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AVIATION SECURITY

Challenges Exist in Stabilizing and Enhancing Passenger and Baggage Screening Operations

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February 12, 2004

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Highlights

Highlights of GAO-04-440T, a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

Securing commercial aviation is a daunting task—with hundreds of airports and thousands of flights daily carrying millions of passengers and pieces of baggage. In an effort to strengthen the security of commercial aviation, the Transportation Security Administration (TSA) was created and charged with making numerous enhancements to aviation security, including federalizing passenger and baggage screening and screening checked baggage using explosive detection systems. To assess the progress of passenger and baggage screening operations, GAO was asked to describe TSA's efforts to (1) hire and deploy passenger and baggage screeners, (2) train the screening workforce, (3) measure screener performance in detecting threat objects, and (4) leverage and deploy screening equipment and technologies.

What GAO Recommends

In prior reports, GAO has made numerous recommendations designed to strengthen airport passenger and baggage screening. GAO also have several ongoing reviews related to the issues addressed in this testimony, and will issue separate reports related to these areas at later dates, with additional recommendations as appropriate.

www.gao.gov/cgi-bin/getrpt?GAO-04-440T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Cathleen A. Berrick, (202) 512-8777, Berrickc@gao.gov..

What GAO Found

TSA met its mandate to establish a federal screener workforce by November 2002, but continues to face challenges in hiring and deploying passenger and baggage screeners. Staffing shortages at some airports and TSA's hiring process have hindered TSA's ability to fully staff screening checkpoints without using additional measures, such as overtime. In addition, while TSA has taken steps to enhance its screener training programs, staffing shortages and lack of high-speed connectivity at airport training facilities have made it difficult for screeners at some airports to fully utilize these programs.

TSA has also undertaken several initiatives to measure the performance of passenger screeners in detecting threat objects. These efforts include increasing covert testing at screening checkpoints and conducting annual recertifications of screeners. While TSA is making progress in measuring the performance of passenger screeners, it has collected limited performance data related to its baggage screening operations. However, TSA has begun collecting additional performance data related to its baggage screening operations, and plans to increase these efforts in the future.

TSA also continues to face challenges in deploying and leveraging screening equipment and technologies. TSA deployed Explosive Detection Systems and Explosive Trace Detection equipment to all airports to screen checked baggage. However, TSA has been unable to fully utilize this equipment to screen 100 percent of checked baggage due to screener shortages, and equipment out of service for maintenance and/or repairs. When this equipment is not available, TSA continues to screen checked baggage using alternative means. TSA also has ongoing initiatives designed to increase the efficiency of screening checked baggage, including implementing in-line baggage screening systems and streamlining screening processes.

TSA is also conducting research and development (R&D) activities to strengthen passenger and baggage screening. These efforts are designed to improve detection capability, performance, and efficiency for current technologies, and to develop next generation screening equipment. TSA faces a number of challenges with its R&D program, including balancing funding with competing priorities, and working with other components of the Department of Homeland Security to develop a strategy for merging their R&D programs.

Passenger Screening Checkpoint at U.S. Airport

Source: FAA.

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting me to participate in today's hearing to discuss progress and challenges in airport passenger and baggage screening. Securing commercial aviation is a daunting task—with hundreds of airports, thousands of aircraft, and thousands of flights daily carrying millions of passengers and pieces of baggage. In an effort to strengthen the security of commercial aviation, the President signed into law the Aviation and Transportation Security Act (ATSA) on November 19, 2001.[1] ATSA created the Transportation Security Administration (TSA) and mandated actions designed to strengthen aviation security, including the federalization of passenger and baggage screening at over 440 commercial airports in the United States by November 19, 2002, and the screening of all checked baggage using explosive detection systems.[2] Notwithstanding these efforts, recent reviews and covert testing conducted by us, the Department of Homeland Security's (DHS) Office of Inspector General, and TSA's Office of Internal Affairs and Program Review revealed continuing weaknesses and vulnerabilities in the screening system.

My testimony today focuses on the progress TSA is making in developing and deploying tools to enhance and measure screener performance and the challenges that remain. In particular, my testimony highlights four key areas, including TSA's efforts to (1) hire and deploy passenger and baggage screeners, (2) train the screening workforce, (3) measure screener performance in detecting threat objects, and (4) leverage and deploy screening equipment and technologies. My testimony is based on our prior work and preliminary observations from our ongoing reviews of TSA's passenger and baggage screening programs, and research and development efforts.

[1]Pub. L. No. 107-71, 115 Stat. 597 (2001).

[2]According to TSA, Explosive Detection Systems (EDS) and Explosive Trace Detection (ETD) are the only technologies available to TSA for meeting ATSA's requirement to screen 100 percent of checked baggage using explosive detection systems. EDS operate in an automated mode and use probing radiation to examine objects inside baggage and identify the characteristic signatures of threat explosives. ETD works by detecting vapors and residues of explosives. Human operators collect samples by rubbing bags with swabs, which are chemically analyzed to identify any traces of explosive materials.

In summary:

While TSA met its mandate to establish a federal screener workforce by November 2002, it continues to face challenges in hiring and deploying its screener workforce. To accomplish its security mission, TSA needs a sufficient number of passenger and baggage screeners trained and certified in the latest TSA screening procedures and technology. However, staffing shortages and TSA's hiring process have hindered the ability of some Federal Security Directors (FSD)[3] to provide sufficient resources to staff screening checkpoints and oversee screening operations at their airports.

TSA has taken steps to enhance its training programs for passenger and baggage screeners. In addition to strengthening its basic and recurrent training programs, TSA is also enhancing and standardizing remedial training for screeners who fail covert tests conducted by TSA's Office of Internal Affairs and Program Review. TSA has also established leadership and technical training programs for screening supervisors. Although TSA continues to make progress in this area, staffing shortages and lack of high-speed connectivity[4] at many airport training facilities have made it difficult for screeners to fully utilize these programs and complete required training.

While TSA has undertaken several initiatives to measure the performance of passenger screeners in detecting threat objects, it has collected limited data related to the performance of baggage screeners. In response to its July 2003 Passenger Screener Performance Improvement Study, TSA developed a short-term action plan that identified key actions TSA planned to take to strengthen the performance of passenger screeners. These actions built on several initiatives that TSA already had underway, including enhancing training for screeners and supervisors, increasing covert testing, completing installation of the Threat Image Projection

[3]Federal Security Directors are responsible for overseeing security at each of the nation's commercial airports.

[4]High-speed connectivity refers to broadband access to TSA's field operations training sites and checkpoints.

System (TIP),[5] and conducting annual recertification of screeners. TSA has focused on assessing the performance of passenger screeners, but has collected limited data related to the performance of baggage screeners. However, TSA has begun collecting additional performance data related to its baggage screening operations, and plans to increase these efforts in the future.

Although TSA has made progress in its checked baggage screening operations, it continues to face operational and funding challenges in its efforts to screen all checked baggage using Explosive Detection Systems (EDS) or Explosive Trace Detection (ETD) systems. TSA deployed this equipment to all airports to screen checked baggage, but has been unable to fully utilize this equipment due to screener and equipment shortages and equipment being out of service for maintenance and/or repairs. When EDS and ETD equipment cannot be used, TSA continues to use alternative screening means identified in ATSA,[6] including K-9 teams, manual searches, and positive passenger bag match.[7] TSA has ongoing initiatives to increase the efficiency of screening all checked baggage using EDS and ETD, including the development and construction of in-line baggage screening systems—which streamlines screening processes[8] and airport operations at larger airports. In addition, although TSA is funding research and development (R&D) on several technologies designed to improve the effectiveness of screening checked baggage and passengers for explosives, progress has been delayed due to competing priorities in a tight budget environment.

[5]TIP is designed to test screeners' detection capabilities by projecting threat images, including guns and explosives, into bags as they are screened. Screeners are responsible for positively identifying the threat image and calling for the bag to be searched. Once prompted, TIP identifies to the screener whether the threat is real and then records the screener's performance in a database that could be analyzed for performance trends.

[6]Pub. L. No. 107-71, § 110, 115 Stat. 597, 617, requires the use of alternative means for screening any piece of checked baggage not screened by an explosive detection system. Authorized alternative means include a bag match program, manual search, K-9 explosive detection units, and other means or technology approved by the Under Secretary.

[7]Positive passenger bag match is an alternative means of screening checked baggage, conducted by the airline, which requires that the passenger be on the same aircraft as the checked baggage.

[8]In-line baggage screening systems integrate EDS equipment into airport baggage handling systems to improve the pace of checked baggage screening (i.e., throughput).

Background

The security of the U.S. commercial aviation system has been a long-standing concern. Over the years, numerous initiatives have been implemented to strengthen aviation security. However, as we and others have documented in numerous reports and studies, weaknesses continue to exist. It was due in part to these weaknesses that terrorists were able to hijack four commercial aircraft on September 11, 2001, with tragic results. Concerns continue to exist regarding the security of the aviation system, as evidenced by the recent cancellations of several, mostly transatlantic flights to and from the United States in response to intelligence information regarding specific threats to those flights.

In response to the attacks of September 11th, ATSA mandated specific actions designed to strengthen aviation security, and established ambitious deadlines for completing many of these initiatives. Consequently, TSA initially focused on attempting to meet these deadlines, particularly creating a federalized screener workforce at commercial airports nationwide by November 19, 2002. TSA also focused on screening 100 percent of checked baggage using explosive detection systems by the original deadline of December 31, 2002.[9] These efforts resulted in the deployment of more than 55,000 federal screeners at over 440 commercial airports nationwide by November 19, 2002, as well as the deployment of thousands of EDS and ETD systems.

Virtually all aviation security responsibilities now reside with TSA. Two of the most important of these responsibilities are passenger and checked baggage screening. Passenger screening involves the use of metal detectors, X-ray machines, ETDs, and manual searches to examine passengers and their carry-on baggage to identify threat objects. Checked baggage screening involves the use of EDS, ETDs, K-9 teams, positive passenger bag match, and manual searches to screen checked baggage. Performing these screening functions can be cognitively demanding and difficult for screening personnel.

The results I am presenting today are based on our preliminary observations of TSA's passenger and baggage screening programs and related research and development efforts, based on our ongoing reviews of

[9]Pursuant to the Homeland Security Act, Pub. L. No. 107-296, § 425, 116 Stat. 2135, 2185-86 (2002), the deadline for screening all checked baggage using explosive detection systems was extended until December 31, 2003, at airports the Under Secretary of Transportation for Security determined could not meet the December 31, 2002, deadline due to TSA's inability to deploy sufficient explosive detection systems to those airports.

these areas for this committee. As part of our ongoing reviews of TSA's passenger and baggage screening operations, we interviewed TSA officials and visited 15 category X airports; 11 category I airports; and 7 category II, III, and IV airports.[10] During these visits, we observed screening operations and interviewed FSDs, their staffs, and, at some airports, airport authority and airline officials. We plan to visit additional airports and conduct additional analysis during the remainder of our review, including conducting a survey of all 158 FSDs regarding their screening operations. Additionally, we will continue to assess TSA's and DHS's research and development programs and the views of a panel of security and technology experts that we convened with the assistance of the National Academy of Sciences. We will report on the results of these reviews later this year.

Although Progress Has Been Made, Concerns Remain Regarding Hiring and Deploying the Screener Workforce

Although TSA successfully met its mandate to establish a federal screener workforce by November 2002, it continues to face challenges in hiring and deploying passenger and baggage screeners. To accomplish its security mission, TSA needs a sufficient number of passenger and baggage screeners trained and certified in TSA security procedures and technologies. TSA has acknowledged that its initial staffing efforts created imbalances in the screener workforce and is taking steps to address these imbalances. However, staffing shortages at some airports and TSA's hiring process have hindered the ability of some FSDs to fully staff screening checkpoints without using additional measures, such as overtime and the use of a National Screening Force.[11]

Staffing Shortages Affect Screening Operations

TSA accomplished a significant goal by hiring and deploying more than 55,000 passenger and baggage screeners by November 19, 2002. However, TSA continues to struggle to maintain an adequate number of screeners at airport checkpoints, and has not yet achieved a stable screener workforce. Recognizing these difficulties, TSA has taken several steps to address staffing imbalances—including enhancing its workforce planning efforts, and deploying a National Screening Force to airports with pressing screening needs.

[10]There are five categories of airports—X, I, II, III, and IV. Category X airports have the largest number of enplanements and category IV airports have the smallest number.

[11]TSA's National Screening Force provides screening support to all commercial airports in times of emergency, seasonal demands, or under other special circumstances that require a greater number of screeners than currently available to FSDs.

Screener Imbalances

After meeting its deadline of deploying over 55,000 screeners by November 19, 2002, TSA recognized that its initial efforts created imbalances in the screener workforce, as some airports had too many screeners while others had too few. To address these imbalances, as well as congressional concerns regarding screener-staffing levels, TSA began attempting to right-size its screener workforce. Specifically, TSA established a goal to reduce its screener workforce by 3,000 screeners by June 1, 2003, and an additional 3,000 screeners by September 30, 2003. These reductions were achieved through attrition, voluntary transfers from full to part-time, and involuntary transfers to part-time or terminations based on screeners' scores on competency-based examinations.[12]

Currently, a congressionally imposed staffing cap[13] prohibits TSA from exceeding a screener staffing level of 45,000 full-time equivalents (FTE).[14] Figure 1 shows that based on annualized FTE data, TSA is currently below the 45,000 cap.[15]

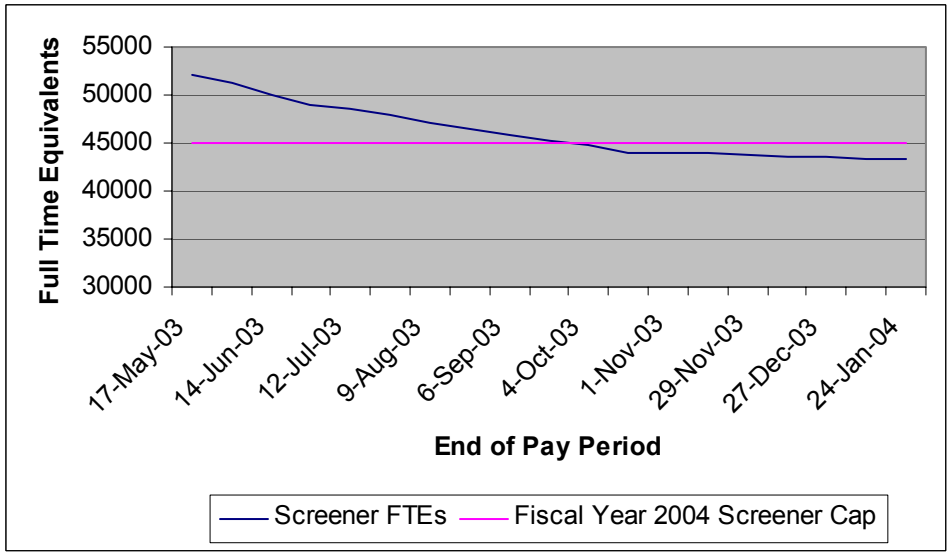
[12]TSA instructed FSDs to use competency-based testing at airports that were over their authorized screener staffing levels as the identification method for involuntary conversions to part-time and reductions-in-force. Based on an airport's staffing plan, the FSD was required to identify the number of screeners and screening supervisors to be converted to part-time or be reduced-in-force. Screeners were ranked based on testing scores. The competency-based tests consisted of two computer-based tests, including image recognition and knowledge of standard operating procedures.

[13]The fiscal year 2004 Department of Homeland and Security Appropriations Act, Pub. L. No. 108-90, 117 Stat. 1137, 1141-42 (2003).

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

[15]According to TSA, an annualized number represents an estimate of the usage of FTEs over the fiscal year assuming that the usage in a given pay period remains constant over all future pay periods.

Figure 1: TSA Full-Time Equivalent Screeners, May 2003 through January 2004



Source: TSA annualized data.

According to TSA officials, TSA has experienced an average annual attrition rate of 14 percent for screeners. However, attrition among the nation's more than 440 commercial airports is sometimes considerably higher. For example, at 8 category X airports visited during our review, FSDs reported that average annual attrition ranged from 15 to 36 percent.

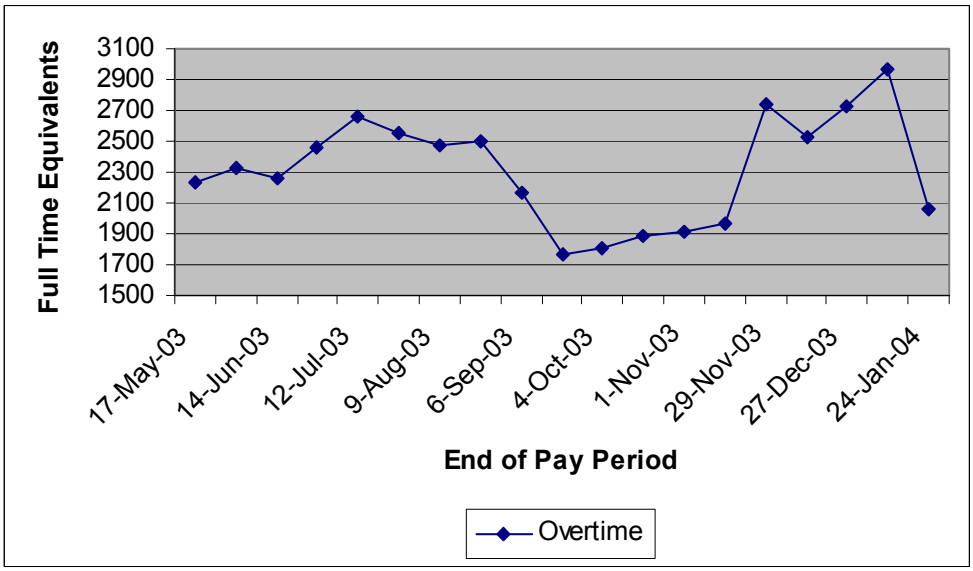
TSA has also experienced difficulties in hiring new staff, particularly part-time staff. FSDs at 11 of the 15 category X airports we visited reported that they were below their authorized staffing levels due to attrition and difficulties in hiring new staff. In addition, 3 of these FSDs noted that they were never successful in hiring up to the authorized staffing levels. FSDs said that some of the factors contributing to their inability to hire and retain screeners were the location of their airport, the lack of accessible and affordable parking and/or public transportation, and the high cost of living.

In addition, FSDs at several of the airports we visited stated that they experienced difficulty in attracting needed part-time screeners, which they believed to be due to low pay and benefits, as well as undesirable hours. Additionally, FSDs stated that very few full-time screeners were interested in converting to part-time status, and TSA officials stated that attrition rates for part-time screeners were considerably higher than those for full-

time screeners. TSA began actively recruiting part-time screeners during the summer of 2003, and continues to recruit part-time screeners at more than 80 airports.

Due to screener shortages, FSDs at 6 of the category X airports we visited stated that they frequently had to require mandatory overtime, particularly during the holiday season, to accomplish passenger and baggage screening functions. FSDs' use of overtime was particularly high during peak summer and holiday travel seasons. Figure 2 shows that between May 2003 and January 2004, TSA used the equivalent of an annualized average of 2,315 full-time-equivalent screeners in overtime hours per pay period (every 2 weeks).

Figure 2: TSA Screener Overtime in Full-Time Equivalents, May 2003 through January 2004



Source: TSA annualized data.

Workforce Planning Efforts

In an effort to right-size and stabilize its screener workforce, TSA hired a consultant in September 2003 to conduct a study of screener staffing levels at the nation's commercial airports. Specifically, the consultant was tasked with:

- evaluating TSA's current staffing methodology and systems to establish a baseline for model development;

- developing a method for collecting and analyzing data to realistically portray specific airport conditions rather than using a generalized large/small airport protocol;
- developing a comprehensive modeling approach with appropriate details to account for the considerable variability that occurs among airports;[16]
- integrating modeling parameters into TSA's screener scheduling system;
- implementing a staffing analysis model to be used as a management tool to determine daily and weekly staffing levels and deploy the model to commercial airports nationwide; and
- delivering user-friendly simulation software that will determine optimum screener staffing levels for each of the more than 440 commercial airports with federal screeners.

TSA expects the consultant's study to be completed in April 2004. In the interim, TSA officials stated that they will continue to review the staffing allocation provided through their internal modeling efforts, which, among other things, assesses air carrier and airport growth patterns, and makes adjustments as appropriate. We will continue to review TSA's efforts to determine appropriate staffing levels for passenger and baggage screeners during the remainder of our review.

National Screening Force

To compensate for screener shortages and to enable operational flexibility to respond to changes in risk and threat, in October 2003, TSA established a National Screening Force to provide screening support to all airports in times of emergency, seasonal demands, or under other special circumstances that require a greater number of screeners than regularly available to FSDs. This force replaced the Mobile Screening Force—a regionally-based force—that was created in early 2002 primarily to support the initial deployment of federal screeners to commercial airports. The National Screening Force currently consists of over 700 full-time passenger and baggage screeners, of which about 10 percent are screening supervisors. Members of the National Screening Force volunteer to participate on the force for a 1-year period. TSA officials stated that while these screeners have a home airport to which they are assigned, they travel to airports in need of screening staff approximately 70 percent of the year.

[16]TSA officials stated that it required the contractor to validate the staffing model using statistical samples of all staff and equipment operations at all category X airports and as many category I, II, III, and IV airports as necessary.

TSA officials stated that they determine where to deploy members of the National Screening Force based on four priorities. The highest priority is given to those airports that need additional screeners in order to be able to screen 100 percent of checked baggage using EDS and ETD. The second priority is given to small airports that have never met their authorized screener staffing levels and have no permanent screeners. TSA officials stated that several small airports have screening checkpoints that are entirely staffed by the National Screening Force. They also stated that some National Screening Force staff are deployed to airports, particularly small airports, where they are only needed on a part-time basis. The third priority is given to airports that are so understaffed that significant screening delays would occur without additional staff. Finally, the fourth priority is given to those airports with peak seasonal needs, such as Palm Springs, airports that have a shortage of female passenger screeners;[17] and airports offering new commercial service. Additionally, when DHS recently increased the threat condition from yellow (elevated) to orange (high),[18] TSA reportedly redeployed about 50 percent of the National Screening Force to airports determined to be at a higher risk based on intelligence data.

TSA is also currently drafting standard operating procedures for the National Screening Force. We will continue to examine TSA's use of the National Screening Force during the remainder of our review.

TSA's Hiring Process Not Fully Responsive to FSD Needs

TSA's hiring process is designed to ensure that its hiring practices are standardized and consistent throughout all airports. However, this process has hindered the ability of some FSDs to adequately staff passenger and baggage screening checkpoints. Several FSDs we interviewed expressed concern that TSA's hiring process was not responsive to their needs, and wanted to have more input in the hiring process. These FSDs faced screener shortages that hindered their screening capability.

[17]TSA's standard operating procedures require that a screener of the same gender as the passenger conduct secondary searches (i.e., hand wanding and pat downs) of the passenger.

[18]DHS's Homeland Security Advisory System consists of 5 threat conditions, ranging from low (green) to severe (red).

To ensure consistency in its hiring process, TSA headquarters manages hiring centrally through its Aviation Operations and Human Resources offices. In general, the process includes the following steps.

- FSDs identify their need for additional passenger or baggage screeners, within their authorized allocation of screeners, and request headquarters to initiate the hiring process.
- Aviation Operations reviews and prioritizes each request in consultation with FSDs.
- Human Resources develops a hiring plan that identifies a schedule of hiring events – from vacancy postings to the establishment of centers at which the applicants' skills are assessed.[19]
- A recruiting contractor receives and assesses all screener applications to ensure the applicants meet the basic requirements for employment, including U.S. citizenship and specific education and work experience. All applicants that meet the minimum qualifications are invited to schedule themselves for the assessment process.[20]
- Upon successfully completing the assessment process, the recruiting contractor sends the list of qualified applicants to TSA's hiring/personnel contractor responsible for making job offers.
- The hiring contractor schedules the candidates for orientation and training once they have accepted the offers.

Many of the FSDs we interviewed expressed concern with the lack of a continuous hiring process to backfill screeners lost through attrition, and their lack of authority to conduct hiring on an as needed basis. The FSDs also complained of the time lag between their request for additional staff

[19]An assessment center is a temporary testing site that TSA's hiring contractor assembles to conduct assessments of screener applicants. The centers are generally constructed at locations such as hotels and TSA training facilities that are in close proximity to the airport(s) where FSDs have requested additional staff.

[20]The assessment process consists of three phases. Phase I includes three computer-based tests (1) the English Proficiency Test; (2) the Screener Object Recognition Tests, which assesses an applicant's ability to identify an X-ray images through visual observation and identification and mental rotation; and (3) the Aviation Security Screener Employment Test, which evaluates interpersonal skills such as customer service and dependability and work values. Applicants who pass Phase I of the assessment process are scheduled to attend Phase II, which includes (1) a structured interview; (2) physical ability tests, such as luggage lift and baggage search; (3) a medical examination such as vision, color vision, hearing, physical coordination, and motor skills; and (4) a drug test. Applicants who pass Phase II proceed to Phase III, which entails a background investigation including credit and criminal checks. TSA officials reported that approximately 8 percent of applicants pass both the Phase I and II assessments, and about 90 percent of applicants pass Phase III. Officials further reported that nearly 80 percent of offers made are accepted.

and having trained and certified screeners on board. FSDs at 4 of the category X airports we visited stated that the time lag between their request for additional staffing and the opening of an assessment center took several months. For example, one FSD stated that in response to continued attrition at his airport, he notified TSA in advance that additional screeners would be needed before the peak summer travel season. However, an assessment center was not opened until mid-June and the initial training did not begin until July. The FSD reportedly had to rely on the Mobile Screening Force and overtime to accommodate the demand during the peak summer season. This same FSD also stated that the lengthy hiring process limited his ability to address screener performance issues, such as absenteeism or tardiness, and contributed to screener complacency because screeners were aware that they were unlikely to be terminated due to staffing shortages. In another example, an FSD at one large airport found it difficult to fill the more than 100 part-time approved screener positions because the nearest assessment center was too far away for local applicants to be processed.

Several FSDs we interviewed also stated that not all of the applicants who were offered positions showed up for initial basic screener training. For example, in November 2003, at one large category X airport, the FSD reported that 80 individuals who accepted screener positions were scheduled to report for basic screener training, but following orientation, only 15 individuals (less than 20 percent) reported for training. TSA headquarters reported that an average of 13 percent of screeners who are hired fail to attend basic screener training.[21]

FSDs also expressed concern regarding the lack of input they had during the hiring process. Specifically, they stated that they do not have a role in reviewing applications, interviewing applicants, or making hiring decisions. In response to these concerns, TSA officials reported that they plan to redesign and streamline their hiring process, particularly the assessment center process (Phase II), to allow for more involvement by FSDs and their staff. Specifically, officials reported that they are beginning to (1) ensure that the recruiting contractor includes the FSD in recruitment planning, including obtaining input regarding where and how the contractor recruits; (2) allow FSDs to participate with the contractor in the structured interview of the candidates during Phase II of the hiring

[21]TSA attempts to contact hired screeners who do not show up for basic screener training, and reschedule training when possible.

process; and (3) ensure that FSDs swear in the candidates and provides organizational briefings on their first day of orientation. Officials also reported that they plan to establish an advisory council of FSDs to help guide the piloting and implementation of this new process. The goal of these efforts is to make the hiring process more responsive to the wide range of airports' needs while ensuring efficiency and quality. We will continue to review these initiatives as part of our ongoing review of TSA's process for hiring and deploying passenger and baggage screeners.

TSA Has Enhanced Its Screener Training Programs, but Access to Programs Is Sometimes Limited

TSA has taken steps to enhance its training programs for passenger and baggage screeners. However, staffing shortages and lack of high-speed connectivity[22] at airport training facilities have made it difficult for screeners to fully utilize these programs. Specifically, TSA recently revamped its screener training program to include three main components: (1) dual training for both passenger and baggage screeners (replaces basic screener training); (2) recurrent (skills refresher) screener training; and (3) technical screener training/certification for EDS.[23] In addition to strengthening its basic and recurrent training programs, TSA is also enhancing and standardizing remedial training for screeners who fail a covert test conducted by TSA's Office of Internal Affairs and Program Review. Despite these efforts, however, FSDs at 5 of the 15 category X airports we visited stated that ensuring screeners received required training continued to be a challenge.

Dual Passenger and Baggage Screener Training

As required by ATSA, TSA established a basic screener training program comprised of a minimum of 40 hours of classroom instruction and 60 hours of on-the-job training for passenger and baggage screeners. The initial basic screener training courses were updated at the end of 2003, respectively, to incorporate changes to standard operating procedures. In addition to these updates, TSA officials stated that they recently developed a new basic screener training program, "dual function screener training," to address technical aspects of both passenger and baggage screening. This training will utilize modular courses to provide skills refresher (recurrent) training or to cross-train screeners, such as refreshing baggage screening skills for a screener who has worked predominately as a

[22]High-speed connectivity refers to broadband access to TSA's field operations training sites and checkpoints.

[23]TSA plans to develop other certifications as new technologies are utilized and integrated into the screening process.

passenger screener. TSA officials reported that beginning in April 2004, all newly hired screeners will receive dual function screener training in order to provide FSDs with the flexibility to staff them as either passenger or baggage screeners.

Recurrent Training

Comprehensive and frequent training is key to passenger and baggage screeners' ability to detect threat objects. TSA requires passenger and baggage screeners to participate in 3 hours of recurrent training per week, averaged over each quarter. One hour is required to be devoted to x-ray image interpretation, and the other 2 hours on screening techniques or reviews of standard operating procedures.

We reported in September 2003 that TSA had not fully developed or deployed a recurrent training program for passenger screeners.[24] Since then, TSA has developed 12 recurrent training modules for passenger and baggage screeners. Two of these modules have been deployed to airports nationwide,[25] while 9 additional modules are expected to be deployed by March 2004. The final module, a Web-based x-ray image interpretation tool, is scheduled for implementation in April 2004.

As we reported in September 2003, many of the passenger screeners and supervisors we interviewed expressed the need for recurrent training.[26] Screeners were particularly interested in receiving additional training related to recognizing x-ray images of threat objects, and also identified an interest in more realistic training for the detection of improvised explosive devices. FSDs and training coordinators also emphasized that screeners needed to receive more hands-on training using threat simulators and emulators. TSA headquarters also identified these training needs as part of a study of passenger screener performance, and developed and deployed training tools to help address these needs.[27] For example, TSA officials

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

[25]The 2 completed modules are videos that provide training on procedures for conducting handheld metal detector, pat down, and manual bag searches.

[26]As we did not select statistical samples of passenger screeners and supervisors to interview, the views of those we interviewed should not be considered representative of the views of all screeners and supervisors at the airports we visited.

[27]While the study was focused on passenger screening, TSA officials stated that many of the performance issues identified also pertained to baggage screening.

reported that they provided every airport with at least one Modular Bomb Set kit and one weapons training kit. These Modular Bomb Sets and weapons training kits are intended to fill an identified gap in training by allowing screeners to touch and feel the threat objects that they are looking for. TSA also instituted a training program called "Threat In the Spotlight" that provides screeners with the latest in threat information regarding terrorist attempts to get threat objects past screening checkpoints.

TSA is also in the process of developing specialized certification training for technologies used by passenger and baggage screeners. TSA has developed only one course, for EDS use, but plans to develop other certifications and courses as new technologies are utilized and integrated into the screening process. Additionally, in October 2003, TSA fielded an Online Learning Center—a Web-based tool with 366 self-guided training courses available to all screening staff. The courses provided on the Online Learning Center Web site capture common developmental needs identified by TSA. The Online Learning Center also enables screeners to view the list of required and optional training courses and materials, review their training records, and track their training progress.

Remedial Training

Consistent with ATSA, TSA requires remedial training for any passenger or baggage screener who fails an operational test, and prohibits screeners from performing the screening function related to the tests they failed until they successfully complete the training.[28] FSDs must certify that screeners identified as requiring remedial training complete the training before they can perform the screening function identified as a performance weakness.

TSA is in the process of enhancing and standardizing remedial training requirements required after failure of covert operational tests. Program enhancements will provide specific guidance regarding materials to be reviewed during remedial training and standardize the practice of demonstrating proper techniques and procedures in the area of deficiency noted during the failed test.

[28]Screening supervisors and managers may also require screeners to participate in corrective action training based on their observations of performance deficiencies, such as failure to follow a standard operating procedure.

Supervisory Training

TSA's Office of Internal Affairs and Program Review identified a lack of supervisory training as a cause for screener testing failures. In addition, both FSDs and TSA headquarters officials have recognized the need to enhance the skills of screening supervisors through supervisory training. As we reported in September 2003, TSA had begun working with the Department of Agriculture (USDA) Graduate School to tailor USDA's off-the-shelf supervisory course to meet the specific needs of TSA's screening supervisors. According to TSA, 500 screening supervisors participated in the course during the fourth quarter of fiscal year 2003.[29] Since then, TSA reportedly has sent an additional 1,500 of its approximately 3,600 screening supervisors to the enhanced USDA Graduate School supervisory course, and expects all screening supervisors to have received this training by April 2004. TSA officials also stated that they intend to schedule recently promoted supervisors to attend the USDA Graduate School supervisory course after March 2004 if they had not yet attended, and plan to extend the course offering to include screening managers, once screening supervisors are trained.

In addition to the USDA Graduate School supervisory course, TSA officials reported that the agency plans to have a Web-based technical training course–required for all screening leads, supervisors, and managers–by the end of February 2004. This course will cover technical issues such as resolving alarms at screening checkpoints. Additionally, TSA's Online Learning Center includes over 60 supervisory courses designed to develop leadership and coaching skills. TSA officials noted that they focused their efforts on training supervisors that were initially hired into supervisory roles, rather than internally promoted supervisors.

Challenges Exist in Providing Screeners Access to Available Training

While TSA has begun developing and fielding recurrent training modules to airports, staffing shortages and a lack of high-speed connectivity at airports have made it difficult for all screeners to access these courses. Specifically, due to staffing shortages, FSDs at 5 of the 15 category X airports we visited stated that it was difficult, if not impossible, to comply with the requirement that screeners receive 3 hours of recurrent training each week, averaged over a 3-month period. FSDs stated that due to staffing shortages, they were unable to let screeners take this training because it would impact the FSDs' ability to provide adequate screener

[29]The USDA course covers topics related to supervising staff within the federal government.

coverage. Consequently, screeners received an average of only 3 hours of recurrent training per month. In an attempt to ensure screeners receive required training, several FSDs provided training through overtime, or established training relief teams with the sole purpose of staffing screening checkpoints while screeners participated in training.

The lack of high-speed connectivity at airport training facilities has also limited access to TSA's training tools. TSA's Online Learning Center was established to provide passenger and baggage screeners with high-speed access to over 350 training courses. However, TSA did not begin deploying high-speed connectivity to its training sites and checkpoints until May 2003. Currently, TSA has reportedly provided high-speed connectivity to 71 airport locations, including training sites where 927 training computers are fully connected.[30] TSA expects to install high-speed connectivity at up to 81 additional airports by the end of fiscal year 2004. Until high-speed connectivity is fully achieved, TSA plans to continue to distribute new training products using multiple delivery channels, including written training materials and CD-ROMs.

TSA Continues to Strengthen its Efforts to Measure Screener Performance in Detecting Threat Objects

TSA has undertaken several initiatives to measure the performance of passenger screeners in detecting threat objects. However, TSA has collected limited data related to the performance of baggage screeners. In July 2003, TSA completed a study of the performance of its passenger screening system, which identified numerous performance deficiencies. These deficiencies were determined to be caused by a lack of skills and knowledge, low motivation, ineffective work environment, and wrong or missing incentives. In response to this study, TSA developed a short-term action plan that identified key actions TSA plans to take to strengthen the performance of passenger screeners. These actions build on several initiatives that TSA already had underway, including enhancing training for screeners and supervisors, increasing covert testing conducted by TSA's Office of Internal Affairs, completing installation of the TIP, and conducting annual recertifications of screeners. While TSA is making progress in each of these areas, it has collected limited data on the performance of its baggage screening operations. Officials stated that they have collected limited performance data related to baggage screeners due

[30]TSA defines fully connected as a training computer with the new network image installed and connected to the TSA broadband network.

to their focus on passenger screener performance, but plan to collect additional performance data in the future.

Performance Improvement Study and Short-Term Action Plan

In July 2003, TSA completed a Passenger Screener Performance Improvement Study designed to identify root causes for gaps between the current performance of passenger screeners and TSA's desired performance—defined as 100 percent interception of prohibited items coming through screening checkpoints. The study identified many of the performance deficiencies that FSDs reported to us during our site visits to more than 30 airports, including inadequate staffing and poor supervision of screeners. While the study was focused on passenger screening, TSA officials stated that many of the performance issues cited also pertained to baggage screeners. TSA officials stated that they plan to assess the performance of baggage screeners after recommendations from the performance improvement study relative to passenger screening have been implemented.

In October 2003, to address passenger screener performance deficiencies identified in the Screener Performance Improvement Study, TSA developed a "Short-Term Screening Performance Improvement Plan." This plan included nine action items that TSA plans to pursue to provide tangible improvements in screener performance and security, and identified 6 week, 3 month, 6 month, and, in some cases, milestones of 1 year or more. These action items include increasing covert testing at screening checkpoints, completing installation of TIP at all airports, enhancing screener training, and strengthening supervisor's skills through leadership and technical training. TSA is also establishing a longer-term plan that addresses identified deficiencies, such as the need to establish adequate training facilities at airports and to reconfigure checkpoints to eliminate screener distractions. Table 1 provides a summary of TSA's short-term action items for strengthening passenger screener performance.

Table 1: Summary of TSA's Short-Term Action Items for Strengthening Passenger Screener Performance

Category		Action Item	Description	Benefit
People				
	1	Increase FSD support and accountability	Hold FSDs accountable for screening performance and delivery of security	Management accountability is driven down to the local airport FSD performance is linked to screener performance, creating incentives for maintaining and improving security
	2	Enhance training	Provide ongoing training for screeners and supervisors to maintain their skills and provide new skills and techniques based on evolving threats and lessons learned	Maintains and improves knowledge base of screeners Ensures proper oversight by supervisors Ensures that screeners are capable of addressing evolving threats
	3	Increase Internal Affairs covert testing	Increase the frequency of TSA covert testing	Improved identification of systemic vulnerabilities in airport security systems Immediate implementation of limited remedial actions
	4	Continue to pursue human performance improvements	Better understand reasons and causes for human errors and interactions with technology in order to identify opportunities for performance improvements with a goal of identifying optimum work conditions	Reduces human-based errors Increases workforce morale and working conditions, leading to improved performance
Technology				
	5	Continue to identify screening technology improvements	Continue to research alternative technologies and seek short-term technological solutions, especially for potential vectors.	Identifies threats more accurately and quickly Decreases number of false positives from equipment
	6	Finish installing TIP	The TIP system is a series of 2,400 images of threat objects that can be automatically fed into X-Ray machines during actual screening	Maintains alertness of screeners Identifies individual screener performance issues
	7	Expedite high-speed connectivity to checkpoints and training computers	Connect all TSA offices, checkpoints and screening equipment (X-rays, EDS machines) to the internet in order to automate and improve processes that are currently done manually or not at all	Provides immediate feedback on and response to screener performance issues Improves communication with managers in the field
Process				
	8	Refresh aviation operations policy, procedures and practice	Conduct a thorough and expedited review of all policies and procedures developed during the rollout of TSA with a focus on increasing screening performance and capabilities	Maintains "freshness" of standard operating procedures based on most recent intelligence about security threats Removes or updates outdated or unnecessary screening techniques based on lessons learned
	9	Improve workforce management	Determine the optimal workforce staffing levels based on latest passenger flows and other factors	Maximizes utilization of existing resources

Source: TSA

Covert Testing

TSA's Office of Internal Affairs and Program Review conducts unannounced covert tests of passenger and baggage screeners to assess their ability to detect threat objects and adherence to TSA-approved procedures. These tests, in which TSA undercover agents attempt to pass threat objects through screening checkpoints, are designed to identify systematic problems affecting the performance of screeners related to their adherence to standard operating procedures and handling of equipment. TSA's testing to date has identified weaknesses in the ability of passenger and baggage screeners to detect threat objects.

In November 2003, we reported that the Office of Internal Affairs and Program Review had conducted 733 covert tests at 92 airports of passenger screeners at screening checkpoints.[31] Since then, TSA has conducted an additional 362 passenger screening checkpoint tests through January 17, 2004, for a total of 1,095 tests, and estimates that it will double the number of tests conducted during fiscal year 2004. However, even with the doubling of these tests, only a small percentage of the screener workforce is subject to a covert test.

TSA initially focused most of its resources on testing passenger rather than baggage screeners. While TSA began conducting covert tests of passenger screeners in September 2002, it did not begin conducting covert tests of checked baggage screeners until January 2003—after Congress's initial deadline for 100 percent screening of checked baggage using explosive detection systems had passed. Between January 2003 and September 2003, TSA conducted checked baggage tests as part of the Computer-Assisted Passenger Prescreening selectee testing protocol.[32] In November 2003, TSA developed a protocol specifically designed to test checked baggage. From January 2003 through January 17, 2004, TSA conducted 192 checked baggage tests at 128 airports, and plans to increase the number of checked baggage tests it conducts this fiscal year. We plan to review the Office of Internal Affairs and Program Review's covert testing in more detail during the remainder of our reviews.

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

[32]The Computer Assisted Passenger Screening System is a stand-alone application residing in an air carrier's reservation system that analyzes certain behavioral patterns to score and calculate each passenger's risk level for determining the appropriate level of screening.

Threat Image Projection System

Another key source of information on screener performance in detecting threat objects is the TIP system, which places images of threat objects on the X-ray screen during actual operations and records whether screeners identify the threat objects. TIP was shut down immediately following the September 11th terrorist attacks due to concerns that it would result in screening delays and panic, as screeners might think that they were actually viewing threat objects. Recognizing that TIP is a key tool in maintaining and enhancing screener performance, TSA began reactivating and expanding TIP in October 2003. Additionally, TSA has increased the number of TIP-ready X-ray machines at passenger screening checkpoints from about 1,300 in October 2003 to over 1,770 as of January 20, 2004. In January 2004, TSA also reported that it had installed a new library of 2,400 threat images on all existing TIP ready X-ray machines—a significant increase from the 200 images the Federal Aviation Administration had in place. TSA has ordered an additional 30 TIP-ready X-ray machines and expects TIP to be 100 percent operational by April 2004.

With an operational TIP program, FSDs have the capability to query and analyze passenger screening performance data in a number of ways, including by individual screeners, checkpoints, terminals, and airports. However, until high-speed connectivity is available at screening checkpoints, collecting this information for reporting and analysis purposes will continue to be cumbersome.[33] For example, at airports where high-speed connectivity is not available, TIP data have to be downloaded onto a disk and mailed to a remote location where they are uploaded for analysis.

Although TIP is available to measure the performance of and train passenger screeners, it is not currently available for baggage screeners. TSA officials stated that they are currently working to resolve technical challenges associated with using TIP for checked baggage screening on EDS machines and have started EDS TIP image development.

Annual Recertification Program

ATSA requires that TSA collect performance information on all passenger and baggage screeners by conducting an annual proficiency evaluation to ensure each screener continues to meet all qualifications and standards related to the functions that he or she performs. To meet this requirement, TSA established an annual recertification program. Currently, there are

[33]TSA began deploying high-speed connectivity to screening checkpoints in May 2003.

two parts to recertification: a knowledge and skills assessment program and a final rating on a screener's annual assessment. The knowledge and skills assessment is comprised of three modules: (1) knowledge of standard operating procedures, (2) image recognition, and (3) a practical demonstration of skills. To be certified, a passenger screener must pass all applicable modules of the knowledge and skills assessment program and have a rating of "met" or "exceeded" standards on a screener's annual assessment. However, baggage-only screeners are not required to complete the image recognition test.[34] If a screener does not meet the recertification requirements, he/she is not certified and may not continue employment as a screener.[35] According to TSA officials, approximately 200 screeners have been terminated to date for failure to pass the recertification program.

TSA began implementing its recertification program in October 2003, and expects to complete testing at all airports in March 2004.[36] As of January 30, 2004, TSA reportedly had completed modules one and two of its annual screener recertification program at 100 percent of federalized airports, and had completed module three at 50 percent of these airports. TSA does not have a recertification track specifically for cross-trained screeners. However, TSA officials stated that they plan to establish a dual functioning screener recertification track for the 2004-2005 recertification cycle. Currently, all screeners who are cross-trained and actively performing both passenger and baggage screening functions are considered passenger screeners for the purpose of recertification. However, the current recertification program ensures that cross-trained screeners pass the image interpretation test for x-ray threat image interpretation, as well as the ETD system and manual bag search, which are also performed in checked baggage screening. We will continue to examine TSA's progress in administering its annual recertification program during the remainder of our reviews.

[34]Checked baggage screeners will not recertify on EDS as part of the current recertification program. EDS is a separate certification program under development. The need for other skills or equipment-certifications is under consideration for future certification programs.

[35]Screeners that fail any module will receive study time, remediation, and one retest opportunity.

[36]At the time the recertification testing began, TSA considered about 28,000 screeners as having already completed the first two components of the knowledge and skills assessment because they successfully passed competency tests TSA administered at many airports as part of a screener workforce reduction effort.

Performance Management Information System

TSA's Performance Management Information System (PMIS) is designed to collect, analyze, and report passenger and baggage screening performance data. While PMIS does not contain information on screener performance in detecting threat objects, it collects information on operational performance, 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.

TSA recently surveyed FSDs or members of their staff who use PMIS by inputting or analyzing data, to solicit their feedback on the usefulness of the system.[37] PMIS users who responded to the survey identified several areas for improvement, including additional capabilities, such as the ability to customize reports, and enhanced technical features, such as split screen report viewing and data entry. TSA reported that, to the extent possible, they plan to use feedback from the survey to make enhancements to the system.

TSA provides FSDs and other PMIS users with monthly PMIS system updates that include new functionalities and improvements to the system. These enhancements have allowed TSA to collect additional information with which to better analyze its operations. For example, when TSA began collecting employee census data in June 2003, it only collected information on the number of screeners. TSA is now able to collect more detailed information on screeners including the number of part-time screeners, hours worked per week, and screener gender. TSA also developed pilot programs in order to determine the usefulness of PMIS data before making systemwide changes. For example, TSA began to collect additional data regarding checked baggage screening operations during the spring of 2003 at 36 airports. Among other things, the 36 airports collect data on the number of checked bags screened, number of prohibited items confiscated, and number of law enforcement officer interventions. TSA is evaluating whether to expand collection of baggage screening data to additional airports. TSA plans to continuously enhance the system as it learns what data are needed to best manage the agency.

[37]The PMIS user survey was conducted in July 2003 and had a response rate of 21.9%. Given this low response rate, the results of the survey may not be representative of the views and opinions of PMIS users. TSA plans to administer a second survey in March 2004.

To help ensure the quality of the data, TSA has also developed PMIS user guides and procedures. TSA officials reported that headquarters' staff and contactors provide consultation to and review the input from FSDs to ensure that the data provided are complete and consistent. The PMIS also contains checks for data entries that are out of normal bounds. However, because the PMIS system relies on self-reporting by FSDs, there may be inconsistencies in the way in which the data are reported, reducing the overall usefulness of the system in aiding management decisions. We will continue to review TSAs plans to enhance the system and its reliability during the remainder of our review.

Performance Indexes for Screeners and Screening Systems

In September and November 2003, we reported that in addition to making improvements to PMIS, TSA was developing performance indexes for both individual passenger and baggage screeners and the screening system as a whole. The screening performance index will measure the effectiveness of the screening system through nationwide TIP results and covert testing data; efficiency through a calculation of dollars spent per passenger screened or dollars spent per bag screened; and customer satisfaction through a national poll, customer surveys, and customer complaints at both airports and TSA's national call center. TSA is currently developing baseline data for fiscal year 2004 and plans to report the indexes to the DHS in fiscal year 2005 in support of its Government Performance and Results Act performance measures.[38]

[38]The Government Performance and Results Act of 1993, Pub. L. No. 103-62, 107 Stat. 285, shifts the focus of government operations from process to results by establishing a foundation for examining agency mission, performance goals and objectives, and results. Under the act, agencies are to prepare 5-year strategic plans that set the general direction for their efforts, and annual performance plans that establish connections between the long-term strategic goals outlined in the strategic plans and the day-to-day activities of managers and staff. Finally, the act requires that each agency report annually on the extent to which it is meeting its annual performance goals and the actions needed to achieve or modify those goals that have not been met.

TSA Faces Challenges in Its Efforts to Deploy and Leverage Screening Equipment and Technologies

TSA has made progress in its checked baggage screening operations, but continues to face operational and funding challenges in screening all checked baggage using explosive detection systems, as mandated by ATSA. Although TSA has deployed EDS and ETD equipment to all airports, TSA has not been able to fully utilize this equipment to screen 100 percent of checked baggage for explosives by December 31, 2003, due to screener and equipment shortages and equipment being out of service for maintenance and/or repairs. When TSA cannot screen 100 percent of checked baggage using EDS and ETD, TSA continues to use alternative means outlined in ATSA, including K-9 teams, manual bag search, and positive passenger bag match. TSA has ongoing initiatives to increase the efficiency of screening checked baggage using EDS, including the development and construction of in-line baggage screening systems at larger airports—which, streamlines the screening processes. TSA is also conducting research and development activities to strengthen passenger and baggage screening. These efforts are designed to improve detection capability, performance, and efficiency for current technologies, and to develop the next generation of EDS equipment.

TSA Is Not Fully Utilizing Equipment for Meeting the 100 Percent Checked Baggage Screening Requirement

While TSA has made progress in its checked baggage screening processes, it continues to face challenges in attaining 100 percent screening using explosive detection systems[39] 100 percent of the time. Since its creation in November 2001, TSA has deployed over 1,100 EDS machines and 6,000 ETD machines to over 440 airports nationwide. However, TSA has not been able to fully utilize this equipment to screen 100 percent of checked baggage due to screener and equipment shortages, and equipment being out of service for maintenance and/or repairs.

In its effort to meet ATSA's original requirement to screen 100 percent of checked baggage using explosive detection systems by December 31, 2002, TSA deployed hundreds of EDS and thousands of ETD machines to over 440 airports. As it became apparent that TSA would be unable to attain the December 31, 2002, deadline, the Congress authorized an extension of that

[39]According to TSA, Explosive Detection Systems (EDS) and Explosive Trace Detection (ETD) are the only technologies available to TSA for meeting ATSA's requirement to screen 100 percent of checked baggage using explosive detection systems. EDS operate in an automated mode and use probing radiation to examine objects inside baggage and identify the characteristic signatures of threat explosives. ETD works by detecting vapors and residues of explosives. Human operators collect samples by rubbing bags with swabs, which are chemically analyzed to identify any traces of explosive materials.

deadline for noncompliant airports until December 31, 2003. In its effort to meet these deadlines, in June 2002, TSA and its contractors began to deploy EDS and ETD equipment to the nation's commercial airports. This effort involved designing and implementing facility modifications for EDS and ETD equipment, installing equipment, and developing and administering equipment training for baggage screeners. As EDS and ETD were being deployed to airports, TSA implemented interim solutions to screen 100 percent of checked baggage, until more permanent solutions could be designed and constructed. For example, many large airports were equipped with stand-alone EDS machines that were not integrated with baggage conveyor systems. These minivan-sized machines were sometimes deployed in airport lobbies, which led to crowding as passengers filled lobbies waiting to have their checked baggage screened. In addition, stand-alone EDS machines are both labor and time intensive to operate since each bag must be physically carried to an EDS machine for screening and then moved back to the baggage conveyor system prior to being loaded onto an aircraft.

Realizing the inefficiencies of these interim solutions, TSA and some airport authorities are developing more permanent solutions, such as in-line systems. TSA also continues to look for ways to improve the efficiency and effectiveness of the baggage screening process, especially ways that reduce reliance on screener personnel.

TSA has made progress during 2003 in its efforts to deploy equipment to screen 100 percent of checked baggage using explosive detection systems. However, some airports are currently unable to use this equipment to screen all checked baggage for explosives, or reported that they do not have enough EDS or ETD to conduct baggage screening. These airports are unable to achieve the requirement to screen 100 percent of checked baggage, 100 percent of the time, using EDS and ETD due to insufficient screener staff to operate screening equipment, insufficient staff and equipment to meet surges in passenger volume, and equipment being out of service for maintenance and/or repairs. As a way to monitor baggage-screening operations, FSDs are expected to report, using TSA's PMIS, when they are unable to screen all checked baggage using EDS and ETD and the reasons that prevented them from doing so.[40] We reviewed TSA's Aviation Operations division's report on the status of checked baggage screening (based on PMIS data), dated January 5, 2004, to determine

[40]FSDs are expected to list all reasons that prevented them from screening 100 percent of checked baggage using EDS and ETD. Also, FSDs are to report when they do attain 100 percent screening of checked baggage using EDS and ETD.

whether airports were conducting 100 percent screening using EDS and ETD, and to identify reasons for not achieving this deadline. Our preliminary review of that data showed that the most frequently cited reasons for not being able to meet the requirement—noted by about two-thirds of the FSDs that reported they were not conducting 100 percent screening using EDS or ETD[41] ---were staff shortages, absenteeism, and a lack of training. Almost half of these FSDs also identified that they did not have sufficient EDS and ETD equipment to screen all checked baggage, and/or that some of their EDS and ETD equipment was inoperable.

Of the airports reporting that they were not screening 100 percent of checked baggage using EDS or ETD, the number of consecutive days that they were not conducting this screening ranged from 1 to 371 days. In addition, almost one-third of these FSDs reported that they did not conduct 100 percent screening using EDS or ETD less than 10 consecutive days, while half of the FSDs reported not conducting 100 percent screening using EDS or ETD for more than 200 consecutive days. This reporting status can change daily as the events that caused airports to not conduct 100 percent screening using explosive detection systems may be corrected. FSDs are also expected to report whenever there is need to use alternative screening means because fewer than 100 percent of checked bags are being screened using EDS and ETD.

Furthermore, in our visits to several category X and I airports, FSDs identified EDS and ETD machines that were unable to be used due to an insufficient number of screeners to operate the equipment or because the equipment was not in the locations where it was needed. FSDs at some of these airports expressed concerns about not being able to resolve operational issues that were causing them to be noncompliant with the requirement for 100 percent screening using explosive detection systems.

[41]The number of airports unable to attain 100 percent screening of checked baggage using EDS and ETD is Sensitive Security Information and, therefore, is not included in this testimony.

To comply with a requirement from the Homeland Security Act that TSA report on its status in achieving the checked baggage-screening deadline,[42] TSA provides classified reports monthly to selected committees of the Congress identifying its progress in deploying EDS and ETD equipment to screen 100 percent of checked baggage. As of December 31, 2003, TSA reported that it fell short of this goal at several large airports, primarily because these airports did not have the EDS and ETD equipment needed and/or experienced staffing shortages to operate the equipment. We compared TSA's January 5, 2004, Aviation Operations Reports to the December 2003 monthly report provided to the selected congressional committees, and identified additional airports that were not using EDS and ETD to screen checked baggage 100 percent of the time. TSA officials stated that the discrepancies were caused because the primary focus of their report to the selected congressional committees was on initial deployment of the equipment, rather than fluctuations in staffing and maintenance issues that affect TSA's ability to utilize the equipment. We will continue to monitor TSA's compliance with the requirement to screen 100 percent of checked baggage using explosive detection systems during the remainder of our review.

TSA Faces Funding and Operational Challenges in Achieving Efficiencies in Checked Baggage Screening

TSA has two major initiatives underway to achieve efficiencies in its baggage screening operations—integrating EDS machines into the airports' baggage handling systems and resolving EDS alarms using computer images, referred to as on-screen resolution. Reconfiguring airports for in-line checked baggage screening could be extensive and costly, especially when new construction or extensive conveyor belt systems are required. TSA estimates that the systemwide costs to complete installations of in-line baggage screening systems may be as high as $3 to $5 billion, not including the costs of EDS and ETD equipment. In addition, TSA's efforts to develop protocols for on-screen resolution,

[42]The baggage-screening requirements of 49 U.S.C. § 44901(d)(1), on which TSA must report, include: (A) that explosive detection systems are deployed as soon as possible to ensure that all airports described in § 44903(c) have sufficient explosive detection systems to screen all checked baggage no later than December 31, 2002 (as discussed earlier, the Homeland Security Act extended this deadline to December 31, 2003, for airports that the Under Secretary of Transportation for Security determines could not meet the original deadline), and that as soon as these systems are in place at an airport, all checked baggage at the airport is screened by those systems; (B) that all systems deployed under subparagraph (A) are fully utilized; and (C) if explosive detection equipment at an airport is unavailable, all checked baggage is screened by an alternative means.

which may permit more efficient screening operations without increasing security risks, have taken longer than anticipated.

Many large airports are planning to install in-line baggage screening systems—installing EDS machines as an integrated part of the airport baggage handling systems—to improve throughput of baggage and reduce crowding in airport lobbies. These in-line systems have been funded in part through letters of intent (LOI) signed by TSA.[43] To date, TSA has signed 6 LOIs covering 7 airports promising multiyear financial support totaling about $772 million for in-line integration of EDS equipment. For example, LOIs are to provide $87 million in airport modifications at Boston Logan International Airport, and over $104 million at Dallas/Fort Worth International Airport. In addition, TSA is negotiating LOIs with 4 additional airports. The 7 airports with signed LOIs and the 4 airports negotiating LOIs with TSA are shown in table 2.

Table 2: Airports Receiving or Negotiating Letters of Intent

Letter of intent issued		Letter of Intent in negotiation	
Airport	**Amount**	**Airport**	**Amount**
BOS – Boston	$87,000,000	ATL – Atlanta	$175,700,000
DEN – Denver	$71,250,000	IAH – Houston	$101,520,000
DFW – Dallas/Fort Worth	$104,437,359	MCO – Orlando	$80,000,000
LAS – Las Vegas	$93,750,000	PHX – Phoenix	$65,565,000
LAX/ONT – Los Angeles International and Ontario	$256,467,000		
SEA – Seattle	$159,000,000		

Source: Transportation Security Administration

Note: Amounts reflected are TSA's contribution, which is 75% of funding needed for an in-line EDS screening solution.

[43]A letter of intent represents a nonbinding commitment from an agency to provide multiyear funding to an entity beyond the current authorization period. Thus, that letter allows an airport to proceed with a project without waiting for future federal funds because the airport and investors know that allowable costs are likely to be reimbursed.

TSA also reported that 23 additional airports, shown in table 3, have requested LOIs.[44]

[44]In addition, in-line systems have been funded through the Federal Aviation Administration's AIP funds. The Airport Improvement Program trust fund is used to fund capital improvements to airports, including some security enhancements, such as terminal modifications to accommodate explosive detection equipment. Thirteen airports are using AIP funds to make infrastructure upgrades to support EDS equipment that TSA will supply.

Table 3: Additional Airports Requesting Letters of Intent

Airports	
SNA – Orange County, California	TPA – Tampa
CLE – Cleveland	MCI – Kansas City, Missouri
PVD – Providence	MIA – Miami
PHL – Philadelphia	FLL – Fort Lauderdale
SJC – San Jose	MDW – Chicago-Midway
RSW – Ft. Meyers	SFO – San Francisco
SAN – San Diego	SLC – Salt Lake City
MSP – Minneapolis/St. Paul	PDX – Portland, Oregon
STL – St. Louis	MKE – Milwaukee
ANC – Anchorage	PBI – West Palm Beach
RIC – Richmond	BDL – Bradley, Connecticut
GPT – Gulfport-Biloxi	

Source: TSA.

TSA officials stated that they are assessing requested LOIs based on a security evaluation, as well as a determination of return on investment. Officials stated that top priority would be given to airports that need in-line systems to comply with the requirement for 100 percent screening of checked baggage using explosive detection systems. However, officials stated that they would also assess other airports that are currently conducting 100 percent baggage screening using EDS and ETD. Officials gave the following reasons why these airports may be good candidates for in-line checked baggage screening systems.

- airports that will fall out of compliance at peak passenger load times due to seasonal fluctuations and/or carrier moves, additions, or changes;
- airports with highly disruptive operational implementations and high staffing levels; and
- airports with a heavy reliance on ETDs that would benefit by improved operational efficiencies and cost reductions.

In December 2003, the Vision 100—Century of Aviation Reauthorization Act shifted the funding formula for LOIs from a 75 percent TSA (25 percent local contribution) to a 90 percent TSA (10 percent local contribution).[45] This increase in TSA's required contribution for both

[45]Pub. L. No. 108-176, § 605, 2490 Stat. 2566-68 (2003).

future and previously issued LOIs could diminish TSA's capacity to accommodate additional LOIs.

In addition, TSA has not yet approved protocols for on-screen resolution of EDS alarms. TSA's promulgation of these protocols is an important element in enabling efficiencies in in-line baggage screening systems and affects the design of the systems being constructed or planned.[46] Under these protocols, EDS operators would be able to view images of alarmed bags and either clear the bags or divert them for further screening. Using on-screen resolution, baggage screeners could be able to view images of the baggage from a remote location electronically connected to the EDS machines, raising the throughput rate of bags screened. Currently, TSA is testing protocols for on-screen resolution at 4 airports. Officials from TSA's Office of Security Technologies initially reported that they anticipated the protocols being completed by December 2003. However, to date, the protocols have not been approved for nationwide use. Advance knowledge of on-screen resolution protocols could assist airports in developing in-line systems by providing valuable information that could be used to design the systems for optimal efficiency. We are examining TSA's baggage screening program, including both development of in-line systems and its issuance of letters of intent, in an ongoing review.

TSA is Funding R&D on Screening Technologies, but Deployment Is Years Away, and TSA Faces Several Challenges

TSA is funding R&D on several technologies designed to improve the screening of checked baggage and passengers at the nation's airports. However, while the majority of these technologies are scheduled for pilot testing within the next 12 to 18 months, they are not scheduled to be deployed in quantity for 2 to 5 years. Furthermore, progress on this research was delayed in fiscal year 2003 when TSA used more than half of its R&D funds for other programs that TSA viewed as higher priorities. As TSA moves forward with its R&D program, it faces a number of challenges, including maintaining its schedule while planning for a merger with the DHS's Science and Technology Directorate. TSA must also balance funding for competing priorities in a tight budget environment, not only between R&D and other requirements, but also between aviation and other modes of transportation.

[46]On-screen resolution could also be used with stand-alone EDS machines to potentially increase screening efficiencies.

Checked Baggage Screening Technologies

To improve the detection capability and operational efficiency of its current checked baggage-screening program, TSA has both near-term (2 to 5 years) and long-term (more than 5 years) approaches designed to develop, test, acquire, and deploy checked baggage screening equipment. In fiscal year 2003, TSA obligated about $12 million for near-term activities, significantly more than the $75,000 it obligated for long-term activities. For fiscal year 2004, TSA has budgeted $45 million for the development of next generation explosive detection systems, which encompass technologies for screening checked baggage, carry-on baggage, and individuals. The President's fiscal year 2005 budget requests a total of $155 million for TSA's R&D program, of which $45 million is planned for the development of next generation explosive detection systems. [47]

The near-term activities for developing next-generation checked baggage screening equipment are largely reflected in the Phoenix program, which is funded jointly by government and industry. In September 2003, TSA obligated about $9.4 million of the $12 million obligated for near-term activities to enter into five cooperative agreements with private sector firms under the Phoenix program.[48] While the five agreements are designed to enhance existing systems and develop new screening technologies, TSA was not able to provide us with scheduled deployment dates. The five agreements are described below:

- Two cooperative agreements, totaling $4.7 million, provide enhancements to existing systems. These upgrades are intended to reduce false alarm rates, advance screener user-interface tools, and improve service diagnostics, thereby increasing reliability, maintainability, and availability.

[47]The President's fiscal year 2005 budget is requesting a total of $155.2 million for TSA's R&D program.

[48]The remaining about $2.7 million was obligated for continuous improvement to currently deployed equipment and for contractor support activities for the Phoenix program.

- One cooperative agreement, for $1.2 million, is intended to enhance detection capabilities and reduce false alarm rates by combining two new and emerging detection technologies, X-ray diffraction, and quadrupole resonance, with currently deployed EDS technology, and computed tomography.[49]

- Two cooperative agreements, totaling $3.5 million, are aimed at developing new screening technologies that perform substantially better than current technologies. One technology is intended to triple the pace of checked baggage screening (throughput), reduce false alarms by 75 percent, and enhance detection through superior spatial resolution. The other technology is intended to take up less space at less than half the unit cost of current systems.

In addition to these checked baggage-screening technologies, TSA is testing radio frequency identification (RFID) baggage tags at several airports, including those in Jacksonville, Atlanta, San Francisco, and Las Vegas.[50] The RFID tags, which identify baggage much more accurately than the bar code tags that are currently used, are intended to allow TSA to track luggage, such as bags that must be searched by hand because they triggered alarms. The tags are also intended to allow TSA to redirect bags that require further screening because of receipt of updated intelligence information or interactions with the passenger who checked the bag. TSA expects these tags to also benefit industry by reducing the incidence of lost, mishandled, or misdirected luggage. TSA expects the pilot systems at the previously mentioned airports to be fully operational by May 2004.

TSA's long-term approach for improving checked baggage screening systems, called the Manhattan II program, is in the planning stages. This program will consist of several initiatives and technologies that are designed to achieve "revolutionary" improvements in detection capability and operational efficiency in 5 to 10 years using new screening

[49]X-ray diffraction technology is based on the detection of scatter patterns as X-rays interact with crystal lattice structures of materials. Quadrupole resonance uses radio frequency pulses to probe bags by eliciting unique responses from explosives based on their chemical characteristics. Computed tomography uses an X-ray source that rotates around a bag, obtaining a large number of cross-sectional images that are integrated by a computer, which displays the densities of objects in the bag. The machine automatically triggers an alarm when objects with high densities, characteristic of explosives, are detected.

[50]RFID is a technology that uses radio waves to automatically identify individual items, such as checked luggage, for tracking purposes.

technologies. TSA intends to award this project's first contracts in fiscal year 2004.

Passenger Screening Technologies

To better detect explosives and weapons that an individual may try to carry into an aircraft cabin, TSA obligated about $1.2 million in fiscal year 2003 for research, development, testing, and evaluation of checkpoint screening technologies. As mentioned previously, for fiscal year 2004, TSA has budgeted $45 million for the development of next-generation explosive detection systems, which encompass technologies for screening checked baggage, carry-on baggage, and individuals. For example:

- TSA has conducted tests of two explosive trace detection portals at airports in Orlando and Knoxville. These portals analyze the air for explosives as passengers pass through them. TSA anticipates that these portals will be ready for limited deployment in 2004.
- TSA is funding the development of a document scanner capable of detecting traces of explosives on a document handled by a passenger, such as a boarding pass. TSA anticipates that the scanner will be ready for limited deployment in 2004.
- TSA is evaluating body-scanning technologies—such as backscatter X-ray, millimeter wave energy analysis, and terahertz wave technology[51]—that can detect a variety of weapons and explosives on passengers. However, TSA acknowledges that it needs to resolve issues related to passenger privacy before deploying any of these technologies.

Future Challenges

As TSA moves forward with passenger and baggage screening R&D, it faces a number of organizational, funding, and coordination challenges. One challenge will be to sustain its R&D efforts during a period of organizational uncertainty and a possible merger. Under the Homeland Security Act, TSA is mandated to operate as a distinct entity until November 25, 2004, but after that date its organizational future is not specified in statute. According to a DHS official, the Secretary of Homeland Security intends to transfer TSA's R&D program from DHS's Border and Transportation Security Directorate to DHS's Science and

[51]Backscatter X-ray detects reflected X-ray energy, providing an image that highlights organic materials such as explosives on a passenger. Millimeter wave energy analysis provides a 360-degree image of the human body in order to detect weapons and explosives. Terahertz imaging penetrates many common materials and reveals not only the shape but also the composition of hidden objects, including explosives.

Technology Directorate, which is responsible for homeland security R&D. One of the key areas that we will be reporting on later this year is the extent to which TSA and DHS have developed strategies for the merger of their R&D programs.

Balancing funding for competing priorities may also pose challenges for TSA. In a tight budget environment, TSA may be under pressure to use R&D funds for other purposes, as it did during fiscal year 2003, when it reprogrammed about $61 million, or more than half of its $110 million R&D appropriations to programs outside of R&D. As a result, TSA had to delay several key R&D projects, including developing a device to detect weapons, liquid explosives, and flammables in containers found in carry-on baggage or passengers' effects, and further development and testing of a walk-through chemical trace detection portal for detecting explosives on passengers. Competition for resources may also increase the difficulty that TSA already faces in allocating funds to address security threats in modes of transportation other than aviation. While aviation has historically faced, and continues to face, significant security threats, and improving aviation security is an important goal, TSA is also responsible for security in the other transportation modes, and these modes have significant vulnerabilities that remain to be addressed.[52]

Concluding Observations

Having achieved many of ATSA's deadlines designed to strengthen passenger and baggage screening, TSA has begun to focus on longer-term planning to assist in stabilizing its screener workforce and screening operations. Carefully considering how it strategically hires, deploys, and manages its screener workforce will help TSA meet its mission and stabilize its passenger and baggage screening operations. We are encouraged that TSA is undertaking efforts to develop the tools needed to train its screener workforce and measure their performance. However, as TSA works toward improving the performance of individual screeners and screening operations, it will also be important that the agency deploy and leverage screening equipment and technologies and sustain its research and development efforts.

[52]U.S. General Accounting Office, Transportation Security: *Federal Action Needed to Help Address Security Challenges*, GAO-03-843 (Washington, D.C.: June 30, 2003).

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

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