement or not implement proposed modifications.

**Concurs:** As noted in this report, TSA maintained the recommended documentation for the majority of the SOP issues studied by GAO. TSA intends to raise this standard by establishing additional processes and controls to ensure that all SOP change proposals that could have a significant impact on resources or the integrity of the process of ensuring security are documented as recommended. These controls are being implemented in the current SOP change cycle. For each level of review (consolidation, interagency staff, and senior decision making), documentation includes the source, intent, and reasoning for implementing or rejecting those SOP change proposals determined to be significant by senior leadership.

TSA has already begun making progress implementing GAO's recommendations. This progress demonstrates our commitment to continual improvement to ensure the security of the traveling public.

Thank you for the opportunity to provide comments to the draft report.

Sincerely,



Steven J. Pecinovsky  
Director Departmental GAO/OIG Liaison Office

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# Appendix IV: GAO Contact and Staff Acknowledgments

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## GAO Contact

Cathleen A. Berrick, (202) 512-3404 or [berrickc@gao.gov](mailto:berrickc@gao.gov)

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## Acknowledgments

In addition to the person named above, Maria Strudwick, Assistant Director; David Alexander; Christopher W. Backley; Amy Bernstein; Kristy Brown; Yvette Gutierrez-Thomas; Katherine N. Haeberle; Robert D. Herring; Richard Hung; Christopher Jones, Stanley Kostyla; and Laina Poon made key contributions to this report.

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# GAO Related Products

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*Aviation Security: TSA's Staffing Allocation Model Is Useful for Allocating Staff among Airports, but Its Assumptions Should Be Systematically Reassessed.* [GAO-07-299](#). Washington, D.C.: February 28, 2007

*Aviation Security: Progress Made in Systematic Planning to Guide Key Investment Decisions, but More Work Remains.* [GAO-07-448T](#). Washington, D.C.: February 13, 2007.

*Homeland Security: Progress Has Been Made to Address the Vulnerabilities Exposed by 9/11, but Continued Federal Action Is Needed to Further Mitigate Security Risks.* [GAO-07-375](#). Washington, D.C.: January 24, 2007.

*Aviation Security: TSA Oversight of Checked Baggage Screening Procedures Could Be Strengthened* [GAO-06-869](#). Washington, D.C.: July 28, 2006.

*Aviation Security: TSA Has Strengthened Efforts to Plan for the Optimal Deployment of Checked Baggage Screening Systems, but Funding Uncertainties Remain* [GAO-06-875T](#). Washington, D.C.: June 29, 2006.

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