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LEVERAGING TECHNOLOGY TO IMPROVE AVIATION PART I AND II

HEARING

BEFORE THE

SUBCOMMITTEE ON ECONOMIC SECURITY, INFRASTRUCTURE PROTECTION, AND CYBERSECURITY

OF THE

COMMITTEE ON HOMELAND SECURITY HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

JULY 13, 2005 AND JULY 19, 2005

Serial No. 109–31

Printed for the use of the Committee on Homeland Security

Available via the World Wide Web: http://www.gpoaccess.gov/congress/index.html

U.S. GOVERNMENT PRINTING OFFICE

27–448 PDF WASHINGTON : 2006

For sale by the Superintendent of Documents, U.S. Government Printing Office
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LEVERAGING TECHNOLOGY TO IMPROVE AVIATION SECURITY PART I

Wednesday, July 13, 2005

HOUSE OF REPRESENTATIVES,
COMMITTEE ON HOMELAND SECURITY,
SUBCOMMITTEE ON ECONOMIC SECURITY,
INFRASTRUCTURE PROTECTION, AND CYBERSECURITY,
Washington, DC.

The subcommittee met, pursuant to call, at 2:00 p.m., in Room 2212, Rayburn House Office Building, Hon. John Linder presiding.

Present: Representatives Linder, Rogers, Sanchez, Markey, Dicks, DeFazio, Langevin and Thompson (ex officio).

Mr. LINDER. The Subcommittee on Economic Security, Infrastructure Protection and Cybersecurity will come to order. The committee is meeting here today to hear testimony on how technology can be leveraged to improve aviation security.

I am John Linder. I am not the chairman of the subcommittee, but the chairman, Dan Lungren, has been kidnapped and is being held captive in the Judiciary Committee markup of the USA PATRIOT Act.

I would like to welcome everybody to today's hearing of the Subcommittee on Economic Security, Infrastructure Protection and Cybersecurity. This afternoon, we will examine how current and emerging technologies may improve the efficiency and effectiveness of airline-passenger-checked baggage screening and checkpoint security.

The Transportation Security Administration spends approximately $4 billion a year to screen passengers and baggage. While that is undoubtedly a lot of money, I fear this country is not getting nearly the return it would hope on such an investment. The deficiencies of the current system are well documented. Checkpoint x-ray machines and metal detectors are outmoded technology and have limited ability to detect modern terrorist threats.

The TSA also uses a Band-Aid approach to cover up the shortfalls with the technology, such as requiring passengers to empty their pockets, take off their coats, remove the laptop computers from their cases. They also strongly recommend that passengers remove their shoes. Moreover, TSA deploys thousands of screeners to provide an additional layer of secondary screening in the form of wandings and patdowns.

To make matters worse, at airports where it does not have either the money or the space for an Explosive Detection System, TSA

has deployed explosive trace detection systems, or EDTs. EDT machines require screeners to swab luggage surfaces for traces of explosives; and a sample collection is difficult to take correctly, taking an average of 8 minutes to fully swab each piece of luggage. The result is a checkpoint security system that is too slow, too costly, too labor intensive, inefficient and, quite simply, not effective enough.

I am hopeful that emerging technologies could alter the current state of checkpoint security. I want to emphasize that no single technology will offer a 100 percent solution to the multitude of aviation security threats. I believe the American people are better served, however, through the automation of existing systems and the deployment of emerging technologies. We must develop plans and identify effective technologies that are suitable to the aviation environment and drive toward the goal of improving detection and reducing operating costs. They offer the best hope of improving TSA screening operation.

I would like to thank all of our witnesses who are appearing before us today. We look forward to them providing the subcommittee with the testimony and insight on how this government may better protect the traveling public. After all, the worth of prevention in this case cannot be measured in ounces or pounds but rather in hundreds if not thousands of lives.

I now recognize the ranking minority member, Ms. Sanchez, for any comments she chooses to make.

Ms. SANCHEZ. Thank you, Mr. Chairman.

I am very grateful that the majority has agreed to have this hearing because I think this issue of technology and how we can use it and having some experts in front of us who have been working with technology in these three-plus years where we have been trying to figure out a way to check more people and check them more effectively, I think it is an incredibly important topic. I know that you have a lot of varied experiences.

I know from the very beginning when we began this committee as a select committee we have had plenty of meetings with many technology companies who tell us they have the solution to everything. I think in some cases we have spent some money fairly quickly and maybe didn't get the result that we had hoped we would. But now we are really at a standpoint where we have had some years behind us, maybe more technology is available, and I think it is important, I think, in particular because, you know, there is so much frustration still at the airports.

I know I was in line the other day and went through and did the whole works and my bag got—handbag got put, taken off and looked at, personal search and then they put the handbag back through the x-ray machine, and then they checked again by hand and then they put it through again through the x-ray machines and then they checked it again by hand. And by the third time I just said to the gentleman, do you think you might have found whatever you are looking for by now? He told me they thought they had seen a knife in there. I mean, it was just a little handbag.

So when we have these occurrences there begins to be a real credibility problem, a credibility gap about what we as a govern-

ment are doing to protect people. So I am hoping we get some insight from you and we can begin to find some solutions to this.

I am also pleased that my local airport, John Wayne International airport in Orange County, California, has the in-line Explosive Detection System, or EDS; and I think that LAX just received their letter of intent from the TSA for reimbursement to get that in-line EDS system there, also. But, unfortunately, there are a lot of airports that don't have that.

You know, I think we need to upgrade our two-dimensional x-ray machines. As I just indicated, I think implementation of in-line EDS is important, and it is going to help us. But I think there is just a whole bunch of reform that we need to do and really make a good plan now.

I know that in our bill that we passed last year we had $250 million for research and development and installation of weapons detection equipment. We had $650 million for in-line EDS system installation. We had $100 million to research explosives detection technology in particular with respect to plastic explosives, which is a big concern not only at airports but at places like Disneyland and other places where they would really like to be able to screen people for that. $300 million to research and develop and install new air cargo security technology, a big issue for a couple of my colleagues in particular who have been pushing here on this side of the committee for that; and, unfortunately, the President's budget for fiscal year 2006 did not include funding for these initiatives.

So I hope that we have a candid discussion and testimony here with respect to these topics; and I thank you, Mr. Chairman.

Mr. LINDER. Thank the gentlelady.

The gentleman from Mississippi seeks to inquire.

Mr. THOMPSON. Yes, thank you very much, Mr. Chairman.

I, too, look forward to the testimony of our witnesses today.

The creation of the Transportation Security Administration was one of the first actions Congress took in response to the September 11, attack. Congress directed TSA to hire Federal screeners and install screening equipment to close security gaps and restore confidence among Americans that it was safe to fly again. Four years later, we now know, thanks to the Defense Contract Audit Agency, that TSA, in its rush to meet a congressional mandate, lost control of its $741 million contract to hire 60,000 screeners. Thanks to the GAO and the Department's Inspector General, we now know that TSA, in its haste, purchased $4.5 billion worth of screening equipment that needs to be upgraded if we are to better screen our traveling public. In fact, the Inspector General said that significant improvement in performance may not be possible without greater use of new technology.

What brings us to the subject of the hearing today is, what is TSA doing? Is it successfully identifying promising technologies? Is it providing R&D support? Is it moving the technologies in a timely fashion to the pilot or trial phase and then seeing the technologies through to development and installation?

We want to hear from our witnesses today. I look forward to hearing that.

I am particularly interested in hearing how the constant turnover at TSA and within the Border and Transportation Security Di-

rectorate has impacted development of aviation technology. TSA needs a plan for optimal deployment of in-line EDS and EDT machines to replace stand-alone systems at the Nation's more than 400 airports. That is why Congress in the 9/11 Act directed TSA to give high priority to developing, testing, improving and deploying airport checkpoint screening technologies, create a strategic plan for the deployment and use of EDS at airport screening checkpoints, and expediting the installation of in-line baggage screening equipment at airports.

I would also like to hear how TSA is doing with the $100 million Congress authorized for investments in emerging explosive technologies at passenger checkpoints. TSA launched it last year. How are they doing?

TSA cannot get a redo when it comes to securing the skies. We need to get it right.

Thank you, Mr. Chairman; and I look forward to the testimony.

Mr. LINDER. Thank you.

I ask unanimous consent for Chairman Cox's statement to be made part of the record and remind the other members that if they have a written statement that it will be part of the record.

[The statement of Chairman Cox follows:]

PREPARED OPENING STATEMENT OF THE HONORABLE CHRISTOPHER COX, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA, AND CHAIRMAN, COMMITTEE ON HOMELAND SECURITY

JULY 13, 2005

Thank you, Mr. Chairman.

Preventing terrorists from bringing or placing explosives aboard commercial aircraft is one of the Transportation Security Administration's (TSA's) most important mandates. Sadly, the technology that TSA relies upon, including much of the new technology that has been deployed since September 11th, has limited ability to detect some of the most pressing terrorist threats, such as improvised explosive devices—although we now are much more likely to catch knifes, nail clippers, and other less critical items.

Because of the deficiencies with the current screening machines, TSA has been forced to rely upon time-consuming and invasive procedures such as pat downs and opening up and swabbing of baggage. Furthermore, the system requires screeners to make judgments based upon limited information, introducing a large amount of human error into the system.

In fact, testing conducted by the Department of Homeland Security's Inspector General and the Government Accountability Office raises serious questions as to whether the existing screening system can ever operate at optimal levels of efficiency or effectiveness.

While TSA continues to spend the lion's share of its budget on a deficient passenger and baggage screening operations, the development and deployment of new screening technologies have not received the priority attention that these important functions deserve. Almost four years after Congress charged TSA with screening passengers and checked baggage for threat items, TSA has yet to devise a comprehensive technology strategy to improve the efficiency or effectiveness of its aviation screening operations.

Nor has TSA moved with urgency to use existing technology to reduce operational costs. As GAO has noted, TSA has gone about its technology deployment in a haphazard fashion, without rigorous cost-benefit analysis. The labor-intensive nature of operating the current equipment has made TSA the lead federal agency in on-the-job injuries. In fact, 30 percent of TSA screeners filed workers compensation claims during 2004, mostly related to lifting heavy baggage during the screening process.

As long as TSA continues to employ a system that relies upon outdated equipment and the judgment and physical labor of thousands of screeners, we will continue to have a costly and ineffective system. TSA must promptly move to identify and prioritize investment in technologies that are best suited for each of its airports, bearing in mind each airport's unique characteristics and passenger volume.

The current system is a terrible waste of resources, an inconvenience to the traveling public, and is of questionable security benefit. I thank the witnesses in advance for appearing today to provide their expert views on these issues and I look forward to your testimony.

PREPARED OPENING STATEMENT OF HON. DANIEL E. LUNGREN

JULY 13, 2005

[Call hearing to order]

I would like to welcome everyone to today's hearing of the Subcommittee on Economic Security, Infrastructure Protection, and Cybersecurity.

This afternoon we will examine how current and emerging technologies may improve the efficiency and effectiveness of airline passenger checked baggage screening and checkpoint security.

The Transportation Security Administration spends roughly $4 billion annually screening passengers and baggage. While that is a lot of money, it is what we get (or don't get) for that price tag that concerns me the most.

The deficiencies of the current system are well documented.

Checkpoint X-ray machines and metal detectors are outmoded technology and have limited ability to detect modern terrorist threats.

TSA uses a band-aid approach to cover up the short falls of its technology, such as requiring passengers to empty their pockets, take off their coats, and remove their laptop computers from their cases. They also strongly "recommend" that passengers remove their shoes. And TSA deploys thousands of screeners to provide an additional layer of secondary screening in the form of wandings and pat-downs.

The result is a checkpoint security system that is too slow, too costly, too labor intensive, inefficient, and—most troubling—not effective enough.

Emerging technologies—such as those we will hear about today—could alter the current state of checkpoint security.

While serious concerns remain—including cost, operational integration, and privacy—these technologies offer the potential to improve checkpoint efficiency, enhance screening effectiveness dramatically, and reduce labor costs.

TSA's system for checked baggage screening is slightly better, but it is still mostly a patchwork of randomly placed machines. To meet the unrealistic deadlines of the 2001 Congressional mandates, TSA was forced to deploy explosive detection systems (EDS) wherever they could find space without much regard for what would be optimal from an operational standpoint.

The placement of the EDS machines has driven up labor costs and on-the-job-injuries and does not allow for automation that would make full use of their speed.

To make matters worse, at airports where it does not have either the money or space for an EDS, TSA has deployed explosive trace detection systems (ETD). ETD machines require screeners to swab luggage surfaces for traces of explosives. Sample collection is difficult to do correctly, and it takes an average of 8 minutes to fully swab each piece of luggage.

Automation of existing systems and the deployment of emerging technology offers the best hope of improving TSA's screening operations.

While this could require substantial upfront capital in some airports, the resulting reduction in labor and operating costs will pay back the initial investment, in most cases, in less than two years.

Finally, it must be remembered that no single technology will offer a 100 percent solution to the multitude of aviation security threats.* The key is to develop a plan and identify effective technologies that are suitable to the aviation environment and drive towards the goal of improving detection and reducing operation costs.

Every dollar wasted is an opportunity lost.

I thank our all of our witness for appearing before us today and now recognize the Ranking Member of the Subcommittee, Ms. Sanchez.

Mr. LINDER. We are pleased to welcome our first panel. Thank you for coming. Thank you for being willing to take the opportunity to help us.

We ask that, due to the number of witnesses on our panels, two panels, we will have, that you keep your opening oral testimony to 3 minutes. Your written testimony will be made part of the record. All of the members of the panel will be allowed to testify before any questions.

On the first panel, Louis Parker is President and Chief Executive Officer with General Electric Security. Allen Barber is the President of L–3 Communication Security and Detection Systems, Inc. Michael Ellenbogen of Reveal Imaging is still on an airplane. Hopefully, he can join us. Todd Hauptli, Senior Executive Vice President of American Association of Airport Executives and Senior Vice President of Airport Legislative Alliance; and Cathleen Berrick, Director of the Homeland Security and Justice, U.S. Government Accountability Office.

Thank you all for coming.

Mr. LINDER. Mr. Parker.

STATEMENT OF A. LOUIS PARKER

Mr. PARKER. Thank you.

I would like to thank the subcommittee for the invitation to discuss using technology to improve aviation security and reduce costs. The focus of this panel—and my remarks—is the benefits of automating checked baggage screening at our Nation's airports with in-line Explosive Detection Systems, EDS. My written statement addresses a broader range of aviation security technology currently offered by GE and new technologies under development.

Despite significant upgrades to aviation security since 9/11, there is much room for improvement in operational efficiency and cost reduction. The Washington Post recently reported that Dulles Airport incurs delays up to an hour on some flights due to slow screening. Lack of investment in in-line EDS screening will create adverse impact throughout the aviation system as air traffic continues to grow.

The reasons to expedite EDS in-line bag screening are compelling because it provides the best security, is the most economical solution for many airports, offers a variety of time-tested screening solutions for both small and large airports.

EDS technology, by definition, is certified to meet the highest standard of detection. The weak link in baggage screening is the human factor. We must minimize human intervention and maximize automation for effective security. EDS technology will clear congestion in many airport lobbies and reduce the risk of tampering with bags after screening.

Since the origination of EDS certification in 1994, false alarm rates have halved and throughput has doubled. We anticipate an escalation of technology advancement, but little of this will be of any use in lobbies where throughput and efficiency improvements are limited by manual loading speed.

Technology can provide both enhanced security and cost reduction. EDS is a non-intrusive screening method that minimizes bag openings, an enormous benefit. When coupled with the Yxlon x-ray defraction system added to the family of GE-certified EDS, we are one step closer to the goal of full automation. Using diffraction x-ray to resolve alarms of CT-based EDS greatly reduces bag openings and associated staff. Deploying diffraction technology pays for itself in 2 years.

San Francisco airport is a pioneer in in-line EDS. They estimate that their $70 million infrastructure investment has saved approxi-

mately 600 TSA FTEs. The airport estimated that in-line EDS screening lowers the cost per bag from $2.35 to $0.38.

It is also notable that TSA reports a 77 percent reduction in workmen's compensation at SFO because of reduced baggage handing.

Savings opportunities are not limited to large airports. Lexington, Kentucky, achieved an impressive return on its capital investment. Its in-line system results in an annual savings of $3 million in operational costs with a 16-month payback.

Payback will take less than a full year for future small airport systems. As in-line projects at airports such as Dallas and Denver are completed, many machines currently in airline lobbies will become available. Hundreds of CTX2500 and 5500 machines can be reused in smaller airport in-line systems. Simple in-line applications can be done as little as $100,000 per machine.

In March, the GAO reported that TSA estimates a $1.3 billion savings over 7 years with 1-year payback for the nine lucky airports federally funded through letters of intent, LOIs.

Despite solid economic justification, funding for the capital investment remains a challenge. In-line EDS makes sense from a security, economic and operational perspective. We must continue to increase the efficiency of the system through implementation of technology. We must also explore financing options to accelerate the availability of funding for this much-needed investment in the safety and security of our Nation's aviation system.

Mr. LINDER. Thank you very much, Mr. Parker.

[The statement of Mr. Parker follows:]

PREPARED STATEMENT OF A. LOUIS PARKER

Thank you Chairman Lungren, Congresswoman Sanchez and Members of the Committee for this opportunity to discuss the benefits of leveraging technology to improve security at our nation's airports. Securing our commercial aviation system remains a high national priority. We have experienced first-hand the devastating effects that inadequate security can bring. We recognize that increasing the effectiveness of security operations must be done in a cost-effective manner given the limited resources available—and GE is willing to work with the US government to increase security through effective and cost-saving technology.

As reported on July 4, 2005 in the Washington Post, Dulles International Airport is experiencing increasing delays due to the baggage screening operation. This problem will escalate not only at Dulles but nationwide as traffic levels continue to rise. We believe that the solution is automating screening with In-line systems. I will discuss the economic justification for and benefits of In-line EDS screening; the need for adequate funding; future technology developments for aviation and transportation security and thoughts on how to accelerate achieving our goal of protecting the flying public and the aviation industry.

Although much money has been spent on aviation security since the tragic events of 9/11, the job is not completed. The 9/11 Report by the National Commission on Terrorist Attacks Upon the United States recommended:

"The TSA should expedite the installation of advanced (in-line) baggage screening equipment". There seems to be general agreement that this must be done, but little consensus on how to accomplish this task.

Background

InVision Technologies, Inc. developed the first technology to be certified as an EDS in 1994. GE acquired InVision in 2004 as a major part of GE's commitment to becoming a leading provider of security solutions. In the eleven years following this major achievement, a family of GE Security explosive detection products has been developed to meet the variety of needs at different size airports. This includes five, certified checked baggage EDS products.

In addition to checked baggage EDS, GE trace detection portals and electronic trace detection (ETD) systems are deployed at airports and other facilities to detect

explosives on people, their belongings and cargo. GE also provides cargo container security systems, biological detection, nuclear and radiological detection, access control, integration of security systems and other security products and services to the public and the private sectors worldwide.

Continuing its history of innovation and as another first, GE received EDS certification for a diffraction based x-ray system last year. Ten years from the first EDS certification, a powerful, new technology has been added to the war on terrorism by combining CT with diffraction x-ray screening in a system-of-systems designed to optimize automation, efficiency and security.

Substantial improvements to EDS technology have been made over the years. Lower false alarm rates, higher throughputs and increased reliability have been achieved on a continuing basis. Features such as Multiplexing (MUX) and Remote Image Replay (RIR), that were made possible by networking the equipment, have provided impressive progress in process efficiency and cost savings. The San Francisco and Jacksonville airports have MUX and RIR and have seen staffing requirements decrease by as much as 70%.

The Business Case for In-line EDS

In March of this year the Government Accountability Office (GAO) produced a report on In-line EDS at airports entitled "Systematic Planning Needed to Optimize the Deployment of Checked Baggage Screening Systems". GAO concluded that use of EDS systems was the most cost effective method of screening checked baggage at many of our nations' airports.

Only nine airports have received full (75%) Letter-of-Intent (LOI) funding for their In-line projects to date. All but one of these airports is a Large Hub facility requiring major construction to institute a screening system. Despite the substantial investment, GAO reports that TSA estimated that "in-line baggage screening at (the nine airports receiving LOIs) would save the federal government $1.3 billion over 7 years compared with stand-alone EDS systems TSA would recover the initial investment in a little over 1 year". Given that many airports without In-line systems employ an even more labor-intensive and costly screening process using trace detection, the savings potential for the Large and Medium Hub airport system is likely to be even greater.

Working closely with airports that have In-line EDS baggage screening with CTX equipment, GE has analyzed the cost savings and other benefits of such systems. As expected, these are substantial and produce models worth deploying at other airports. Not all airports are viable candidates for the most complex In-line EDS systems, that centralize screening to handle large throughput requirements; however, it does make sense for many airports and for the federal government. As GAO noted, even at an average cost of approximately $2.5 million in infrastructure cost per EDS, the payback is rapid.

Our modeling for Large Hub airport baggage screening operations, defined as an average 5000 bag per hour peak, shows that a $57 Million dollar capital investment will result in a $20 Million dollars per year savings in operational expense. This analysis compares In-line EDS to a standalone type EDS screening operation currently conducted in ticketing lobbies. The savings are primarily in labor related costs. If one were to compare In-line EDS to using trace detection for primary screening of checked baggage in this model, the operational cost savings becomes an astronomical $70 Million dollars per year at a Large Hub size airport. Although trace detection as the primary checked baggage screening method at this size airport is not the preferred option, the Transportation Security Administration (TSA) frequently relies on trace detection to varying degrees due to the inefficiencies inherent in lobby area EDS screening and the lack of available EDS equipment.

Each airport is unique; therefore, modeling alone does not allow us to confidently extrapolate system costs.It is better to use actual airport cost estimates to obtain a valid projection of capital requirements. Since every airport will not be a candidate for In-line baggage screening systems, it is also more appropriate to limit discussions to those that are. Based on survey data gathered by the airport associations, it is estimated that the first sixty-four airports identified as benefiting from such an In-line system, would require $4 Billion in infrastructure capital from the federal government. Adding in new equipment costs, we estimate a total need of nearly $5 Billion. Although the larger airports require a larger investment, the operational savings are also greater, resulting in an estimated *annual* operational savings of $1 Billion dollars.

San Francisco's latest In-line project provides a real life example. The airport spent $16 Million in infrastructure costs to install 11 CTX 9000 EDS machines in Terminal T–3. This Terminal houses United Airlines domestic operation, handling over a third of the airport's total checked baggage. This investment resulted in a

reduction of over 70 TSA FTEs required to handle checked bag screening. The airport's average infrastructure cost per EDS machine is $1.7 Million.

Small Airport Solutions

Simpler and less expensive Mini In-line systems are a proven checked baggage screening option for smaller airports and airport operations with lower throughput requirements. These options can cost from as little $100,000 to $1.5 Million per machine in associated infrastructure costs.

Blue Grass International Airport in Lexington, KY, Traverse City, MI and Ft. Walton Beach, FL screen all their checked bags with two CTX5500 EDS machines. Blue Grass estimates that its system saves $3.1 Million per year in operating expenses for the TSA, with return on its investment in just 16 months. Payback on the infrastructure investment required providing in-line systems to Small Hub size airports drops to less than one year if existing EDS are reused.

Capital investment is minimized through reuse of EDS equipment. The federal government owns over 500 CTX2500 and 5500 EDS machines, many of which can be relocated and reused for In-line projects at smaller airports. As currently funded projects at airports such as Dallas-Ft Worth and Denver come online, these valuable EDS assets will become immediately available for use at other facilities. There are enough machines in existing inventory today to cover all the Small Hub airports without investing any additional dollars for equipment. There would even be machines left over for screening break cargo, mail or other screening applications at any high-risk site.

Leigh Fisher, a well-established aviation industry consultant, has independently analyzed the checked baggage screening options. They reported their findings at an aviation industry conference in 2004. They found for the mid-range of airports the most cost effective solution is a small EDS In-line system. Their analysis shows that In-line EDS is appropriate even for airports originally considered too small to warrant such systems.

This type of low cost In-Line installation option has existed for over a decade. The first In-line EDS was installed in United Airlines International check-in counter in San Francisco in 1995. Dozens of such installations were in place prior to the 9-11 tragedy. Systems placed directly in bag conveyor lines were installed for as little as $110,000 per machine. Since these projects often involved one EDS per airline or airport, a project that covered an entire airport operation today would have an even lower cost per machine. This is because general costs such as design and permitting would be spread over more machines. These lower throughput solutions are every bit as viable today for small airport and low throughput requirement operations in large airports.

Safety Benefits

An additional consideration and benefit of In-line EDS screening is the reduction of on-the-job injuries. TSA is experiencing the highest level of workman's compensation claims in the federal government. Automating bag handling with In-line EDS systems will dramatically decreased this problem. The TSA reports that claims were down 42% and total cost of workmen's compensation is down 77% with implementation of its In-line system in San Francisco.

Additional Security Considerations

Crowded ticketing lobbies are an attractive and vulnerable target for terrorists and other criminals. Moving baggage screening away from this area is prudent in order to mitigate this risk. In-line baggage screening also minimizes the potential for serious operational impacts. Evacuating a ticketing area to resolve an unknown threat wreaks havoc on timely ticketing, boarding and aircraft departure. Even an hour delay at one airport can cost millions of dollars and produce a ripple effect in operational impact through the aviation system.

Screening baggage in non-public, controlled access areas is also inherently more secure than in public lobbies. There is far better ability to prevent tampering with bags after they have been screened. The chain of custody of the bag is unbroken and all personnel handling the bag have undergone background checks in order to be given access to the secured areas of the airport.

Cargo and Mail

Equipment installed to handle checked baggage can and does serve multiple purposes. The machines can be used to screen counter-to-counter packages, break bulk cargo and mail that is carried aboard commercial aircraft.

Creative Financing

Public support wanes as time passes following a major security event. When this happens, competing needs often jeopardize security funding. Relying on the annual

appropriations process for the federal government to fund In-line EDS projects is problematic for airports and their communities. Delays and funding uncertainty result in excessive construction and redesign costs, as well as added complexity in executing capital improvement programs. Taxpayer monies are spent on inefficient and labor-intensive processes that do not provide the same level of security that can be achieved using the same funds more effectively.

Congress and the industry, led by AAAE and ACI-NA, recognized the challenge of financing the capital expenditures required to install explosive detection systems in U.S. airports. The Letter of Intent Program (LOI) was an excellent first step in ensuring that airports would receive the necessary capital funds. This Program did not address, however, the fact that substantial funds would be needed in a relatively short timeframe. This has resulted in a funding shortfall. Only eight LOIs have been issued to date, covering only nine of the 429 certified airports. TSA has not issued a new LOI since FY04 and has no funding for additional LOIs in the proposed FY06 Budget.

Other government capital programs, and almost all major investments by private industry, utilize longer term financing options to meet their needs. It is unusual and unnecessary to require up front funding from DHS annual appropriations of both EDS equipment procurement and EDS installation by airports (with LOI reimbursement). Multi-year leases with annual renewals and managed service agreements are but two of the financing tools used by other government agencies to fund their major capital projects. Such financing options must be explored as a method of solving these funding problems.

Two examples of using long-term financing demonstrate the type of savings possible. Assumptions used:

1. Private sector capital utilized
2. Government repayment using annually appropriated funds
3. A 7-year financing term
4. A 10-year useful life for EDS equipment

Applying a financing plan as described above to our Large Hub airport model, we can cover debt on the $57 Million dollars over 7 years with an approximate annual repayment obligation of $10 Million. The corresponding annual operational savings realized in the first year and each year of the 7-year financing term is $20 Million dollars. The resulting $10 Million per year in net savings begins in Year 1 and continues for the 7-year term of the financing. After completion of the 7-year financing term, the annual net savings would be $20 Million for the balance of the useful life of the assets. Total savings over a 10-year period to the federal government for financing an In-line EDS system versus retaining its standalone EDS lobby screening operation is $130 Million dollars.

If we look at the project in total, it is estimated that a capital investment of $5 Billion dollars is needed to fund both infrastructure and equipment to fully implement the In-line EDS solution. Full deployment of In-line EDS can result in annual operational savings of $1 Billion per year. For analysis purposes, if we were able to have a common financing start date for all airports requiring In-line EDS, the operational savings applied to repayment coupled with $500 Million per year authorized by Congress for construction of In-line EDS would result in a payback period of less than 4 years, at which point the annual saving to the Government would be $1 Billion dollars net per year.

Bag Delivery Services

A promising potential for baggage screening involves the ingenuity of private entities. The business of baggage delivery for a fee is a growing enterprise. The public may well be willing to pay for the convenience of having their bags picked up in advance of a trip and transported by a private service to their destination. This business model may provide some answers to screening of bags and cargo. If the public pays for this service, the cost of security screening can be included in the fee. A centralized screening facility on-airport can also be used to screen cargo and as an overflow facility for airline baggage.

The Future

Although great strides were made over the last decade in EDS performance, we anticipate that improvements and breakthroughs will escalate based on the existence of a real market need for better solutions. With GE's entry into the aviation security arena, a substantial increase in resources, including technological expertise, has become available to apply to R&D efforts to advance the state of the art.

GE is already leveraging its industry-leading position in imaging and other technologies to develop tomorrow's solutions. Carry-on baggage screening, passenger portals combining multiple screening technologies, container security devices with

multiple threat detection capability and standoff detection are only a few of the innovations in the works.

To realize the benefits of such innovations and to spur research in advanced security technology solutions, there must be a plan and a path from research to development to deployment. Technologies developed for aviation are not only portable to other transportation industries, but can be used to mitigate threats in other areas such as our borders, ports, government buildings, nuclear facilities, chemical plants, and iconic structures. A timely example is millimeter wave combined with smart video used in standoff detection applications. This technology could be deployed unobtrusively in public areas such as metro and rail stations to detect explosives without requiring aviation security style portals.

As the aviation industry continues its trend toward technology-driven automation critical to cutting expenses and improving efficiency, TSA must do the same. The airlines and airports are moving rapidly towards automating all of passenger processing, from printing boarding passes on home computers to common-use, self-serve kiosks. Processes that are expensive, labor-intensive or even simply frustrating for the customer cannot be supported in such an economically sensitive industry.

The future of checked bag screening, as well as screening of passengers, carry-on bags and cargo, must rely on automation. Not only does automation save life-cycle screening costs, it greatly improves the ultimate security of the system by minimizing the unknowns associated with the human factor.

Reducing the human factor in the screening process will also minimize bag openings. One of the most attractive benefits of EDS is its ability to perform non-intrusive detection. The need to open bags for threat resolution, along with the associated opportunities for misplaced bag contents, can be almost eliminated by coupling CT and diffraction-based EDS technologies. Yxlon EDS diffraction x-ray is designed to resolve bags that alarmed on the CTX EDS and cannot be cleared by On Screen Resolution. We estimate the payback on implementing Yxlon EDS equipment at approximately two years.

Another example of leveraging technology is implementing something as inexpensive and simple to install as Remote Image Replay for automatic electronic images of and data on alarms to be used in threat resolution. GE calls this feature ViewLink for CTX5500 and 2500 products and Passive Threat Resolution Information (PTRI) as part of a Multiplexed CTX9000 networked system. This screening automation feature saves San Francisco Airport's security operation over $3.5 Million dollars a year in labor and consumables.

Increased research with rapid testing and deployment of successful technology can provide continuous improvements to efficiencies and economics of security. Automation is the key to optimizing these systems. This is the direction in which we must continue.

Summary

In-line EDS makes sense from a security, economic and operational perspective. We must continue to increase the efficiency of the system through technological advancements and flexible system designs that meet the needs of all stakeholders. We must also explore financing options to accelerate the availability of funding for this much-needed investment in the safety and security of our nation's aviation system and the flying public.

SFO Passive TRI Cost Benefit Analysis

Alarm Rate (Domestic)	20%	Alarm Rate (Int'l)	30%	
Suspect Rate	40%			

TRI Cost	$11,000
Cost / Page $0.30	TRI Install Cost $5,000

Airline	Peak # of Bags / Min.	Avg. Search Time w/ Passive TRI	# of Screeners Req'd.	Avg. Search Time w / printed image	# of Screeners Req'd.	# of TRI's Req'd.	Bags / Day	Printed Pages	Cost / Day (Paper & Ink)	TRI Cost	Payback (Days)
International Terminal (North)	20	4	10	5	12	10	7500	1200	$360.00	$160,000	444
International Terminal (South)	20	4	10	5	12	10	7500	1200	$360.00	$160,000	444
United	50	3.5	14	4.5	18	14	20000	3200	$960.00	$224,000	233
American	12	3.5	4	4.5	5	4	5500	880	$264.00	$64,000	242
Delta / Hawaiin	12	3.5	4	4.5	5	4	3800	608	$182.40	$64,000	351
Northwest	5	3.5	2	4.5	2	2	1800	288	$86.40	$32,000	370
Alaska / America West	9	3.5	3	4.5	4	3	4000	640	$192.00	$48,000	250
US Air / Air Canada	9	3.5	3	4.5	4	3	3400	544	$163.20	$48,000	294
Continental / Frontier	6	3.5	2	4.5	3	2	2100	336	$100.80	$32,000	317
ATA	4	3.5	2	4.5	2	2	800	128	$38.40	$32,000	833
			54		67	54			$2,707	$864,000	

	# of Screeners Shift #1	# of Screeners Shift #2	Labor $ / Year
Labor Savings	13	7	**$3,416,407**

The Passive TRI will result in a more efficient Directed Search for a "Threat Item" within a bag and should lower the search time by 1 minute. Therefore the resulting Labor savings per year.

Yxlon 3500 Level 3 Alarm Resolution Cost Effectiveness Model

Prepared by Y. Margalit and A. Neeman, GE Infrastructure, Security
Based on SFO International Terminal Data

Input Assumptions		Comments
Level 1 EDS False Alarm Rate	21.0%	With inspection improvements, US national average
Level 1 EDS FAR (co-tuned, used only with XRD)	23.5%	Detection tuned up for XRD-CTX combined certificatio
Level 2 operator alarm resolution (non-resolved bag ratio)	50%	Input from SFO
Cost per MUX and ETD operator, per year	$ 50,000	Operator fully loaded cost
Number of shifts per day per station	3.0	Input from SFO, weighted by average staffing
Airport / terminal peak load, bph	3,600	Input from SFO Int'l Terminal (12 CTX 9000's)
Average operator OSR time, seconds	18	Input from SFO
ETD operator throughput (PTRI directed trace), bph	10.9	Based on 5.5 minute average US nationwide
Capital Cost of ETD	$ 50,000	Lifespan of 4 years
Ratio of operators per ETD machine	2	
Annual maintenance of ETD machine	$ 4,000	Annual Maintenance Cost @ 8%
SoS alarm rate	6.0%	Cert test
Yxlon 3500 throughput	200	Demonstrated in AENA (Spain) test and Phoenix work
Yxlon 3500 throughput in fullbag mode	60	
Capital Cost of XRD, Yxlon 3500	$1,300,000.00	Sales price with Yxlon installation
Infrastructure modifications cost of XRD (Yxlon 3500)	$1,300,000.00	Equal to 100% Capital Cost
Maintenance cost of XRD at 9% of Capital Cost	$ 117,000.00	9% of Capital Cost
Rate of CTX to XRD alarm miss registration	1%	
Current MUX / ETD at BIR Expense Calculations		
Number of EDS operators needed	4	Bags that alarmed at CTX X average OSR throughput
Total cost of CTX Level 2 operators	$ 567,000	Number of operators X shifts X cost of operator
Alarm bag rate to ETD at BIR (NARP resolution rate)	11%	Peak load X unresolved from MUX NARP
Alarm bags to ETD (Level 3)	378	Peak load X FA rate X unresolved from MUX NARP
Number of ETD operators at peak load at BIR	35	Bags sent to BIR X ETD operator throughput
Number of ETD operators	104	Operator stations X shifts
Labor costs of ETD	$ 5,201,835	ETD operators X operator cost
Number of ETD machines	17	
Total capital cost of ETD	866,972	
Total maintenance costs of ETD machines	$ 69,358	Number of machines times annual maintenance cost
Total Annual Cost of MUX and BIR Operations	**$ 5,838,193**	
Forecasted OSR, XRD and ETD at BIR Expense Calculations (using OSR at level 2 TRIs)		
Throughput of XRD combining all inspection modes	151	
Number of EDS operators needed	4.23	Bags that alarmed at CTX X average OSR throughput
Total cost of CTX Level 2 operators	$ 635,040.00	Number of operators X shifts X cost of operator
Peak number of alarm bags to XRD	423	All OSR alarms go to XRD
Alarm bag rate to ETD (system-of-system FA rate)	3.0%	Simple multiplication of EDS, OSR and XRD FA rates
Number of Yxlon 3500 needed	3	Rounded up to integer
Peak number of alarm bags from XRD to ETD	108	Airport peak load X system FA rate
Number of ETD operator stations	10	
Number of ETD operators	30	Operators X number of shifts
Labor costs of ETD	$ 1,486,239	ETD operators X operator cost
Number of ETD machines	5	
Total capital cost of ETD	$ 247,706.42	Number of machines X capital cost
Maintenance of ETD machines	$ 19,817	Number of machines times annual maintenance cost
Maintenance of XRD machines	$ 351,000	Number of machines times annual maintenance cost
Total Aunnual Cost of OSR, XRD and BIR Operations	**$ 2,492,095**	
Cost Effectiveness Analysis		
Total annual Operating Cost savings	**$ 3,346,098**	
Net ETD capital expediture savings	**$ 619,266**	Assumes purchase or 1 replacement cycle of ETD
XRD capital expenditure	**$ 7,800,000**	
ROI (months)	**25.8**	

Cost-Benefit Analysis (MUX at SFO)

# of CTX 9000	46	
bpm (Bags per Minute) Airport wide	100	
Averege Screener view time (seconds)	20	
Alarm Rate (Avg. of Domestic and Int'l bags)	22%	
Number of Screeners Required without MUX	46	One screener required per CTX 9000
Number of Screeners Required with MUX	8	Equal to bpm x Alarm Rate x Avg View Time
Number of Screeners Required (with MUX) With supervisor and lunch and break relief	12	
Manpower Savings from MUX (per shift)	34	
Manpower Savings from MUX (hired to staff)	102	This takes the Daily staff savings x 1.4 to cover 7 day/wk operation and vacation and sick days
TSA manpower cost for On-screen resolution screeners	$60,000	
Yearly Manpower Savings	$6,120,000	

imagination at work

Mr. LINDER. Mr. Barber.

STATEMENT OF ALLEN BARBER, PRESIDENT, L–3 COMMUNICATION SECURITY AND DETECTION SYSTEMS, INC.

Mr. BARBER. Thank you.

The L–3 Explosive Detection System was TSA certified in 1998. We have fielded 550 systems installed at our Nation's airports. Thirteen other countries have also acquired this technology to assist in them their efforts to bolster aviation security.

I would like to make three ints for the committee:

One, aviation security continues to pose a significant risk. The use of trace detection systems for checked baggage screening at many U.S. airports continues at high labor costs and marginal security. Meanwhile, substantial improvements in in-line EDS have occurred over the last year to reduce cost. Baggage throughputs are up substantially.

Boston Logan's new terminal A, for example, has achieved well in excess of 600 bags an hour at peak periods this summer. We encourage the committee to visit the Nation's first 100 percent in-line system at Logan airport to understand the challenges they face and the successes they have achieved.

Installation of in-line EDS remains the highest priority, and we urge the committee to press for the necessary funding. In-line provides improved security and will recoup the total financial investment in a very brief period because of the tremendous labor savings it achieves.

Second, technology improvements for checked baggage screening have also improved labor efficiency. For example, networking and on-screen resolution of alarms have improved performance significantly. There is almost 100 L–3 examiners networked now versus four last year at substantial labor savings of about 30 percent. Further reductions of false alarm rates by approximately 20 percent should be deployable by the end of this calendar year. These incremental improvements are very cost effective as they are primarily software changes and can be retrofitted to upgrade existing systems and provide significant labor savings.

Third, the investment made in aviation security technologies has created a pool of relevant technologies that can now be applied to other transportation modes. The event of the last week in London was tragic. Transportation security is a tough task operationally because of its distributed nature. However, rail threats are not as difficult to detect automatically as aviation. Last year's TSA TRIP program demonstrated that screening for rail threats in a terminal or a rail car can be done effectively and have very low false alarm rates.

Thank you for opportunity to appear.

Mr. LINDER. Thank you, Mr. Barber.

[The statement of Mr. Barber follows:]

PREPARED STATEMENT OF ALLEN R. BARBER

Mr. Chairman and Members of the Subcommittee:

I am Allen Barber, President of L–3 Communications' Security & Detection Systems Division. I am pleased to have the opportunity to appear before you today on the subject of leveraging technology to improve aviation security. We have been extensively involved in this field since the mid-1990's and, following the 1998 initial

certification of our eXaminer Explosive Detection System (EDS), we have delivered more than 550 systems to TSA for installation at our nation's airports. Thirteen other countries, including Japan, Mexico and Korea, have also acquired our in-line EDS to assist them in their efforts to bolster aviation security.

The tragic events of last week in London underscore both the continued threats we face from terrorism and the need to redouble our collective efforts to protect our citizens from such violent acts. Transportation security, including rail, is a daunting task operationally because of its distributed nature. However, I think it is fair to say that screening for rail threats may not prove to be as difficult a technical challenge as it was in the aviation environment. In fact, last year's TSA TRIP program demonstrated that screening for rail threats in a terminal and on a rail car can be done effectively with existing high-throughput automatic detection technology and at very low false alarm rates. Addressing rail security is an operational question: where do you focus resources for fielding security systems? We believe that focus should be where the greatest economic and human impact would be—at the large hubs and the links to those hubs. TSA could field equipment and study concepts of operations at several key sites to determine the maximum benefits so passenger and baggage flows can be optimized while maximizing security and throughput. The investment made in aviation security technologies has thus created a pool of relevant technologies that can now be applied to other transportation modes. We do not need to re-invent the technology in order to address multi-mode transportation security.

Aviation security continues to pose the greatest risk and cost. The use of explosive trace detection (ETD) systems for checked baggage screening at many U.S. airports continues at high labor cost & marginal security. Meanwhile, substantial improvements to in-line EDS have occurred over the last year. Baggage throughputs are up substantially at new in-line installations. Boston Logan's new Terminal A has achieved well in excess of 600 bags per hour at peak periods this summer. We encourage the Committee to visit the nation's first large in-line system at Boston's Logan airport to understand the challenges they face and the tremendous successes they've achieved.

In-line EDS is universally recognized as the most secure and cost-effective solution for checked baggage screening. Simply stated, lobbies were designed for the movement of people and, consequently, lobby installations of EDS do not realize the labor savings, particularly with the handling and resolution of alarms. We also have gained experience and knowledge from installing over 170 in-line systems in a variety of baggage handling systems. This now enables us to recommend simple and scaled down in-line solutions for less busy airports (i.e., Cat 2 and Cat 3 airports), which makes in-line EDS for these airports the cheaper, faster, and better approach as well.

The funding and installation of in-line EDS, in my view, remains the highest EDS priority and will provide the greatest return on investment. We urge the Committee to press for the necessary funding and a concrete plan to accelerate these installations. In-line EDS will not only provide improved security for the traveling public, but will recoup the total financial investment in a very brief period because of the tremendous labor savings to be achieved.

Technology improvements for checked baggage screening will also improve labor efficiency, but not to the same extent as in-line EDS. For example, networking and On-Screen-Resolution (OSR) of alarms has improved performance significantly. There are almost 100 L–3 eXaminers networked now, versus 4 last year at substantial labor savings of 30%. Further reductions of the false alarm rates by approximately 20% should be deployable by the end of this calendar year. These incremental improvements are very cost effective as they are primarily software changes and can be retrofitted to upgrade existing systems.

As technology improvements are proven in a real operational environment, they should be fielded or back-fit on the basis of return on investment (ROI). There remains a clear need to invest in the R&D efforts necessary to develop new or improved technology, and we cannot afford to let ourselves focus so greatly on today's needs that we fail to provide for tomorrow's. There should be a continuing investment in R&D to generate the innovations that will provide cheaper and more effective security solutions.

Another area where focus is needed is on aviation cargo security. I believe it is important that a roadmap be developed by DHS that leads to 100% air cargo screening in a way that does not unduly hamper air commerce. As part of this roadmap, it would be useful to ensure that the collective and sometimes disparate needs of affected DHS agencies are coordinated and effectively integrated into a unified set of equipment certification requirements and regulatory standards. Demonstrations to date show that existing EDS is very effective for screening break bulk cargo. A

variety of approaches for pallet and truck screening are also available. I believe it is time that we develop a more targeted approach towards conducting actual cargo screening on an accelerated basis. Hopefully, the development of a roadmap would facilitate this effort. The development of in-container security devices will begin to yield prototypes in FY 2006. Combined with trusted shipper programs, a reasonable layered cargo security road map is now feasible.

Advancements in checkpoint screening is the area most in need of a system solution. We believe that efforts should be undertaken to integrate automated detection technology into the carry-on baggage screening equipment. Automatic detection of threats for carry-on screening systems will be available from L–3 by the end of the fiscal year in standard X-ray machines that fit the current checkpoint footprint. However, initially they will have high false alarm rates & should be used to "suggest" to operators where to look. With the spiral additions of other technology over time, this will be an excellent way to improve the security of checkpoints while learning the value of each new development. L–3 continues to evaluate numerous checkpoint technologies. Some are showing great promise. Continued support for evolving technologies is key to rapid development & subsequent fielding.

In closing, Mr. Chairman, thank you for permitting me to share my views on ways to leverage technology for aviation security. I would like to briefly summarize some of the key steps I believe are needed. First, there should be a stronger focus on accelerating in-line EDS. Finding the resources to get this job done now will improve security and will pay for itself rapidly. Second, the tools needed for air cargo screening largely exist, and a cohesive plan to initiate such cargo screening should be developed. Third, sufficient resources must be devoted towards R&D to continue to develop cheaper and better technology not only for checked baggage and cargo, but for checkpoint security as well. Adoption and fielding of improved technology should be based on ROI. And, last, although not an aviation issue per se, existing automated detection of threats can be applied to address existing security gaps in rail and other transportation modes. It is largely a matter of developing a plan for addressing the greatest risks—hubs, and finding the financial resources to do so.

That completes my prepared statement, Mr. Chairman. I would be pleased to respond to any questions that you may have.

Mr. LINDER. Welcome, Mr. Hauptli.

STATEMENT OF TODD HAUPTLI, SENIOR EXECUTIVE VICE PRESIDENT, AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES

Mr. HAUPTLI. Thank you, Mr. Linder.

Two major points I want to try and make, one on screening, the second on the Registered Traveler Program.

On screening, as both Louis and Al have said, in-line EDS systems make a lot of sense. We need more of them. Ten systems in place today. Eight more in the queue with letters of intent. But literally dozens of airports across the country need these in-line systems.

The multiplexing or networking that Al just talked about, very important; and you should see that in places like San Francisco and other locations. It really reduces the number of personnel that you need, dramatically driving down the personnel costs; and the costs of putting these systems in place is recouped in sometimes a year-and-a-half to 2 years. There is an up-front capital expenditure that is necessary. But that is an example how the Washington sort of arcane budget process gets in the way of technology helping aviation security. So we need a fix there.

Now, not all airports need an in-line full-blown EDS system. Some of the small- and medium-sized airports just need better technology. And if Mr. Ellenbogen were here he would talk about his recently certified machines that hold great promise for some of the small—and medium-sized airports that don't require as much terminal modification. So whether it is the in-line systems at some

of the larger airports or better technologies at some of the smaller airports, it is important to try and drive toward those technological advances.

Registered Traveler Program, we need an interoperable nationwide Registered Traveler Program. Six million passengers account for the overwhelming majority of the 700 million enplanements each year, the proverbial if you need to find a needle in a haystack you have got to make the haystack smaller; and a Registered Traveler Program and the use of technology could do that and make a significant difference.

I am pleased to report to the subcommittee that we have created a new Registered Traveler Interoperable Consortium, airports, the Transportation Security Clearinghouse, airlines and private sector technology partners working together on common business practices and on technical standards for a nationwide interoperable Registered Traveler Program. We need—with due respect to TSA and the Federal Government, we need to move at the industry's pace and at the aviation systems pace, not at the Federal Government's pace, to put a program like this in place.

Thank you, Mr. Chairman.

Mr. LINDER. Thank you very much.

[The statement of Mr. Hauptli follows:]

PREPARED STATEMENT OF TODD HAUPTLI

Mr. Chairman, I want to thank you and the subcommittee for holding this important hearing on leveraging technology to improve aviation security. I am testifying today on behalf of the American Association of Airport Executives (AAAE), Airports Council International—North America (ACI–NA), and our Airport Legislative Alliance, a joint legislative advocacy organization. AAAE represents the men and women who manage primary, commercial service, reliever, and general aviation airports. ACI–NA represents local, regional and state governing bodies that own and operate commercial airports in the United States, and Canada.

Today's hearing is especially timely given the situation that is emerging at a number of airports across the country this summer with air travel returning to and in many cases exceeding record levels. What travelers are finding—as many of you on the subcommittee can attest to as frequent fliers—is that the trip to the airport is quickly becoming a test of patience and endurance due in large part to the ongoing challenges TSA faces in meeting its passenger and baggage screening mandates.

Overcrowding at ticketing areas due to increased passenger volume and the presence of SUV-sized explosive detection (EDS) equipment that has been parked "temporarily" in terminal buildings by TSA continues to be a problem at a number of airports, and passenger screening checkpoints at many locations resemble Disneyland on a busy day. In addition to being a major inconvenience for passengers, this situation represents a growing security threat that must be addressed as quickly as possible.

Recognizing the problems inherent in the existing, labor-intensive passenger and baggage screening model, the airport community has for several years now been very vocal in encouraging the federal government to embrace technology as a means of expediting the passenger and baggage screening process and better utilizing scarce federal resources. While there are a number of new technological tools that merit serious consideration, we would like to highlight for the subcommittee today the case for moving forward with in-line installation of EDS equipment to screen checked baggage and the promise we believe programs like Registered Traveler offer in focusing limited resources on true threats to the aviation system. Moving quickly in these areas will provide enormous bang for the buck while greatly enhancing security.

Federal Government Must Partner With Industry to Solve Security-Related Challenges

Moving forward, it is clear that airports and the aviation industry can and should play an active role in partnering with the federal government to design and implement meaningful solutions. The establishment of effective public/private partnerships has already proven extremely successful, for example, in building a system for

processing fingerprint-based background checks and additional background screening for more than 1.6 million employees at airports through the Transportation Security Clearinghouse. Additionally, the airport community and its aviation industry partners are moving forward to create a permanent, interoperable Registered Traveler program that will bring screening consistency and improved security to the aviation system. These examples and others illustrate that the best path forward is one where federal resources and standards are combined with airport and aviation industry knowledge, expertise, and creativity.

In-Line EDS Systems: Enhanced Security, Improved Efficiency, Reduced Personnel Costs

Perhaps, the greatest area of opportunity in terms of enhanced security, increased efficiency, and potential long-term TSA budget savings in the baggage screening arena comes from the permanent installation of explosive detection equipment in the nation's airports—a fact that has been acknowledged by the 9/11 Commission and others.

In order to attempt to meet congressional deadlines to screen all checked baggage placed aboard commercial aircraft, TSA quickly placed thousands of explosive detection system and explosive trace detection machines (ETD) in airports across the country. Many of those machines have been placed in airport ticketing lobbies without the kinds of integrated approaches that take maximum advantage of their certified throughputs and alarm reconciliation capabilities. The result, too often, is crowded airport lobbies (a safety and security hazard), major backups at a number of security screening checkpoints, and a huge increase in the number of TSA personnel necessary to operate the equipment. At many airports with ETD solutions, especially during peak times, TSA checkpoint screeners are directed to baggage screening, resulting in extremely long lines at the passenger checkpoints.

While virtually everyone agrees that the best solution at many airports is to move EDS equipment from crowded lobbies and place it "in-line" as part of an airport's integrated baggage system, making the necessary changes at airports—reinforcing flooring, electrical upgrades, building new facilities, etc.—are neither easy nor inexpensive. Current cost estimates run in the $4 billion to $5 billion range for airports nationwide. These upfront capital costs are modest, however, when compared to the extraordinary expenses necessary to pay for literally thousands of extra screeners year after year using today's model. In-line screening in airports such as Tampa International Airport has also been shown to reduce the rate of TSA screener on-the-job injuries. The handful of airports that currently have in-line baggage systems report that they have paid for themselves with personnel cost reductions in as little as 16 months. The personnel saved by these solutions are then available for other airports or to accommodate growth at the host airport.

The Government Accountability Office verified the benefits of in-line EDS installation in a March 2005 report (GAO–05–365) entitled "System Planning Needed to Optimize the Deployment of Checked Baggage Screening Systems." Among other things, the report notes that at the nine airports where TSA has committed resources to moving EDS equipment in-line, these systems will save the federal government **$1.3 billion over seven years** through a dramatic reduction in personnel requirements. Specifically, it is estimated that in-line EDS systems at those nine airports will reduce by 78 percent the number of TSA baggage screeners and supervisors required to screen checked baggage from 6,645 to 1,477. The report further notes that **TSA will recover its initial investment in in-line systems at those airports in just over a year.**

Despite the clear benefits of moving forward with in-line EDS installation, gaining the resources necessary to expedite the process at airports has been difficult. Through fiscal year 2005, Congress has appropriated $1.783 billion for EDS-related terminal modifications, although significant portions of those funds were used by TSA on the short-term challenges associated with getting EDS machines in airports to attempt to meet the original statutory deadlines. With conservative estimates that the federal government needs to commit a total of $4 billion to $5 billion to get the job done at airports that require these solutions, the federal government has met less than half of that need since September 11.

Current Situation: Only a Few Airports Have In-Line Systems or Funding for In-Line Systems

Currently, only 10 of more than 430 commercial service airports currently have in-line EDS systems—Boise; Jacksonville; Lexington, Kentucky; Manchester; Tulsa; Boston; Harrisburg; San Francisco; John Wayne International; and Tampa. An additional eight have received commitments from TSA to fund in-line systems through the Letter of Intent (LOI) process—Atlanta; Boston (previously noted); Denver; Dallas/Fort Worth; Las Vegas; Los Angeles and Ontario International; Phoenix; and Seattle-Tacoma.

The LOI process allows interested airports to provide immediate funding for key projects with a promise that the federal government will reimburse the airport for those expenses over several years. At Dallas-Fort Worth International Airport, for example, the airport used its strong rating in the financial market to leverage the LOI and to issue bonds to install these systems. This approach takes advantage of professional airport management capabilities and maximizes the use of limited federal resources to ensure that key construction projects get underway as soon as possible.

Under the LOI process, the federal government has committed to reimbursing airports for these projects over a three to five year period. The following lists the LOI airports and the total project cost at those airports:

LOI Airports

Airport	Total Cost
Atlanta	$125 million
Boston Logan	$116 million
Dallas/Fort Worth	$139 million
Denver International	$95 million
Las Vegas McCarran	$125 million
Los Angeles/Ontario	$342 million
Phoenix	$122 million
Seattle/Tacoma	$212 million
Total LOI Airports:	**$1.276 Billion**

Unfortunately, the prospects for gaining resources to move forward at airports beyond the nine LOI airports remain bleak. The TSA budget request for FY 2006 calls for only $250 million for EDS installation projects, the amount mandated in law by VISION-100 FAA reauthorization legislation. While $250 million is certainly a significant amount of money, the fact is that it will allow TSA to move forward at only a handful of airports.

In fact, TSA has estimated that roughly $240.5 million of the $250 million requested will be used to meet existing commitments at the nine airports covered by the existing eight LOIs with the agency (the LOI for Los Angeles World Airports covers both Los Angeles International Airport and Ontario International Airport). The $240.5 million figure assumes that the agency is allowed once again to ignore provisions in law that require the federal government to pay for 90 percent of the costs of those projects, otherwise it will be much higher.

While the projects at those nine airports are necessary, critical, and a top priority, the simple fact of the matter is that incremental installments of $250 million a year will not get projects started at additional airports in the foreseeable future. Clearly, more resources are needed to address the dozens of other airports that do not currently have LOIs with the TSA. To give the subcommittee an idea of the scope of current needs that exist beyond the LOI airports, we have included the latest data we have from a number of airports that have identified EDS installation as a major challenge facing their facility.

Airports Currently Without Funding in Place for EDS Installation (With Project Cost Estimate)

Albuquerque	$48 million	Anchorage	$27 million
Biloxi	$5 million	Bismarck	$20 million
Bradley	$35 million	BWI	$65 million
Charlotte	$40 million	Chicago Midway/O'Hare	$90 million
Cincinnati	$20 million	Cleveland	$45 million
Colorado Springs	$15 million	Detroit	$100 million
Elgin AFB	$2 million	El Paso	$15 million
Ft. Lauderdale	$85 million	Grand Rapids	$20 million
Guam	$14 million	Honolulu/Kahului	$78 million
Houston	$115 million	Jackson	$9 million
John Wayne	$12 million	Kansas City	$34 million
Memphis	$42 million	Miami	$200 million
Milwaukee	$35 million	Minneapolis/St. Paul	$30 million

Airports Currently Without Funding in Place for EDS Installation (With Project Cost Estimate)—Continued

Nashville	$40 million	Newark	$99 million
New Orleans	$14 million	New York LaGuardia	$98 million
New York JFK	$250 million	Oakland	$30 million
Omaha	$18 million	Orlando	$140 million
Palm Beach	$30 million	Panama City	$10 million
Philadelphia	$65 million	Portland	$45 million
Port Columbus	$22 million	Providence	$38 million
Raleigh-Durham	$40 million	Richmond	$30 million
Rochester	$10 million	St. Louis	$90 million
St. Thomas	$10 million	Salt Lake City	$20 million
San Antonio	$40 million	San Diego	$20 million
San Francisco	$22 million	San Jose	$172 million
San Juan	$130 million	SW Florida	$28 million
Tampa	$124 million	Tucson	$10 million
Washington Dulles	$121 million	Washington Reagan National	$52 million
Total:	**$3.019 billion**		

We believe that there are dozens of additional airports not listed here that have yet to develop comprehensive cost estimates or that have not responded to our requests for information.

Despite these overwhelming needs, the federal government does not yet have a long-term EDS solution at a significant number of airports across the country. The TSA's task has not been made any easier by opposition from the Office of Management and Budget (OMB) to the issuance of additional LOIs to airports for these projects. It is our sincere hope that OMB will quickly move past what we believe is a short-sighted view of this problem and focus on the long-term benefits that can be achieved by immediately investing to make the terminal modifications necessary to accommodate EDS equipment.

Mr. Chairman, **in-line systems require up-front capital expenditures, but they pay for themselves in short-order through major reductions in personnel costs. This is an example of budget rules that are "penny-wise and pound foolish."** One need only look to the real-world example of the airports where EDS systems have been properly installed to get real examples of the dramatic personnel savings that can be achieved by moving forward with these projects.

We continue to look for creative approaches to address the existing EDS installation funding shortfall, and look forward to continuing our work with you and your staff in that regard. Airports stand ready to support the LOI process, and airport managers have repeatedly expressed to TSA their ability to accommodate a wide variety of financing options to help the federal government fulfill its responsibility.

Beyond additional resources, we urge TSA to continue its work with airport operators and managers to ensure that proposed solutions and changes are really the best course at an individual facility. Airport professionals understand the configuration and layout of their facilities better than anyone and are uniquely suited to highlight where pitfalls lie and where opportunities exist. In addition, TSA must continue to work with airport operators to optimize the use of limited space in airport facilities and to pay airports for the agency's use of space in accordance with the law.

Airports are pleased to see funding in the TSA budget request for ongoing maintenance of EDS machines. As the machines age and as their use continues to grow and their warranties expire, it is critical that funding is provided to keep the existing machines in operation and to restore machines that fail.

Encouraging Development and Deployment of New EDS Technology

In addition to investing in necessary infrastructure improvements and maintenance, the federal government needs to look toward the promise of new technology and invest in making those promises a reality. We remain convinced that there are a number of additional applications for new technology to improve baggage screening, for example. "On-screen" resolution using EDS equipment, for example, offers great promise in enhancing the efficiency of integrated in-line baggage systems, and the utilization of technology to achieve that goal should be encouraged.

The key is for the federal government to encourage innovation in these areas and to make it a priority to investigate and approve new technology as quickly as possible. We are encouraged by the recent certification by TSA of smaller "next-generation" EDS equipment that can be more easily integrated into check-in areas. We believe this equipment holds tremendous promise at numerous smaller airports across

the country as a possible replacement for personnel-intensive trace detection equipment. At many of these smaller facilities, in-line solutions will not be feasible for one reason or another, so the rapid deployment of this type of equipment will produce enormous benefits. We commend TSA for its efforts to certify and deploy this equipment at several pilot-program airports and urge that the results of these pilots be evaluated and incorporated into future practices.

We must also look beyond our borders to learn from the experiences of the rest of the world. In many instances, the goals that we have been discussing over the course of the past several years both in terms of operations and technology are already a reality in many places. We would be wise to study those successes and incorporate best practices where appropriate.

Passenger Screening: Implementation of Registered Traveler and Other Programs Critical

In our view, one of the key components to improving the effectiveness and efficiency in the passenger screening arena is shifting the focus from finding dangerous "things" to finding dangerous "people." The most important weapon that the 19 terrorists had on September 11 wasn't box cutters; it was knowledge—knowledge of our aviation system and existing security protocols, which they used to their advantage.

Programs like Secure Flight and others can help identify threats before dangerous individuals have access to the aviation system and they must be pursued with careful consideration provided to a full range of individual privacy issues. Additionally, we must quickly take advantage of the opportunity that exists through deployment of a Registered Traveler program to greatly reduce the number of people subject to intense scrutiny at screening checkpoints. With more than 700 million passengers traveling through the U.S. aviation system each year—a number that is anticipated to grow to more than one billion annually within the next decade—we simply cannot afford to treat each passenger the same way. Six million passengers make up the overwhelming majority of all travel, and we should make every effort to provide a different screening protocol for this group of trusted travelers. The subcommittee has been apprised of the many benefits of the RT program during your recent series of hearings on the subject.

The goal moving forward for TSA and industry should be to create a permanent, interoperable RT program that improves security, expedites passenger processing, creates screening consistency, and reduces the passenger "hassle factor." We believe strongly that the program needs to move forward now operationally rather than wait for governmental or proprietary solutions to answer all the questions over time.

Conclusion

Mr. Chairman, we appreciate the opportunity to highlight a few areas in which the quick deployment of technology can produce enormous benefits in terms of additional security and greatly reduced costs to the federal government. The sooner we can move forward in these areas, the sooner we can shift resources to other homeland security needs—a priority that the tragic events in London last week tragically reinforced.

Airports have aggressively and persistently attempted to develop a collaborative working relationship with TSA and DHS since the federal government assumed direct control of passenger and baggage screening in the wake of 9/11 with the passage of the Aviation and Transportation Security Act (P.L. 108–176), and our efforts in that regard continue. In our view, a close working relationship makes perfect sense given the unique expertise of airport operators and the incentives airports have as public institutions to perform security responsibilities at the highest levels.

Thank you for allowing us to testify today.

Mr. LINDER. Ms. Berrick.

STATEMENT OF CATHLEEN A. BERRICK, DIRECTOR HOMELAND SECURITY AND JUSTICE, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Ms. BERRICK. Thank you, Mr. Linder and members of the committee.

My testimony today focuses on potential efficiencies and increased security that can be achieved through the integration of Explosive Detection Systems with baggage conveyor systems to screen checked baggage for explosives and the need for better planning to deploy this equipment.

TSA has made substantial progress in deploying Explosive Detection Systems at the Nation's airports. However, due to the high cost and time required to integrate this equipment in-line with baggage conveyor systems, TSA deployed most of this equipment in a stand-alone mode, mainly in airport lobbies. This resulted in operational inefficiencies, including requiring a greater number of screeners and screening fewer bags for explosives each hour. This configuration also resulted in increased security risks due to crowding in lobbies where the machines were located.

TSA also deployed explosive trace detection machines to conduct primary screening of checked baggage. Trace detection involves a screener swabbing a bag which uses chemical analysis to detect traces of explosives. Trace detection is used as a primary screening method at more than 300 airports Nationwide. Trace detection is more labor intensive and less efficient than screening using Explosive Detection Systems, and there are also some security tradeoffs.

TSA and airport operators are taking steps to install in-line baggage screening systems to achieve efficiencies and enhance security. However, resources have not been made available to fund these systems on a large-scale basis, and the overall cost of installing these systems is not known. We found that TSA has not conducted a systematic analysis to determine at which airports they could achieve long-term savings and enhance security by installing in-line systems.

At the nine airports where TSA helped fund the installation of in-line systems, TSA found the test systems could save the Federal Government over $1 billion over 7 years and that the government could recover its initial investment in little over 1 year.

Although an in-line system can yield significant savings they may not be the best solution for all airports. At one airport where TSA helped fund an in-line system, TSA estimated after the installation began that the system actually resulted in a $90 million loss due in part to the significant up-front investment required to make airport modifications. TSA also has not determined whether greater use could be made of Explosive Detection Systems rather than relying on trace detection for airports where in-line systems may not be economically justified.

An analysis of airport baggage screening needs would help TSA determine the optimal deployment of Explosive Detection Systems, potentially resulting in significant savings to the government and enhanced security. This analysis would also help TSA to determine how to effectively use new technologies such as the smaller and faster Explosive Detection Systems.

This concludes my opening statement. I would be happy to respond to any questions at the appropriate time.

[The statement of Ms. Berrick follows:] Maintained in the committee file.

Mr. LINDER. Thank you all very much.

I will recognize myself for 5 minutes to begin the questioning period.

The on-line EDS, is there any new technology here? Anybody take a shot at this. Mr. Parker, is there some new technology?

Mr. PARKER. We have new technologies being added to on-line EDS. I mentioned x-ray diffraction which can be coupled with on-line EDS to actually make it almost completely automated.

Mr. LINDER. And will it pick up plastic explosives?

Mr. PARKER. Yes.

Mr. LINDER. Will it pick up vials of anthrax?

Mr. PARKER. Anthrax, no. Trace detection. We can do that through other forms but not through the checked bags.

Mr. LINDER. Mr. Barber.

Mr. BARBER. Yes. And L–3 is also working a contract with TSA for x-ray diffraction to add—to reduce the alarm rates after the machine to further increase the automation and remove the operator from the scene as much as possible.

Mr. LINDER. Is there a means to standardize aviation security technology benchmarks for the vendors to all be on the same page, or should we not do that?

Ms. BERRICK. If I could add, I think where this needs to start is TSA needs to conduct risk assessments across aviation and all modes of transportation to determine what are the threats that they need to develop technologies to counter and then also what are the vulnerabilities and criticality. Once they conduct these threat assessments, which we found they haven't completed in the aviation sector—

Mr. LINDER. Have they started it?

Ms. BERRICK. They have. They started and focused primarily on threat assessments. They have done much less related to vulnerability assessments and criticality assessments. Once they complete these assessments, they need to develop operational requirements and then establish benchmarks that technology companies should strive for to meet to fill security gaps.

Mr. LINDER. I fear that the TSA has become a wholly owned subsidiary of the airline industry.

Mr. Hauptli, tell me, of the six million regular travelers, how many of the 690 million flights do they make up?

Mr. HAUPTLI. Mr. Linder, I don't know that off the top of my head. I just know that those 6 million passengers make up—it is something like 60 or 70 percent of the enplanements for the year. So the point being that is a group of people that travel on a regular basis. They are willing—most, if not all of them, are going to be willing to submit to whatever sort of process people decide is necessary, additional background checks, whatever vetting needs to happen so that they can move through the system as efficiently as possible.

Mr. LINDER. I expect you are working closely with that.

Is there any expectation that if they get a fingerprint, a biometric and you have been checked, that you don't have to go through the gates, don't have to take your computer out of the case, don't have to take off your shoes?

Mr. HAUPTLI. We arm-wrestle with TSA all the time about that, sir, in terms of what they would be willing to sort of give up in the security process. And that is clearly one of the things that we focus on, is the whole notion of do you have to take your shoes off. Do you have to take your computer out of the case.

Mr. LINDER. Well, what is the point? If you have to go through the same process, what is the point?

Mr. HAUPTLI. And that is our point as well. We argue that there ought to be—that people still should be subject to screening and security, not to the secondary screening, and that there are things like whether or not you have to take your coat off, whether or not you have to take your computer out of your bag, whether or not you have to take your shoes off that TSA should look at.

Mr. LINDER. Are we looking at a new version of technology coming along where you can walk through a magnetometer of some new development that will sniff everything—explosives, weapons, et cetera, vials of anthrax? Are we getting anywhere near the point of that?

Mr. BARBER. There is a variety of technologies that are emerging, Congressman, that are potentially applicable. They are in the early stages in many cases. Others are in more mature stages of development.

The technology right now for automated detection at a checkpoint is really centered around the CT that currently exists. Unfortunately, it is physically very large and would have a significant impact from a footprint standpoint on a checkpoint. But there is automatic detection that is available that is older technology, that if we look at spiral development of adding other technologies as they become available to reduce alarm rates down that may be a more practical or certainly more interim kind of a solution. Even if it doesn't provide the solution, it may provide operator aids so that we can at least start to get some explosive detection into the checkpoint.

Mr. LINDER. Either of your companies working on backscatter activity?

Mr. PARKER. We are working on a technology, the millimeter waves, which is another—it is not backscatter, but it is something that competes with backscatter. It is faster. No ionization issues.

Also, Congressman Linder, if I can also just make a comment on the sensors fusion, if you will, pulling things together, varying technologies together. You know, as an example, we recently were able to demonstrate pulling together a shoe scanner using quadrupole resonance technology along with trace detection, three access and networking as well as biometrics, networking all that together. So that capability is there. We just need to know what the standards are and the plans for deployment and we can work on those technologies.

Mr. LINDER. Thank you.

My time has expired. Ms. Sanchez, I recognize you for 5 minutes.

Ms. SANCHEZ. Thank you, Mr. Chairman.

I want to ask you, Ms. Berrick, a couple of questions.

First of all, you mentioned that the TSA has not finished but it has begun to work on some risk assessment threat information with respect to the airports. Do you know if they have begun to do that for rail or mass transit or some of the other responsibilities that they have with respect to passenger transportation?

Ms. BERRICK. To a much lesser extent, although they are beginning to. Right after September 11, TSA obviously focused on aviation security; and because of that the Department of Transpor-

tation really still had a role in security up until pretty much recently. They are still involved, but TSA is starting to become more involved in other modes of transportation.

For example, in rail security they have conducted some threat assessments, but they have done much more limited vulnerability assessments identifying how vulnerable different stations are to potential threats. Then also criticality assessments, meaning how critical are different stations or trains in terms of loss of life or economic impact.

So, to answer your question, they have primarily focused on aviation more so than other modes of transportation. They are starting to get involved more in other modes of transportation, but they still haven't completed all of the risk assessments.

Ms. SANCHEZ. So from your, I would assume, somewhat limited view, because you are just one person and we have really never done this before and you are sort of breaking into the field, if you will, could you rate what, in your opinion, what percentage of airline plan risk assessment vulnerability they have done that you think they might have to do, what percentage of rail, what percentage of mass transit?

Ms. BERRICK. In those three, estimating, I would say in aviation security they have probably done about 75 percent where they need to be. And TSA identifies continually and so does DHS that they need to follow a risk management approach. So they agree with this approach. It is just a matter of doing it, and it does require some time and resources.

In rail, I would say that it is less, probably around 40 percent; and that is a combination of what TSA has done and also what the Department of Transportation has done related to rail.

And I would say right about 30 percent also for mass transit. Because, again, the Department of Transportation has also been doing some vulnerability assessments that are useful.

Ms. SANCHEZ. Great.

The in-line EDS system, we just heard that with the nine systems it is estimated that it is going to be about a billion dollars of savings over 7 years and that the initial investment would be recovered in a little bit over a year. If that is the case, have you talked to TSA? I mean, you know, when we see the budget that they have proposed, they have, quite frankly, failed to ask for funds for in-line EDS systems, even on some of the letters of intent that they have. Have they justified that to you as you have looked over their plans?

Ms. BERRICK. In our review of their baggage screening program they have identified, first of all, it requires a huge up-front investment to install an in-line system; and, right now, with the letter of the intent agreement, it is a 75 percent/25 percent cost share between the Federal Government and the airport. So the airports would have to be willing to put up 25 percent to fund the in-line system. So TSA's position is it is very capital intensive and airports have to agree to partner with us in these systems.

Having said that, one of the things we recommended based on the work that we did was TSA really needs to conduct, basically, an analysis to develop a business case to identify and provide Congress information that you can use to make informed decisions

about where would in-line systems make sense. In doing that analysis, they could identify what would be the benefits to the government in terms of reduced screeners and potentially enhanced security and also what would be the benefits to the private sector, the air carrier and the airports that also receive benefits from—because baggage is moving through the system much more quickly.

So I think if TSA does an analysis, identifies to the Congress what the benefits are and which airports' in-line systems make sense—because, again, it probably doesn't make sense for all airports—then you would have the information that you need to make informed decisions.

Ms. SANCHEZ. One last question, very quickly.

When you have been reviewing and taking a look at some of this, you know there is this whole issue of new technology and everybody comes through the door. They have got the latest and the best. Do you see a plan with TSA in partnership with some of these private companies to sort of almost in a visionary way look to see where the next new thing is that they need? I mean, are they thinking that far ahead? Or is it just like, this guy is in front me today; do I buy his product or not?

Ms. BERRICK. We did do a study of TSA and DHS transportation security R&D programs and identified some areas for improvement. One was the plan that you are mentioning. TSA had not developed a strategic plan for research and development for transportation security. I am told that it is being drafted right now, and it is soon to be finalized.

Everything we identified was that DHS and TSA were not managing the R&D programs very well. For example, when we asked for a listing of all of your R&D programs, it took a very long time to get that listing because it wasn't centrally managed. Also, about 90 percent of the programs didn't have estimated deployment dates. So, although we got a listing, it was unclear when these technologies were ever going to come to fruition. So we made some recommendations to help them better manage their R&D program.

But it looks like they are moving in the right direction with the strategic plan. Now they just need to put the management in place to make sure they follow through with that.

Mr. DICKS. Will the gentlelady yield just on this for just a quick intervention?

Ms. SANCHEZ. If the chairman will allow.

Mr. LINDER. The gentlelady's time has expired. But go ahead.

Mr. DICKS. How much are they spending on R&D?

Ms. BERRICK. In the 2006 President's budget request, I am not sure exactly what they are requesting for R&D. It has been about—I think last year was about $150 million for R&D. I am not certain what they have requested this year, but they have—if you look at all of their transportation security R&D and programs, they have about 200 right now; and about 70 percent of that is in aviation.

Mr. LINDER. The gentlelady's time has expired.

Gentleman from Mississippi.

Mr. THOMPSON. Thank you very much.

You need a little more time to ask.

Mr. DICKS. Well, the other gentleman wanted to comment on this question, Mr. Chairman.

Mr. HAUPTLI. Mr. Dicks, I was just going to make the point that in the previous budget TSA ended up using some of their R&D money to pay for screeners, much to the chagrin of Mr. DeFazio and Mr. Mica and the folks who had been overseeing that issue at the time. Because of the pressure that they had on their budget to pay for personnel, they robbed Peter to pay Paul, which was very disappointing to the industry.

Mr. DICKS. I thought you were going to say robbed Peter to pay John.

Mr. THOMPSON. Reclaiming my time, one of the questions, Ms. Berrick, is how—in your review of TSA, did you find how they went about identifying new technology as a department?

Ms. BERRICK. That is one of the things we did look at. The first thing we looked at, it was to what extent did they do these risk assessments to identify what were the security holes that they needed to fix? And what we found there was that they were moving in the right direction. They had conducted some of these risk assessments, but there was more work that they needed to do.

We also looked at their coordination with other Federal agencies that are involved in research and development and also with the private sector, and we found that TSA could do a better job in coordinating with other agencies in terms of research and development programs that they had undergone. For example, Department of Transportation and NASA had some related R&D projects.

Then also we talked to some private sector stakeholders, and they felt that TSA could do a better job partnering with them on research and development programs that were out there.

Another thing that we found in a lot of transportation security work that we have done is that the private sector often looks to TSA to identify promising R&D programs and promising technology that they could apply. Understanding that they have a role in homeland security, they are willing oftentimes to spend the money. It is just they need some guidance from TSA on what is the best place to spend it. So we also found that in the work that we have done.

Mr. THOMPSON. Thank you.

One of the things is the notion that all of our airports are the same and, therefore, they need all of the identical equipment. Did you find whether or not TSA had separated airports based on some review of what technologies might be best for individual airports?

Ms. BERRICK. TSA has categorized airports based on the size and the amount of volume that the airports have. But in terms of doing a systematic analysis across the airports, because, as you mentioned, they are very different in terms of baggage screening, they have not done that. They have started to do it. We did make a recommendation that TSA do that. They started this analysis.

But we think it is critically important because, as you mentioned, in-line systems may not be appropriate for every airport. We have over 300 airports that are relying primarily on explosive trace detection, and there are some limitations with that. So—and even as in-line systems are installed that sprang up from Explosive Detection Systems that potentially could be moved to some of these smaller airports in place of the trace detection.

So we think it is critically important that TSA conduct this planning, and at the time of our review they had not done that.

Mr. THOMPSON. For the people who are actually in the business, have you found the fact that DHS does not really have a technology plan—have you found that as a deterrent to doing business with them, or would you like for them to come forth with a technology plan that you could look at?

Mr. PARKER. We work very closely together with TSA and DHS on technology and the plans going for the future. I think the only issue is that they tend to work on one technology at a time, as opposed to—just like Congressman Linder was asking on there is capability of putting multiple technologies together in a solution. And that is where it gets a little difficult because they just tend to work on one technology at a time, as opposed to a concurrence of technology.

Mr. THOMPSON. Mr. Barber.

Mr. BARBER. Yeah. Our experience with TSA is if we bring an idea to them they are very receptive to it. The level of complication sometimes does become a deterrent when we are looking at beginning to add multiple technologies to what is currently available for in-line. However, if we can put together a reasonable business plan we have had a fair amount of success in working together with TSA.

As the lady from the John Wayne area said, there is a lot of technologies out there, and everybody has got the latest and greatest thing. I think we are all looking at the technologies ourselves trying to find the best combination that fully automates these things. The better the partnership, the better we can achieve that.

Mr. THOMPSON. Thank you, Mr. Chairman.

Mr. LINDER. The Chair recognizes the gentleman from Washington.

Mr. DICKS. Thank you, Mr. Chairman.

I am not sure I know how to—can you hear me? So as we have it up here, GAO reported in 2004 that $126 million is spent on TSA aviation R&D, which was 80 percent of the entire amount of R&D done by TSA. That is our number. So the total R&D is about $155 million. But a big significant part is being put into the aviation account, is that correct?

Ms. BERRICK. That is correct.

Mr. DICKS. And you are saying that part of that money was borrowed to pay the cost of the screeners?

Ms. BERRICK. In some past years, the R&D budget that TSA received for R&D programs was moved to other areas, including paying screeners salaries.

Mr. DICKS. Do you have any idea how much it was?

Mr. BERRICK. I don't have it off the top of my head.

Mr. DICKS. Can you get us that for the record?

Ms. BERRICK. Certainly. I will get that information.

Mr. DICKS. Apparently, also we have a limit on the number of screeners. This is something that was imposed by Congress which I have a problem with because I think we are going to see a—you know, hopefully without another 9/11 type incident—a significant growth in passenger levels. They are going to expand. And I worry that with this congressionally imposed cap that we are not going

to have the ability to properly screen these people or we are going to have tremendous lines at some of the key airports like Atlanta and Seattle, Portland and Los Angeles.

Bennie, I can't think of your airport down there. I am trying to work on it.

Mr. THOMPSON. Jackson.

Mr. DICKS. But isn't that a problem if they continue this cap, that there is going to be a problem of getting the job done?

Ms. BERRICK. That is a concern.

One of the things that TSA recently did that I think will help address this problem is they developed a model to try to identify the optimal numbers of screeners at each airport. They are putting in different factors such as the time required for training, overtime, leave, things of that nature, to make sure they are coming up with the appropriate numbers at each airport.

Another thing that they are doing is they established mobile screening teams. So if they have a particular high volume at a certain airport they can deploy these teams to that airport to help pick up some of the slack so—

Mr. DICKS. I must admit that has worked pretty effectively at Seattle-Tacoma. I mean, they have sent people there. They created a training center there. But there was a lot of congressional review of what they were doing. And Mr. Rogers helped us on that, by the way.

But I just worry about this cap. I just think, you know, I would rather have another way of dealing with it rather than an arbitrary cap. I think some judgment to the agency about how many people to hire. You know, I realize there was a tremendous growth the first few years. But if we have a growth in traffic, I just worry about that.

Ms. BERRICK. GAO has actually been mandated to look at this very issue about the screener cap and how TSA is allocating screeners among the airports and do they have enough. And we have started that. So, in the future, we will have more information to provide you on that subject.

Mr. DICKS. Okay.

Mr. Parker, on the EDS system, that is your system, right, General Electric?

Mr. PARKER. Yes.

Mr. DICKS. What is the problem? Is the problem just the cost of getting these things out there? That is the problem? What do we have? Eight airports now or nine airports that have ordered these systems?

Mr. PARKER. Right.

Mr. DICKS. Is it because of the change in structure at the airports, that these are large airports and therefore they have to do a major reconstruction of the airport to put the system in? Is that the biggest problem? And the 25 percent match, and I assume is part of the problem, too.

Mr. PARKER. Well, I think it is a couple of things. Yes, there is a major investment in the baggage handling system to install it, and also the fact that today there is no financing alternatives that are being pursued to help with the up-front cost.

Mr. DICKS. Well, the government does this letter of intent, right, and that means that they intend to put up 75 percent of the cost. Has that worked effectively or not? I mean, I guess if only eight or nine airports have done it, it has been limited in its success.

Mr. PARKER. It is limited.

Mr. DICKS. Is a big part the 25 percent? Is that the problem? Or is it the reconfiguring the airport that is the problem?

Mr. PARKER. I think it is a factor of both, frankly. It is reconfiguring and the up-front cost.

Mr. HAUPTLI. Mr. Dicks, if I could just add a couple of points on that.

Part of the problem, the airports have been very frustrated. Congress authorized $500 million a year for this, and the administration has only asked for $250,000 a year or $250 million a year. Congress has provided somewhere in that range, and so there is a gap there.

Mr. DICKS. This is the money for—

Mr. HAUPTLI. For installing—

Mr. DICKS. For fulfilling the letter of intent.

Mr. HAUPTLI. Yes, sir, for installing the in-line EDS systems at the Nation's airports.

The biggest part of the expense is not the equipment itself. It is the modifications to the airport. Congress originally made it a 90 percent Federal participation, 10 percent local matching share; and because the dollars had not been appropriated sufficient to meet that, Congress has in the appropriations process ratcheted that back or attempted to ratchet that back over the past couple of years to 75/25.

Mr. DICKS. So that has had a negative effect.

Mr. HAUPTLI. Yes, sir.

Mr. DICKS. Thank you, Mr. Chairman.

Mr. LINDER. The gentleman's time has expired.

Gentleman from Oregon is recognized for 5 minutes.

Mr. DEFAZIO. Thank you, Mr. Chairman.

Just to follow up on that. My understanding—Ms. Berrick, have you looked at the return on investment for the installation of this equipment? My understanding is that we have some analysis on threat resolution here from General Electric. We have heard other, I think, testimony on this. The return on investment because of the diminution of labor costs is quite high for these in-line systems, is that correct?

Ms. BERRICK. Right. We looked at TSA's estimates, and they identified that the systems could pay for themselves in a little over 1 year. And this is primarily due to the reduction in screeners that would be required to run an in-line system. Specifically, they estimated that they could reduce the number of screeners by 78 percent, which is very significant.

Mr. DEFAZIO. So if the administration spent a little bit more money in 1 year and installed the new equipment in cooperation with all the airports that are standing in line for equipment and just want the Federal Government to partner with them, the government would recoup within 2 years that total investment and begin saving money in the annual budget.

Ms. BERRICK. Right. I should clarify that that is what TSA has estimated. We have gone to them and said, now that you have established some in-line systems, do you have actual data showing savings? And they haven't done a lot of analysis on that end. But the front-end analysis based on the projections that they made and we also independently looked at those, there is opportunity for substantial savings.

Mr. DEFAZIO. So you were going to look at back-end analysis, real-world analysis?

Ms. BERRICK. Right. We want to get that information after they have been installed.

Mr. DEFAZIO. That would be very helpful.

On the issue of diffraction-based resolution of threat, where would this be in the—I am thinking of the British system where you have two levels of automated threat and the third level is operator. Are you anticipating we run things through an EDS, operators would look at it, and then it would go to the diffraction-based system? Or, would it go through the regular EDS, go through the diffraction-based and only things that couldn't be resolved there would be looked at by the operator?

Mr. BARBER. The key is the technology needs to be fielded to help reduce alarms, and operationally I think what you are asking is what is the best bang for the buck to reduce labor cost. I mean, one could take the scenario that you just take out the operator and let the equipment do the resolution and then all bags go to search that are finally not resolved. But it is probably some combination. But until the technology gets fielded and we get some trials in conjunction with the improvements that are being made in the basic EDS then we will know what the best course of action is.

Mr. DEFAZIO. So this could tell the difference between a bomb and fruitcake for instance.

Mr. BARBER. Yes.

Mr. DEFAZIO. Which the current systems have a little trouble with.

Mr. BARBER. Sometimes, yes.

Mr. DEFAZIO. I for the life of me don't understand why TSA doesn't do a very general announcement when a person buys a ticket saying, don't pack. . .and here is the things you shouldn't pack or your bag may be opened and things might disappear or might arrive in disarray. But they are very resistant to doing that. I don't know why. But that could help the problem, too, on the front end. Tell people not to pack this stuff because of those problems.

Your return on investment estimates for threat resolution or these other investments, are they in line with what TSA has said? I mean, have you looked at those issues?

Mr. BARBER. For example, networking in our case, Congressman, the networking and on-screen resolution, just as an incremental technology add-on, is on the order of 30 percent savings versus just having in-line. We have about 170 systems that are now on line out of the 550 that we have fielded; and a hundred of those are now networks, compared to four before. So it makes a big difference whether you are looking at incremental technology add-ons or just going in-line. But we believe also that the savings is significant

just going in-line. That is the biggest bang for the buck, no questions.

Mr. DEFAZIO. Mr. Parker.

Mr. PARKER. Yes, if you look at an example I gave on San Francisco, that is, 46 of our systems all networked together in one control room; and the savings that I articulated in my comments were specifically as a result of that.

Mr. DEFAZIO. Those are phenomenal savings. It seems like we are shorting the taxpayer here by not making an up-front investment one time that would save us money beginning 18 months out.

Mr. Hauptli, just the Orlando model—we had some testimony—Trusted Traveler. I agree with you. I would love to get specifics on how many people take what number of flights. Because the numbers are all over the place. But we all agree there is some small number of people that take a large number of flights, travel frequently.

Mr. HAUPTLI. Most of them are right up here.

Mr. DEFAZIO. There are others—but, yeah—who suffer as much or more than we do.

But, on Orlando, do you—I have tremendous concerns that we have the $79.95 model, which is something that was market tested, is not being sold at or near cost, not regulated, and there is potential for a monopoly gouging the other airport profits in this and the airport might have an incentive to create really long lines for the people who haven't bought their product and they haven't profited from it. Do you have concerns about this poor profit model?

Mr. HAUPTLI. Sir, I will go ahead and mark you as undecided in your view on the Orlando model. That is not an issue that we have really taken a look at. We haven't focused on that specific example. Orlando is not part of this initial group of founding airports that is part of this consortium. They may try and come in later, and we would welcome them.

But I think that you are going to find that it will probably, as this moves forward, vary from airport to airport as airports decide what additional sorts of benefits that they might want to provide to the people who sign up. In some instances, you could envision a situation where people would want to provide preferred parking as well as part of the whole travel experience. There is a whole range of possibilities.

We are just really at the infancy in the creation of, again, these common business rules and technical standards. So I know that there is concern expressed by some about what Orlando is trying to do. They are sort of off on their own on that one.

Mr. DEFAZIO. Okay. Thank you.

Mr. LINDER. The time of the gentleman has expired.

Gentleman from Rhode Island is recognized for 5 minutes.

Mr. LANGEVIN. Thank you, Mr. Chairman; and I want to thank all of our witnesses for testifying today.

I would like to turn my attention first to EDS equipment, and my first question is for Ms. Berrick. How is TSA determining which airports receive letters of intent for in-line EDS systems and do they use risk assessments in making these determinations or physical assessments of particular airports' needs or some other method? In particular, T.F. Green airport in Rhode Island, my home

State, has been eagerly awaiting its LOI for several years now; and, meanwhile, its stand-alone system is creating continuous hazards and problems for employees and travelers due to its placement right at the main ticketing area. So that question.

My next question is for Mr. Hauptli. Do you think that letters of intent have been an effective way to construct public-private partnerships to enable development of in-line EDS systems and how do you think TSA should in fact prioritize which airports receive funds for in-line EDS systems construction?

Ms. BERRICK. With respect to criteria for issuing letters of intent, initially, TSA's criteria were really two points. The first was who was going to be requesting the LOI first. So it was really almost a first-come-first-serve basis. Along with that is who was willing to—what airports were willing to upfront the 25 percent cost share. So initially that was really the criteria, which airports were willing to do this and willing to make this up-front investment.

Since that time, TSA has put some criteria in place; and that criteria is primarily if these airports did not have in-line systems would they fall out of compliance of electronically screening checked baggage for explosives. So it is, from a security standpoint, if we don't have in-line systems, will airports not be able to screen baggage.

And you asked about risk assessments, and they are starting to use that as a part of their criteria. But it is really in its infancy. They need to do more in that area.

Mr. LANGEVIN. So you are saying before it was first-come-first-serve with no assessment made at all.

Ms. BERRICK. Right. That is what we were told by TSA. And now again they have started to develop criterion moving forward, and we recommended and they agreed that they need to develop a plan on which airports' in-line systems would make sense in terms of savings and efficiency, and as part of that, they are developing criteria and moving forward. But the initial letters of intent they reported to us that it was based on which airports were willing to make the up-front investment and who came in first and requested it.

Mr. LANGEVIN. Okay. That indicates again how backwards the system is as far as I am concerned.

Okay, Mr. Hauptli.

Mr. HAUPTLI. Yes. Mr. Langevin, the question in part was how effective has the letter of intent program been. I would say if you look at 50 or 60 of them that have been received and for the only 8 or 9 of them being issued and the Office of Management and Budget essentially sitting on the DHS and sitting on TSA and telling them not to issue any additional new letters of intent, which has been tremendously frustrating to the airport community—so a promising program.

TSA asked for help in the creation of a letter of intent program. It was modeled after a similar kind of program that is used in the airport improvement program in the FAA and got going. But then OMB sort of came in and said, let's not do any more of these; and so TSA hasn't issued any more of them.

There is—like I said, there is a bunch of airports chomping at the bit to get letters of intent. In the written testimony there is a

whole list of those airports with dollar amounts associated next to it.

Mr. HAUPTLI. Congress has not appropriated sufficient funds, so from an airport perspective this is a 4—to $5 billion program that Congress is appropriating 250—to $300 million a year to solve. At that rate, it will take 10, 15 years to get these in place, and we don't have the luxury of that kind of time.

Mr. LANGEVIN. No, we don't. Thank you, my time has expired, but I may have some questions for the record and I yield back, Mr. Chairman.

Mr. LINDER. The gentleman from Massachusetts is recognized for 5 minutes.

Mr. MARKEY. Thank you, Mr. Chairman, very much.

It is a national scandal that we do not screen cargo that goes onto passenger planes in any meaningful way. It is a scandal. And it will be a national tragedy if Al-Qa'ida exploits that weakness in our defense system, if the TSA is allowed to continue to use the excuse that the technology does not exist to screen cargo.

Seventy-five percent of all cargo can be screened using existing technology that is already used to screen the baggage of passengers which is screened on those very same passenger planes. As you all know, a package this size doesn't even have to go through the known shipper program to get onto a plane. If it was in our bags, they would take it out, they would wand it, they would look at this three different ways. If you put it on this cargo, not even the known shipper program is—

Mr. Barber, as you know, the RAND study in September of 2004 determined that 75 percent of all commercial cargo transported on passenger planes could be inspected for screened luggage.

Mr. Barber, I would like to start with you. L–3 worked successfully with the Massachusetts Port Authority at Logan Airport on an air cargo inspection program that began 2 years ago. This program demonstrated the feasibility of screening 100 percent of the cargo that is loaded on passenger planes.

I expect that you are aware that the Bush administration and the airlines claim that the technology doesn't exist to inspect 100 percent of the cargo loaded aboard airliners, even though we currently inspect 100 percent of airline passengers, their check bags, their carry-on bags. The Bush administration would have us believe that screening 100 percent of the containers in the cargo bay is beyond the technological capacity of the Federal Government. NASA will be launching a shuttle, but we are told we can't figure out how to screen bags, cargo, that is almost identical to passenger bags.

In fact, when I made the amendment with Congressman Shays, Asa Hutchinson says, because of the significant technological limitations, there is no practical way to achieve 100 percent manual inspection of the air cargo. And that is absolutely untrue. Absolutely untrue.

Mr. Barber, I understand that L–3 provides Dutch customs with equipment to inspect cargo that is carried aboard passenger planes and cargo planes in Amsterdam. Could this equipment be used for a similar purpose in the United States?

Mr. BARBER. Absolutely, Congressman. It is a truck screener primarily, or a container screener; it does provide an image for an operator. It does not do explosive detection, but it could provide an image. And if we considered adding technology to that in a layered approach, that is a potential solution, yes.

Mr. MARKEY. Thank you.

Mr. Parker—

Mr. DICKS. For explosives, too?

Mr. BARBER. Well, the current capability in cargo, large cargo screening, unlike the packages the Congressman has shown, would not be able to discriminate for explosives, but other technologies could be added on. I mean, you could do something as simple as put portals or holes in the cargo and try to draw off a sample to try and get at least some indication of it, like the trace equivalent. Plus, if you combine that with the trusted shipper kind of program, you can begin to build a layered security solution. And it may not be perfect, but it would be an approach.

Mr. MARKEY. Mr. Parker, do you believe that the technology currently exists to inspect 100 percent of air cargo carried onto passenger planes?

Mr. PARKER. Certainly when it comes to break cargo, that technology does exist.

Mr. MARKEY. Thank you, Mr. Parker, for that answer.

I would like to read, if I may briefly, Mr. Chairman, something for the record that was sent to me by the head of the Massachusetts Port Authority, Mr. Craig Coy, who wrote to me in February of this year to update me on the results achieved by the cargo demonstration at Logan Airport conducted in coordination with L–3.

In his letter, Mr. Coy said to me, quote: 100 percent screening of all air cargo on all types of aircraft is technically possible. Two, a Federal mandate for this is critical, both in order to deal with the liability issues and to provide the technical standards this complex screening challenge must meet. And third, a Federal mechanism needs to be established that fairly distributes the cost among the major players, the Federal Government, the shippers, the carriers and the airports.

I ask unanimous consent that this letter in its entirety be placed into the record, Mr. Chairman.

Mr. LINDER. Without objection.

[The information follows:]

Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128-2909
Telephone (617) 428-2800
www.massport.com

February 14, 2005

The Honorable Edward J. Markey
2108 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Markey:

Our Chairman, John Quelch briefed us on his World Economic Forum participation in Davos and shared his discussion with you regarding your continuing support for increased air cargo security. I wanted to take this opportunity to bring you up to date on the air cargo screening pilot we've been running here at Logan International and provide you with some of our early conclusions, since you visited our pilot program during the Democratic National Convention.

As you recall, we designed the pilot to provide an initial look at possible screening technologies. But our test program also provided valuable data on the processes and procedures needed to bring air cargo screening into parity with baggage screening aboard passenger aircraft. And it furthered our understanding of those issues which are unique to the screening of air freight on dedicated cargo aircraft. We have thus far completed two of the three planned phases of this pilot and have drawn these early conclusions:

- 100% screening of all air cargo on all types of aircraft is technically possible
- A federal mandate for this is critical; both in order to deal with the liability issues and to provide the technical standards this complex screening challenge must meet.
- A funding mechanism needs to be established that fairly distributes the cost among the major players: the federal government, the shippers, the carriers, the airports

We will keep you updated on the progress of our air cargo pilot and look forward to working with you and your staff on this important national security issue.

Sincerely,

Craig

Thanks for your leadership and support on this issue. ek

Craig P. Coy
Chief Executive Officer

cc: Professor John A. Quelch, Chairman

Jul 14 05 01:18p p.2

Mr. MARKEY. In the aftermath of the London bombings, for someone from Boston that had 10 people led by Mohammed Attah, who hijacked two planes 3 miles from my house 4 years ago, this is a very serious business. The next sleeper cell could very well right now be activated and getting ready to move, and this is a wide-open opportunity to recreate to a very large extent what happened on 9/11. And I believe that what you are telling us today is that the Federal Government, the Bush administration, has no excuse for not putting together a comprehensive program to ensure that no passenger flies in America that has their shoes screened and their bags screened, but the cargo under their feet unscreened that can be used as an opening for Al-Qa'ida.

Thank you, Mr. Chairman.

Mr. LINDER. The hearing has come to an end; it will be adjourned. I want to thank our witnesses, you have been very helpful, your time has been very valuable to us—just this panel. We have another panel coming up. So thank you very much for your time.

Mr. ROGERS. [Presiding.] At this point, due to the large number of the second panel that is here, we would request unanimous consent that the oral statements by each of our witnesses be limited to 3 minutes. Without objection, so ordered.

I would like to thank the panel for their time. I know everybody is busy, and we really do appreciate your availability and your willingness to come and make statements and testify before this committee.

[The statement of Mr. Ellenbogen follows:]

PREPARED STATEMENT OF MICHAEL ELLENBOGEN

Mr. Chairman, on behalf of Reveal Imaging Technologies, I would like to thank you for the opportunity to appear before the Committee to offer my observations on deployment of Explosive Detection System (EDS) technology to improve efficiency and enhance the effectiveness of airport security screening. As a relatively new company, this marks Reveal's second opportunity to testify on our next generation aviation security solution, and we very much appreciate your invitation to appear before the Committee today.

The enactment of the Aviation and Transportation Security Act (ATSA) was a defining moment in the history of aviation security and the security industry. For the first time Congress mandated 100 percent screening of all passengers checked baggage, along with other improvements to the aviation security system, such as screening of carry-on baggage for explosives. This law has dramatically improved aviation security.

In addition to establishing the screening deadline, Congress provided clear direction by specifying that baggage screening must be performed using the Transportation Security Administration's (TSA) Certified Explosive Detection Systems. Based on ATSA's clear direction, Reveal developed a next-generation EDS that was based on computed tomography (CT) technology, but at the same time was

- less expensive;
- smaller and lighter; and
- in-line with the way an airport operates.

ATSA had the unforeseen benefit of creating a climate whereby private funding became available for entrepreneurs with solutions to aviation security challenges. It was in this environment that Reveal was able to raise in excess of $20 million in private funds for one express purpose—to develop, certify, and manufacture a next-generation explosive detection system.

Yet, even though we are privately owned, we consider the Transportation Security Administration our partner. We are making every effort to work with TSA to find innovative solutions to meet the national mandate to screen airline passenger baggage. Reveal counts on direction from TSA to improve our current product and develop future products that will fulfill screening requirements while meeting the operational needs of airports, airlines and passengers. This collaboration with TSA is essential if federal research and development (R&D) funds are going to be aug-

mented by private investment in the development of innovative solutions that provide not only the highest level of security, but also the highest possible levels of customer service to the millions of air travelers in this country.

Now more than ever the aviation industry needs clear direction from TSA on the agency's strategic plan. Without this direction, it is impossible to produce the detailed cost benefit analysis that is required by private investors before they provide funds to improve existing products or design new products. In this time of limited taxpayer dollars, both Congress and TSA should welcome the leveraging of federal R&D funds with private investment.

Checked Baggage Screening: Lessons Learned

There are two broad categories of EDS machines currently available.

- Stand-alone machines that are deployed in "lobby" installations.
- Integrated machines that are deployed in "in-line" installations.

The two primary advantages of the lobby installations are the quick implementation time and the fact that passengers will be present if their bag is flagged for physical search. This approach is labor intensive, uses valuable lobby space, and is not convenient for the passenger. It is clear to all that this is not an effective long-term solution.

The current solution to the lobby problem is to install EDS machines directly into the baggage conveyor system. This option requires significant modification to the baggage conveyor system and airport infrastructure in order to add the EDS equipment, conveyors, and bag tracking systems. To implement this solution, most airports will be required to re-construct existing terminals to house the baggage screening equipment and personnel—or even create new buildings or extensions to do so. Government estimates project that up to $5 billion in additional equipment and airport infrastructure will be required to achieve the 100 percent inspection mandate using the in-line solution.

This is not meant to imply that placing EDS equipment in-line is not a good approach. In fact, we believe that in-line screening is indeed the best option available to both airports and TSA. By placing EDS equipment in-line and networking the systems to a single screener, TSA will be able to realize substantial labor savings year after year. Your colleagues on the Appropriations Committee acknowledged this in the committee report (H.R. 108–541) accompanying the fiscal year 2005 Homeland Security bill, by stating that "if TSA deployed inline Explosive Detection Systems (EDS) machines with multiplexing capabilities, TSA could save up to six FTEs for each suite installed." Clearly there is a sound financial reason for the Federal Government to implement this solution.

What about the other stakeholders? Does deploying EDS equipment in-line make sense to airports, airlines, and passengers. Again, I believe the answer is an unequivocal yes. This was clearly articulated last year in Congressional testimony by representatives of Airports Council International and American Association of Airport Executives. In their written testimony, Mr. David Plavin and Mr. Todd Hauptli stated," nowhere can better improvements be made in aviation security and system efficiency than in the area of explosive detection (EDS) installation at airports. While the costs of moving EDS equipment out of crowded terminals lobbies and placing it 'in-line' as part of the airport's integrated baggage system are significant with a price tag estimated between $4 billion and $5 billion nationally, investing now in this effort will improve security and service and produce significant personnel savings."

Next Generation Explosive Detection Systems

Reveal has spent the last year working with Congress, TSA, airports, and airlines trying to answer the question, "Is it possible to deploy EDS in-line and gain the inherent personnel savings for TSA, while at the same time reducing the $4 billion to $5 billion airport installation price tag?" One doesn't have to spend very much time with airports before you recognize that the needs and desires of each airport are different. For example, the screening issues confronting Los Angeles International Airport are different from those of Gulfport-Biloxi International Airport in Mississippi. Given this reality, how do you best solve this dilemma and still provide airports with the options they will ultimately require?

Reveal has designed, certified, and built a product that not only provides a means for TSA to achieve their personnel savings, but also provides airports and airlines with a way to deploy EDS in-line at a fraction of the cost. It is also a true success story of how industry and government can work together to very quickly define, develop, and produce new and innovative technology.

Briefly, Reveal developed a way to reduce the size of EDS machines without conceding detection performance. This allows next-generation EDS machines to be far smaller and less expensive than the incumbent generation of screening units. While

sharing the same tunnel size as existing EDS products, these systems can now be built into the passenger ticket counter or check-in desk in a network of EDS scanners.

This distributed architecture provides in-line EDS without forcing airports to undertake the costly redesign and rebuild of their baggage conveyor system. Because it is fully networked, this next-generation EDS solution provides screener labor savings identical to custom in-line rebuild programs, but without the billions of dollars in airport infrastructure reconstruction and disruption to airport operations.

Furthermore, for some airports, the passenger check-in counter is a logical place to perform baggage screening since they typically wait about two minutes for their boarding pass. This "dead" time provides the next-generation EDS machines with a way to significantly reduce the false alarms being experienced by alternative installations that have only a few seconds to scan a bag. And because the bag stays with the passenger, any conflict resolution can occur while the passenger is with the bag, potentially increasing passenger satisfaction. These smaller next-generation units can also be used anywhere passengers and their baggage check in, including curbside and remote check-in or at self-serve kiosks.

Passenger Checkpoint: The Next Challenge

I would like to very briefly discuss what I see as the next challenge for TSA and this Committee—screening carry-on luggage for explosives. Although at first glance this might not seem to be related to the deployment of in-line EDS, I believe they are very closely related. To a large extent, the issues TSA encounters for checked baggage will be replicated when they begin to investigate potential options for screening carry-on baggage for explosives. These are natural choke points in the airport security process and must be dealt with in a "distributed" manner at airports.

Although deployment of EDS at checkpoints can improve the overall detection performance of the passenger screening process, as well as eliminate the need for redundant hand searching of selectee bags (pending protocol), simply replacing existing checkpoint X-ray systems with a traditional 100% EDS solution would be cost prohibitive and would likely further slow the passenger screening process.

TSA has recognized the need to improve the security process at the passenger checkpoint. However, TSA and airports are struggling to keep up with passenger processing using today's screening systems and procedures. We are all familiar with stories of how long lines formed during peak periods. These lines will continue to lengthen as air traffic grows and TSA enhances security at passenger checkpoints. Furthermore, in most locations airports do not have additional real estate to expand passenger checkpoints.

The system Reveal has developed for checked baggage is a uniquely designed for passenger checkpoint screening. By applying similar protocols to those being developed for checked baggage, it is possible to improve security, increase passenger throughput, and reduce TSA labor by screening carry-on baggage with an EDS. I believe that airlines and airports would eagerly embrace a system that can significantly increase the throughput of the passenger checkpoint as a means to improve customer service while eliminating the need to expand checkpoints.

Conclusion

Mr. Chairman, since the tragic events of 9/11, EDS manufacturers have primarily been focused on meeting and supporting the deadlines mandated for checked baggage screening deployment. As has been articulated in previous testimony before Congress by the airport community, "it is now time to move forward to ensure that limited federal resources are wisely utilized to enhance security, system efficiency, and passenger convenience." I believe that the items outlined in my testimony are critical to this effort. In particular,

- TSA must continue to work in close partnership with industry to encourage innovation and approve new technology as rapidly as possible. This is the only way that industry will be able justify the large investments required to develop new technologies that will ultimately enhance aviation security and improve customer satisfaction.
- There is no "cookie cutter" formula that can be applied to every airport in the United States. As an airport director said to me once, "If you have seen one airport. . .you have seen one airport." We must recognize the unique needs of individual airports and take their requirements into account as we continue to enhance aviation security.
- Deploying EDS equipment "in-line" does not mean that airports need to exclusively undertake large, expensive, time-consuming construction projects. TSA and industry have contributed significant resources to develop next-generation EDS equipment that provides a lower cost alternative to the vast majority of

the nation's airports. There needs to be a plan for how to take advantage of this investment.

I appreciate the Committee's continued interest in this topic and look forward to working with you and TSA to accomplish our mutual goals.

Mr. ROGERS. And the first witness that I would call for any statement that you might have is Anthony Fabiano, President and Chief Executive Officer of American Science and Engineering, Inc. And we welcome your oral statement, and you could make a longer written statement for the record, if you would like.

STATEMENT OF ANTHONY FABIANO

Mr. FABIANO. Thank you, sir. Congressman Rogers, I have an appendix that you all should have a copy of as part and parcel to our presentation.

I would like to thank the Chairman, the Ranking Democratic Member, and members of the subcommittee on behalf of American Science and Engineering for this opportunity to speak about how to make our airports safer and our traveling public more secure. We believe security checkpoints at our Nation's airports can and should be more effective.

Today I would like to tell you about a technology invented and patented by our company, called Backscatter X-Ray Imaging. Backscatter can provide a much higher level of detection over a broader range of threats than any technology currently employed at airports for inspecting carry-on baggage and people. Backscatter can identify small metal objects such as detonator wires, nonmetallic weapons such as ceramic knives, and very small amounts of explosives in a sealed packet.

The Department of Homeland Security, Office of Inspector General, reported in its audit of passenger baggage screening procedures at domestic airports in 2004 and 2005, the most recent report revealed that the quantity of threats that go undiscovered through our current airport checkpoints is still unacceptable. The report concludes by encouraging TSA to expedite its testing programs and give priorities to technologies such as Backscatter x-ray that will enable the screening workforce to better detect both weapons and explosives. With current and contemplative technology used at airports, several classes of threats may go undetected and be carried on board aircraft. They include metal weapons, smaller than the metal detector threshold setting; sealed envelopes of explosives with no residue trace; nonmetallic weapons such as ceramic knives and composite pistols, weapons or explosives concealed in sensitive areas of the body.

Backscatter Image x-raying, when used to scan people, is a safe and effective method to find almost all classes of threats, including those described above. It is almost impossible to hide a threat on the human body that goes undetected by Backscatter. Backscatter Imaging is very safe; the x-ray exposer from a Backscatter scan is equivalent to the exposure you receive from background, and only 3 minutes when flying in an airplane at altitude.

Figure 4, in your presentation, at appendix A is a Backscatter image of a person hiding several types of threats beneath their clothing. As you see, it would be difficult to hide something like a weapon or explosive.

This unfiltered Backscatter x-ray creates a detailed image of the subject. Our company and TSA appreciate the sensitive nature of these images and have worked diligently together to develop approaches to address privacy concerns. AS&E has developed software algorithms for modifying the images to highlight potential threats and yet diminish the image in sensitive regions of the body.

I draw your attention to figure 5 of appendix A, which shows a privacy-enhanced image, which is the only image seen by the reviewer. The reviewer never sees the original unfiltered image, nor do they have the opportunity to save or display the image elsewhere.

In summary, American Science and Engineering stands ready to deploy its Backscatter personal scanners at airports today with software algorithms to address the privacy concerns. Backscatter detects all threats accurately and repeatedly, it is safe, privacy should no longer be an issue, it is cost effective to operate, it is available now.

We urge the members of this committee to support DHS and TSA in their plans to deploy Backscatter at airports as soon as possible. The security of our Nation and the safety of its traveling public will be the better for it.

Thank you for the opportunity to present, and I would be pleased to answer any questions.

Mr. ROGERS. Thank you, sir.

[The statement of Mr. Fabiano follows:]

PREPARED STATEMENT OF ANTHONY FABIANO

Chairman Cox, Ranking Member Thompson and Members of the Committee on Homeland Security, on behalf of American Science and Engineering Inc., we would like to thank you for the opportunity to speak today about how to make our airports safer and our traveling public more secure. We believe security checkpoints at our nation's airports can and should be more effective. Today, I would like to tell you about a technology invented and patented by our company, called Backscatter X-ray Imaging. Backscatter has been the technology of choice for protecting most high threat facilities around the World, including the Russell and Dirksen Senate Office Buildings. Backscatter can provide a much higher level of detection over a broader range of threats than any technology currently employed at airports for inspecting carry-on baggage and people. Backscatter can identify small metal objects, such as detonator wires, non-metallic weapons, such as ceramic knives, and very small amounts of explosives in a sealed packet. The U.S. Military is also using Backscatter to effectively find Improvised Explosive Devices hidden in vehicles and on people in the theater of operations, Iraq. Over 50 systems are currently deployed, with more on the way.

TSA recognizes the advantages of using Backscatter X-ray Imaging for finding potential threats hidden on people and in carry-on baggage, and recently announced plans to pilot Backscatter for personnel screening at airport checkpoints. The Department of Homeland Security (DHS), Office of Inspector General (OIG) reported in September 2004 on its "Audit of Passenger and Baggage Screening Procedures at Domestic Airports". After suggestions by the OIG were implemented by TSA following this report, the audit was repeated and a follow-on report was issued in March 2005. The March 2005 report stated that the quantity of threats that go undiscovered through our current airport check points is still unacceptable. The study's conclusion was that the "majority of screeners. . .were diligent in the performance of their duties" and that "the lack of improvement since [the] last audit indicates that significant improvement in performance may not be possible without greater use of technology." The report concludes by "encourag[ing] TSA to expedite its testing programs and give priority to technologies, such as backscatter x-ray, that will enable the screening workforce to better detect both weapons and explosives."

First let me tell you briefly what Backscatter is and why it is unique. X-rays do one of three things when they impinge on an object or person: they pass through,

get absorbed or scatter. If the object is not very dense, they would pass through without stopping. If the object is dense, like metal, they might get absorbed. The difference of what goes through versus what gets absorbed is used to map the dense contents of an object and to make a determination if there is something in the image worth worrying about. An example in medicine would be a conventional chest X-ray. This technique, called transmission X-ray, is also used today to determine if there is a threat in your carry-on bag. However, if the object is made of or contains an organic material, such as explosives, it might be very hard to see in Transmission X-rays. The difference between what gets through versus what gets absorbed is not great enough to make a good diagnosis. However, organic materials scatter X-rays in all directions, including backwards. By creating an image of the back scattered X-rays we can identify the presence of those organic materials, including explosives.

At today's airports two techniques are used for inspecting carry-on baggage, Transmission X-rays and Trace Wipes. First your bag is sent through a Transmission X-ray scanner. We've all done this, you put your bag on a conveyor, an image is taken as it goes through the machine and a TSA inspector determines if you are carrying a threat. If they can't make a definitive determination, they might put your bag through a second time or send it to another station where a wipe of the outside of your bag would be analyzed for traces of explosive residue. If the explosive material is missed during the X-ray, it may never go to a secondary "wipe" screen and would be missed.

Figures 1, 2 and 3 of appendix "A" illustrates how Backscatter helps identify objects missed in baggage by conventional X-ray imaging. Figure 1 is a Transmission X-ray image of a briefcase with a laptop computer containing 3 explosive devices. The image was taken with a system currently used at airport checkpoints. Figure 2 shows the same image after "dual-energy" processing to highlight explosives. Only 1 explosive is revealed.

A Backscatter X-ray image of the same bag with the laptop is shown in figure 3. In this image all three explosive devices are clearly seen. Today, two potential threats would likely have gone undetected.

Let's now consider threats hidden on a passenger. Backscatter technology is particularly well suited to identifying threats on a person.

Today, airport security checkpoints primarily use metal detectors to find threats concealed on travelers. There are three fundamental limitations of metal detectors:

1. First, they only alarm on metal objects, leaving many non-metallic weapons and explosive devices undetected.
2. Second, the size of the metal object detected is subject to the nuisance alarm threshold setting. Small metallic objects, such as a plastic handled box knife may go undetected.
3. Third, alarms need to be resolved by another person or device. Portable metal detector wands and pat-downs are often used. This slows the process, is labor intensive and is subject to the competency and thoroughness of the person performing the function. Pat-downs are considered by many to be very intrusive and have been met with substantial resistance by the traveling public.

Recognizing that metal detectors can not find explosive devices, TSA has recently tested trace portals at airports. These devices can identify trace amounts of explosives if residue from one explosive material is present on the person or their clothing. If the explosives are sealed or if there is no residue, the explosives may go undetected, regardless of their size. In addition, there are classes of explosives that do not give off enough trace materials to trigger an alarm.

Therefore, even when using both metal detectors and trace portals, several classes of threats may go undetected and be carried onboard aircraft. They include:

—Metal weapons smaller than the metal detector threshold setting.
—Sealed explosives with no residue trace.
—Non-metallic weapons such as ceramic knives and composite pistols.
—Weapons or explosives concealed in sensitive areas of the body.

Backscatter X-ray Imaging though, provides the broadest range of detection capability when used to scan people, including those threats just described. It is almost impossible to hide a threat on the human body that goes undetected by Backscatter.

Backscatter imaging is very safe. The X-ray exposure from a Backscatter scan is equivalent to the exposure received from background in only three minutes when flying in an airplane at altitude.

The amount of radiation exposure given to the person during the procedure is extremely small. The National Committee for Radiological Protection & Measurement have determined that up to 5000 scans per year are safe for even the most sensitive class of people, including pregnant women and children. It is equivalent to the expo-

sure received from background when flying in an airplane at altitude for just a few minutes.

Figure 4 of Appendix "A" is a Backscatter image of a person hiding several types of threats beneath their clothing. As you can see, threats including handguns, knives, and explosive material are clearly detectable.

This unfiltered Backscatter X-ray creates a detailed image of the subject. Our company and TSA appreciate the sensitive nature of these images, and we have worked diligently with TSA to develop approaches to address privacy concerns. By physically separating the scanned person from the image reviewer and using gender-specific reviewers, some privacy concerns may be eased. However, AS&E has gone a step further and developed software algorithms for modifying the images to highlight potential threats and yet diminish the image in sensitive regions of the body. Figure 5 of Appendix "A" shows the privacy enhanced image which is the only image seen by the reviewer. The reviewer never sees the original unfiltered image nor do they have an opportunity to save or display the image elsewhere. Figure 6 is another sample image in which the explosive is highlighted by the computer in red.

American Science and Engineering stands ready to deploy its Backscatter personnel scanners at airports today with software algorithms to address privacy concerns. Backscatter X-ray Imaging detects the broadest range of threats, including metallic weapons, non-metallic weapons, and explosives by providing a clear and unambiguous image of the threat. With Backscatter systems there should be little need to resolve false alarms with a second security person or method, thereby improving the efficiency of the screening process.

We urge the Members of this Committee to support DHS and TSA in their plans to deploy available Backscatter systems at airports as soon as possible. The security of our nation and the safety of its traveling public will be the better for it.

Appendix "A"
American Science and Engineering Inc.

Testimony to
U.S. House Committee on Homeland Security
13 July 2005

Figure 1:

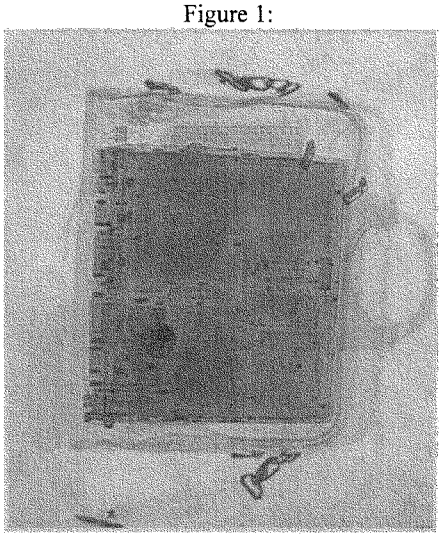


Figure 2:

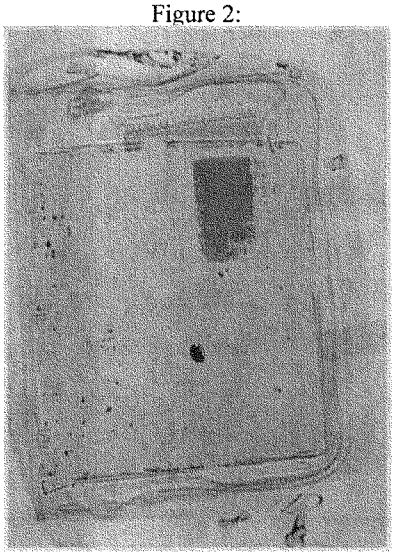
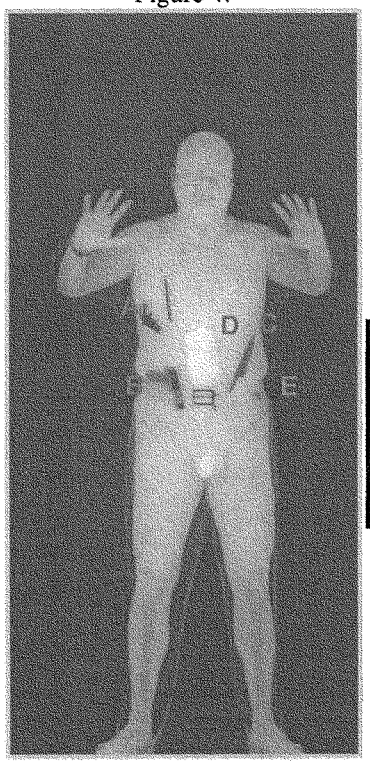


Figure 3:

Figure 4:



Threats Key:
- **A** = 22 caliber Pistol
- **B** = Pistol
- **C** = Ceramic Knife
- **D** = C4 Explosive
- **E** = Folded Metal Knife

Figure 5:

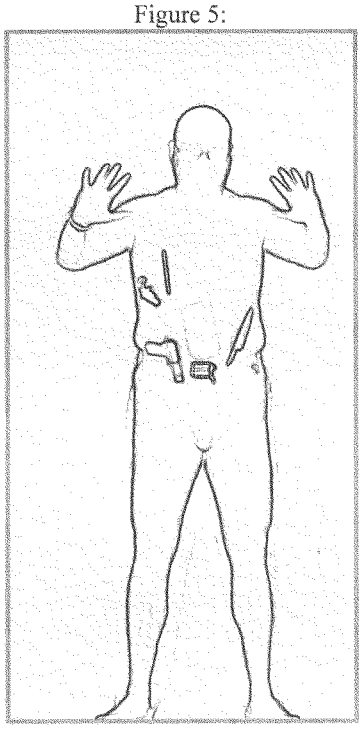
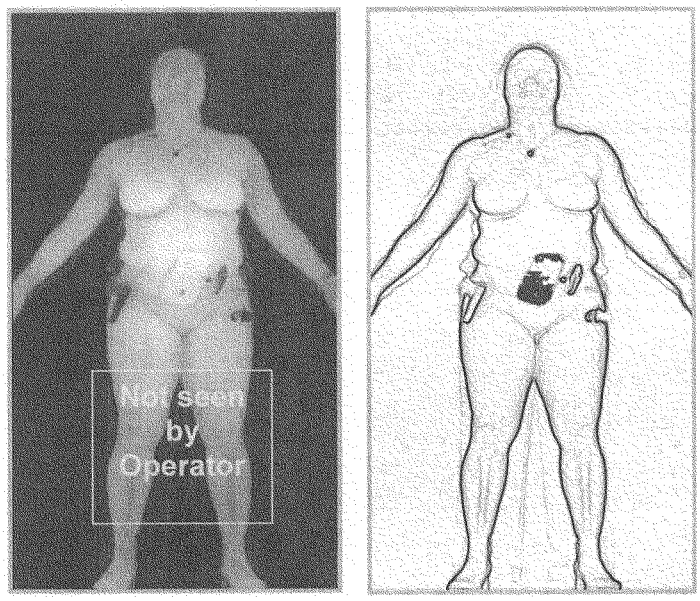


Figure 6:



Mr. ROGERS. The Chair now recognizes John W. Wood, Jr., President and Chief Executive Officer of Analogic.

STATEMENT OF JOHN W. WOOD, JR.

Mr. WOOD. Thank you, Mr. Chairman.

Analogic came to the airport security business through medical imaging, and for more than 30 years we have developed CT-based technology. And to draw an analogy, no patient entering the hospital with a serious illness such as cancer or heart disease would expect to have an image taken of them with an old-fashioned, century-old, two-dimensional x-ray system. They would expect to be imaged with a CT or MRI, which provides a complete three-dimensional volumetric reconstruction of the organs in the body.

We do the same thing with checkpoint carry-on luggage, and we have developed a machine called COBRA, developed with our own company's funds. We are quite pleased with the TSA response to this new technology that offers several advantages.

First, a two-dimensional x-ray in place in airports for 30 years now won't recognize objects completely. A pistol at the wrong angle looks like a block, a knife at the wrong angle looks like a line. We provide a complete automated reconstruction of the image, and also use computers to recognize these threats: guns, knives, explosives. This eliminates the fatigue issue with screeners required to change out jobs every 20 minutes because it is an automated process. It does not require, for instance, that a laptop be removed from a briefcase. It is a powerful enough technique we can completely image it. This speeds the flow.

And last, one of our machines could replace two or three of the existing scanners and save hundreds and millions of dollars by reducing the number of screeners, the 45,000 screeners there, because instead of having to look at a bag, an image of every bag, you might look at only every tenth bag, a bag that might have a threat in it. So we believe this offers many advantages.

The TSA has just completed a 45-day test at Boston's Logan Airport in which we imaged thousands of bags that led this week to a mildly humorous incident in which a traveler at Logan had in his briefcase a tequila bottle shaped like a Colt .45 semiautomatic pistol. It was not picked up by the conventional x-ray system. The glass and liquid are low density, but the shape jumped out in our system very clearly. So the fellow, I understand, had a nice talk with the Massachusetts State Police.

So we have an excellent alternative here. We look forward to moving into advanced trials, and we can move into production of the system later this year.

I appreciate any questions. Thank you, sir.

Mr. ROGERS. Thank you very much, Mr. Wood.

[The statement of Mr. Wood follows:]

PREPARED STATEMENT OF JOHN W. WOOD JR.

. . .It is a privilege and an honor to be with you this afternoon to discuss a subject where I believe my company, Analogic Corporation, can make a real contribution in leveraging our technology to improve not only aviation security, but other modes of transportation security as well.

Analogic is an innovative, developmental engineering and manufacturing company based in Peabody, Massachusetts. Our revenue for the year 2004 was $355 million.

We conceive, design and manufacture high-performance, proprietary medical and security imaging systems, principally for leading international Original Equipment Manufacturers (OEM's).

Members of the Committee most likely know Analogic through our relationship with L–3 Communications. Following 9/11 we supplied L–3 with our Explosive Assessment Computed Tomography (EXACT™) system, which was the second certified Explosive Detection System (EDS) to screen checked baggage. Our EXACT systems are the heart of the L–3 Communications' eXaminer 3DX6000 EDS that is installed at airports across the country to comply with the Aviation and Transportation Security Act of 2001.

In 2003 we responded to requests from TSA to enhance those EDS units already in the field. We, along with Lockheed Martin, were awarded $3.85 million under the Phoenix Category 1 Program to design and develop a system upgrade that would increase throughput, reduce false positive alarms and reduce EDS operating costs. Our field-installable EDS upgrade kit was certified this spring and we will start upgrading EDS units in the near future.

In addition to the important upgrade work, Analogic was awarded $1.15 million for the first phase of a multi-million dollar grant under TSA's Phoenix Category 3 Program to design a new generation of advanced, networkable EDSs with significantly higher throughput and detection capabilities, targeted for delivery in 2007. These new units will further reduce EDS operating costs while providing improved security.

TSA also awarded us a cooperative agreement as part of its new Manhattan II Program to identify and develop revolutionary technologies into deployable systems that will significantly enhance automatic threat detection and discrimination capabilities for checked luggage for aircraft and other applications.

I trust this background on our intensive work in finding explosives in checked luggage was helpful in understanding our success to date, and to describe the close working relationship we have developed with TSA. What I really want to talk to you about now is our in-house R&D efforts on a product called COBRA (Carry-On Baggage Real Time Assessment). We believe that this product has the ability to revolutionize today's checkpoint.

COBRA represents the next generation in aviation security as the first automatic explosives detection system designed to easily integrate into the operational flow of a checkpoint. Designed, developed, and manufactured with our own funding, COBRA is a revolutionary advance over today's conventional line scan X-ray systems. It integrates Computed Tomography (CT) scanning and leading edge image interpretation software to automatically screen carry-on baggage/bins for explosive materials, guns and knives. In addition to automatic threat detection and analysis, COBRA provides high-resolution, 3-Dimensional (3–D) images that can be rotated on the screen for on screen resolution decisions.

COBRA has just completed deployment of a pilot program with TSA at Boston's Logan Airport. The unit was installed downstream of the conventional X-ray systems at the US Air Shuttle Terminal. The trial was part of a TSA project to assess operational performance and to determine if COBRA should replace the currently installed, but outdated X-ray machines.

Early indicators and results from the successful trial are demonstrating that COBRA will save the screeners significant time. One of the biggest contributors to checkpoint bottlenecks is the need for the TSA screeners to double and triple check the one-dimensional images of the conventional systems. Screeners lose efficiency by repeatedly sending bags back through the conveyor because the conventional X-ray source is fixed and many objects that are on the same X-ray path are not imaged clearly or at all. Additionally, the orientation of an object is critical in how the image appears on the screen. A gun viewed from the wrong direction no longer appears as a gun, but instead appears as a rectangular block or stick. There are no hidden objects in the COBRA system. By rotating the X-ray source completely around the bag, a full-volume image is produced of the entire contents of the bag. All contents of the bag are imaged regardless of their orientation.

Another positive aspect of the trial is the improved and automated detection using COBRA. At today's checkpoints, detection of threats is almost always dependent on screener training, skill, attention level and is very dependent on object orientation and bag clutter. Small amounts of explosive materials are at best difficult to detect, and particular configurations are very difficult or impossible to detect. COBRA provides new capabilities of automatic threat detection and analysis for explosive materials in addition to guns and knives. This detection is computer based and does not rely on screener attention level. Detection is based on physical properties of the imaged objects. By automatically identifying and detecting explosives, weapons and a variety of other materials, the use of COBRA will reduce the need for screeners to

view every bag which is a lengthy and tiresome process. The screener will only need to view those bags where the system indicates there is a suspect object which will increase throughput and reduce the number of screeners manning the system.

Another major advantage we are hearing from the Logan screeners relates to the quality of the image on the screen. Today's conventional X-ray systems provide a 2–D colorized image. In addition to a similar 2–D image COBRA provides a real three-dimensional (3–D) color image that can be rotated 360 degrees with the touch of a fingertip.

Other checkpoint issues are being addressed by COBRA. One of the main complaints for the business traveler is the requirement to remove their laptop computers from their briefcases. When using COBRA, these laptops and other electronic devices do not need to be extracted, saving time and improving efficiency. Prohibited items such as scissors, matches, and lighters present additional problems for screeners. With COBRA, these items are seen clearly in a 3–D image, and screeners can easily ask that they be removed, reducing the time taken to resolve prohibited items with hand searches.

In addition to addressing security concerns, COBRA technology also represents a significant labor savings for TSA. The screener workforce, working at our checkpoints today, are doing an excellent job given the limitations of conventional x-ray systems and ETDs. However, more screener personnel are required than needed in light of these limitations. The technology developed in COBRA can, and will essentially reduce that number of screeners anywhere from 30–50%.

COBRA is designed to be installed in less than four hours, is designed for serviceability and comes with a built-in tutorial. Its imaging and display technology was developed with TSA's human factors personnel and is a dramatic improvement over today's image-interpretation techniques. Perhaps one of the more "dramatic" reason for considering COBRA at today's checkpoint (to shore up a chink in the armor) was summed up best by one of the candidates in their 3rd Presidential debate—he said, "If we are employing CT EDS equipment for our checked luggage, why are we not then using that same technology at the checkpoint to inspect our carry-on luggage."

Furthermore, covert testing scores of our checkpoint screeners (that has been in the press of late) reveals that screeners, using the currently deployed equipment, are not up to the task of reliably finding explosives. Clearly, with using advanced technology such as COBRA that automatically detects explosives, those scores will only go higher and the public will benefit from the proportionate rise in security.

Recent events in Moscow with the Chechen suicide bombers made us reevaluate where the threat is to our commercial airliners today. Since Pan Am 103, we have been focused on deploying the best technology to detect the smallest amounts of explosives in checked luggage. Unfortunately, the threat today is different. We have seen how passengers can now bring small amounts of explosives in their carry-on items or on their person. The threat is no longer limited to screening all the bags in the belly of the aircraft. An equal focus must be on the passenger and their carry-on items. Our COBRA system, developed and leveraged from all our work on our checked baggage EDS systems, will provide TSA with the latest technology as advanced or even superior to the technology now installed for checked luggage. The time that passengers wait in lines will be reduced and the operating costs will be a fraction of what they are today.

The next step is to provide this technology in a way that affords frictionless travel, an integrated checkpoint that is user friendly but at the same time is fully capable of detecting small amounts of explosives in a passenger's hand bag or on his/her person. Analogic is working with other companies in the security industry to provide an integrated secure checkpoint. TSA's main focus to date has been to roll out products and test them. Significant progress has been made and it is my belief that our airports are much safer today than prior to 9/11. However, I also know that the 1266 EDS machines that were installed across the country were done in a way that emphasized speed of installment rather than the ease of travel for the flying public. Analogic is doing our part to improve the situation. We are working with TSA to not only enhance the systems currently installed, but to reduce the lifetime costs of ownership. We , as a company, see the checkpoint as a natural focus to bring all our technology to bear to not only improve their security, but to do it a way that is also in the best interests of the passengers and the TSA.

We look forward to working with TSA and DHS in the future and to also address other venues such as rail stations, subways, ports and other critical infrastructure.

Thank you. I will be happy to answer any questions that you may have.

Attachment to John Wood's Testimony on July 13, 2005 @ 2:00 PM

Comparison between a Conventional Line Scan X-ray system and Analogic's COBRA, an Advanced Explosive and Weapon Detection System

Overview: Literally thousands of conventional X-ray systems are installed at airport checkpoints, office lobbies, agency entrances and other locations around the world. They are used for one purpose—to detect dangerous objects inside bags. They can provide an excellent image (sometimes colored for organic materials) and are relatively inexpensive ($30-$60,000). They operate on the principle of a Transmission X-ray (TRX) imaging system that has a source (an X-ray generator), detectors which capture the X-rays that have penetrated through the bag, and a monitor that displays the resulting projection image. A conveyor belt takes the bag through the system.

Analogic's COBRA*TM* (Carry-on Baggage Real Time Assessment) represents a revolutionary advancement over these conventional systems in that it employs Computed Tomography (CT) scanning, the same technology currently deployed by the TSA to screen checked baggage. As objects (bags or bins) move through the COBRA, the system performs full-volume helical CT scans and analyzes the 3-dimensional images using advanced explosive and weapon detection algorithms. In addition to automatic threat detection and analysis, the high-resolution, 3–D images can be rotated on the screen to clearly identify hidden or obscured objects.

Conventional Systems	COBRA
Physics: A conventional X-ray system has a fundamental limitation in that the three-dimensional volume of a bag is compressed to a two-dimensional image. Because of this, all the objects in a bag are superimposed on top of each other, which results in reduced detection of threat objects. Numerical values in the image represent summations along the line of the X-ray penetration. Image interpretation is difficult for both computer-aided (automatic) and operator detection.	**Physics:** Recognition of the fundamental limitations of conventional X-rays led to the development of Computed Tomography (CT). COBRA uses volumetric CT, an advanced diagnostic imaging method in which X-ray measurements from many angles are combined into one image. In COBRA the combination of X-ray source rotation and bag motion produces true 3-dimensional images of all the contents of the bag. The numerical values at each point in space represent material specific properties of the contents of the bag.
Technology: 1970's	**Technology:** 21st Century
The hidden object—Because the X-ray generator is fixed (doesn't move), X-rays go through a bag at a fixed angle. Any threat object that is on the same X-ray path as another item is not imaged clearly or at all. For example, if a threat object is behind (or in front of) a radio, the conventional TRX will show an image of the radio, but may not show the threat. This is why many operators using this technology will have the bag rescanned in a different orientation so that they can see behind the obscuring object. This re-scanning takes time and is inefficient. Additionally, the orientation of an object is critical in how the image appears on the screen. A gun viewed from the wrong direction no longer look like as a gun, but instead appears as a rectangular block or stick.	**No hidden object:** There are no hidden objects in the COBRA system. By moving the X-ray source completely around the bag (on the rotating gantry), a full-volume rendering is produced of the entire contents of the bag. All contents of the bag are imaged regardless of their orientation.
Detection: Conventional systems may detect guns and knives as long as they are not obscured by other objects or in a difficult orientation. Detection is almost always dependent on screener training, skill, and attention level. Explosive materials are at best difficult to detect, and particular configurations are very difficult to detect.	**Detection:** COBRA provides automatic threat detection and analysis for explosive materials in addition to guns and knives. This detection is computer based and does not rely on screener attention level. Detection is based on physical properties of the imaged objects.

Conventional Systems	COBRA
Certification: Conventional systems are not certified for automatic detection of explosives.	**Certification:** CT is the preferred, ''certified'' detection technology used by the TSA for automatic detection of explosives in checked luggage. Analogic is one of three (3) companies who have passed the TSA certification testing for checked baggage EDSs.
Image on Screen: A 2–D colorized image	**Image on Screen:** In addition to a 2–D image of the entire bag, COBRA provides a high-resolution, 3–D image that can be rotated with the touch of a fingertip.
Laptop Computers: Laptop computers must be extracted from bags using conventional X-ray systems.	**Laptop Computers:** Laptop computers do not need to be extracted while using COBRA.

Conventional systems cost less than their CT counterparts, but given the severity of the threat and the acceptance of this certified technology, TSA should move quickly to adopt it in today's checkpoints.

Mr. ROGERS. The Chair now recognizes Deepak Chopra, President of OSI Systems, Incorporated.

STATEMENT OF DEEPAK CHOPRA

Mr. CHOPRA. I want to thank the Chair for this opportunity for OSI, a parent company, and Rapiscan Systems, a global company which offers the world's widest array of nonintrusive inspection systems for aviation, boats, border crossings, cruise lines, and cargo. We have installed more than 50,000 inspection systems in over 150 countries with 300 airports, and after 9/11, we currently provide nearly half of all U.S. airport for checkpoint screening systems.

Today, nearly 4 years after 9/11, I can say that aviation security is stronger; however, there is still room for much improvement today. One of the things we keep talking about is this new technology and new technology. We want to talk about it, what we can do to the airports today. People are frustrated. The long lines generate confusion at the checkpoint. Shoes on, shoes off; greatest detection machine; and, finally, what I call the most humiliating experience of being spread eagle, getting patted down, searched in the middle of an open environment at the airport. It is very embarrassing. I get it done 30 percent of the time I find it.

All the studies have shown that this is very frustrating for the passengers, some of you have said in the previous panel. I can tell you, my company makes the metal gates through which you walk through. None of those units can test anything but metal. That means that if there are sophisticated terrorist weapons, present technology as it exists will not pick that up.

My fellow colleague from AS&E is absolutely right. We make the same device called the People Screener, it is very effective. As a matter of fact, 14 million passengers have been tested through that technology over the last 6 months at Heathrow Airport, and we are proud to say they have gone live. This is the only technology that can be utilized—and I know there is a lot of talk, we talked about privacy. The way the U.K. has taken care of it is they give the pas-

senger a choice. You will either want to get spread eagle and get searched or you want to take a scan. Guess what? Ninety percent of the passengers have chosen a scan. It is a very powerful technology, and it is the only deployable technology that is available today—not tomorrow, not the day after—that will do that job.

We have also gone in and tried to improve the plight of the passengers as it stands today. EDS, as an alternative that people are talking about, I think it is a mistake. We have 2,000 machines that TSA paid for at 9/11. Those machines can be improved. We have been working with TSA. We have integrated a quadrapole resonance technology on one single platform. This system will do the automatic explosive detection deployed right in front of a passenger. Because the QRS system leverages currently installed QRS systems, there is little additional training and almost no additional operational requirements for TSA trainers to be retrained. Congress will not have to hire one additional screener or replace a single machine at an airport, but, most important, they will cost one-third the cost as proposed to EDS Checkpoint Technologies.

Third, we are going live in L.A. right now to double the throughput at a checkpoint by what we call the Checkpoint Efficiency System. It is a simple system machine that can read out the bags so the lines don't get stopped. We have a lot of airports crying for getting these units. It is a very simple thing, a win-win situation.

We have heard a lot of things about the EDS. Our position is that we should be looking at the next-generation systems for checkpoint screening, even if they happen to be CT. The CT technology as it exists right now is 20-year-old medical technology. There are other technologies that are there. For example, we at Rapiscan, we have been developing over the last 2-1/2 years an electronic CT which would bypass and supersede to the tune of 1,400 bags an hour against the present existing technology. These units have been developed at multiple million dollars of cost, with zero funding from the U.S. Government.

We believe that the current platform and technology for the checkpoint should be with the present machines that enhance technology that is available today, not 2 years from now, and get the other body screeners in place; because, like what happened in England, it can happen anywhere, and the present machines don't work.

Thank you very much.

Mr. ROGERS. Thank you very much.

[The statement of Mr. Chopra follows:]

PREPARED STATEMENT OF DEEPAK CHOPRA

Thank you Chairman, Congresswoman Sanchez, and members of the committee. I am honored to testify before this committee on the critical issue of improving aviation security. Sadly, as the events in London last week demonstrate, we are locked in an ongoing fight against terrorism and we must continue to harden and improve our defenses against these ever changing threats.

I am Deepak Chopra, Chairman and CEO of OSI Systems. OSI Systems is the parent company of Rapiscan Systems, a global company based in Los Angeles, California which offers the world's widest array of non-intrusive inspection systems for airports, seaports, land borders, mass transit modes and other secure locations.

Rapiscan Systems has installed more than 50,000 inspection systems in over 150 countries around the world. We currently provide nearly 50 percent of all U.S. airport checkpoint screening systems. Rapiscan also delivers border and sea port inspection systems for U.S. Customs and Border Protection and other international

customs agencies. The State Department employs our systems at every office around the world. And the systems we all walked through to gain entry to this building were made by Rapiscan Systems.

Rapiscan Systems invents, develops, manufactures, installs and services nearly every type of non-intrusive inspection technology in the world. We therefore understand better than anyone, the strengths and limitations of all these systems and can help security officials employ the best technology for any detection and operational requirement.

Rapiscan Systems is a leader in aviation security with installations at the world's most secure airports

Rapiscan Systems is the leader in providing aviation security technology globally. For example, Ben Gurion Airport in Tel Aviv, Heathrow Airport in England, Dulles Airport, Taipei Airport, Kiev Airport, and over 300 other airports around the world rely on Rapiscan Systems' technologies to protect passengers. After September 11, the United States government called on Rapiscan Systems for an emergency deployment of hundreds of additional systems to U.S. airports.

Air travel is more secure since 9-11, but relies too heavily on either old, slow or expensive technology

Today, nearly four years after the 9-11 attacks, I can say that aviation security is clearly stronger. However, there is still much room for improvement. While much of the focus today will be on technological advances in explosive and weapons detection, we must pay equal attention to how technology affects airport operations and the traveling public. Passengers are frustrated with the slow pace of air travel and we should not just provide more inspection for inspections sake. One of the most significant errors in the post 9-11 world has been the rush to install checked baggage inspection equipment with too little attention to its impact on airport operations. The aviation industry and the traveling public clearly want a secure civil aviation system. But long lines, inconsistent inspection procedures, and a beleaguered airline industry are not acceptable outcomes of increased aviation security.

I believe that we continue to focus too much on old technology solutions. Today, every U.S. airport uses the same technology for checkpoint, passenger and checked baggage screening that was in use before 9–11. More astonishing, is that not one new technology has been deployed aviation system-wide since 9–11. This is after Congress appropriated billions of taxpayer dollars to develop new baggage screening technologies.

TSA and the aviation security industry should be evaluating and installing technology that not only improves detection, but also facilitates the flow of passengers and their baggage. The time of endless pilot programs and reluctance to move past old technology should be over.

Moving beyond the focus on EDS technology

Today's aviation passenger security checkpoint is an amalgam of various screening systems from transmission x-ray, metal detection, to trace detection. These systems have all been tested and approved by TSA but deployed as independent technologies at checkpoints. Some have suggested adding yet another stand-alone technology, EDS, to this mix, in essence deploying the technology used for checked baggage inspection to the checkpoint.

I could not disagree more with this opinion. Clearly these systems have a role for checked baggage, as you heard from the first panel. However, EDS systems are either too big, too slow, and too expensive for passenger checkpoints. Installing EDS systems will reduce the number of checkpoints, slow the inspection process, impose massive infrastructure costs on airports, lengthen passenger lines and require even more TSA screeners without improving security.

Addressing aviation security from the passenger's perspective

At Rapiscan, we have addressed the challenge of improving checkpoints from the passenger's perspective. We have asked how can we maximize the current technology install base and improve security without impeding passenger or baggage flow, or add huge infrastructure costs to airports. We have developed four answers to this question:

(1) QXR-Integrate current systems with new automatic detection technologies in one common platform;

(2) Secure 1000—Scan for multiple threats in one inspection;

(3) Checkpoint Efficiency System—Automate the passenger checkpoint and double checkpoint throughput with no additional screeners; and

(4) CXR—Use in-line next generation systems to quadruple baggage throughput.

QXR—Integrate current systems with new automatic detection technology into one efficient airport checkpoint

Rapiscan Systems has developed a new checkpoint technology utilizing our current transmission x-ray systems and integrating Quadrapole Resonance technology in one single platform. This system adds automatic explosive detection to deployed systems and provides nearly equivalent detection performance to checked-baggage EDS systems. QXR systems automatically detect explosives. Therefore, they can be installed without adding a single extra TSA screener.

Because the QXR system leverages currently installed TRX systems, there is little additional training and almost no additional operational requirements for TSA screeners or airport personnel. These systems are simply added to the already deployed checkpoint x-ray systems. This allows TSA to leverage its install base instead of throwing out all the current machines and replacing them with costly and inefficient EDS systems.

The QXR integrated system limits bag tracking and loss issues associated with multiple technologies at a checkpoint. And, most importantly, they would cost 1/3 as much as proposed EDS checkpoint technologies in terms of both capital and operation costs.

Secure 1000—Scan for multiple threats in one inspection

Currently, U.S. airports employ a complex system of metal detection gates, trace detection machines, and physical pat-downs to inspect passengers for weapons, explosives, and other hazardous materials. This process employs a number of imperfect technologies and invasive procedures that have known strengths and weaknesses. However, aviation security can be improved and passenger hassles reduced if we install fewer systems that achieve even better results.

One such system is the Secure 1000, Backscatter Personnel Screener. This technology is the only commercially available, deployable system existing today that can inspect people for metallic objects, plastic and ceramic weapons, explosives, and nonmetallic threats like explosives and glass shrapnel. It would have detected the weapons used by the 9-11 terrorists and is being deployed to catch suicide bombers around the world. This technology has been successfully deployed by U.S. armed forces to combat areas around the world, as well as U.S. Customs and Border Protection and other homeland security agencies where improving security is the most important mission. Because of the worldwide deployments of Secure 1000, Rapiscan Systems is in the position to deliver it to U.S. airports today without the least bit of delay.

In a recently completed pilot program at Heathrow Airport, British aviation security officials put the Secure 1000 through a four month test at a fully operational checkpoint. Passengers were given the option of being screened by the Secure 1000 or by physical pat down search. Not only did the Secure 1000 show a dramatic increase in detection capability over pat-downs, but nearly 95 (93.7%) percent of all passengers opted to be screened by the Secure 1000 over a pat-down search.

The British have found a way to answer the critics concerned about the Secure 1000's impact on passenger privacy. Using simple inspection protocols of employing same-sex screeners, non-archived images and other steps, British officials have developed an inspection system palatable to the traveling public. This has enabled the British to take the lead in passenger inspection security. It is important to remember that the Secure 1000 is an alternative to the very unpopular, less effective, and highly-intrusive physical pat down search. So while much has been made in the media about the potential privacy issues of backscatter inspection, the traveling public clearly prefers this method to invasive and imperfect physical searches.

From a security standpoint, the Secure 1000 provides comprehensive primary or secondary screening for all threats in one machine, reducing training, maintenance, and operating costs. And since the Secure 1000 is designed specifically to fit within the aviation checkpoint footprint, it can seamlessly integrate with the metal detection gates at most airports.

Checkpoint Efficiency System—Automating the airport passenger checkpoint

The modern airport checkpoint is a maze of lines and security systems packed into small throughways. Even the most seasoned traveler has trouble navigating this hectic environment. Rapiscan Systems has created a simple structure that helps screeners track bags and people requiring secondary screening while continuing to allow the checkpoint line to process additional passengers.

A recent TSA analysis found that most of the delay at passenger checkpoints comes from screeners having to stop checkpoint lanes to move and inspect bags for secondary screening, taking more than two additional minutes per passenger on average. Rapiscan's Checkpoint Efficiency System easily fits onto currently deployed

checkpoint x-ray equipment and automatically separates bags for secondary screening enabling the checkpoint to continue to screen passengers. The system is designed to double the throughput speed of a standard airport screening lane.

Additionally, the Checkpoint Efficiency System only adds about a foot of width to a standard checkpoint while doubling capacity. This enables fewer checkpoints to process more passengers faster, with less bag tracking confusion and delay. The system also protects passengers from suspect baggage behind protective barriers. And, by automating the secondary screening process, the Checkpoint Efficiency System reduces labor costs and passenger wait times.

Los Angeles International Airport will be installing the Checkpoint Efficiency System at its new terminal, and many airports have asked Rapiscan for these systems. We are awaiting final approval from TSA on their deployment.

CXR—Use in-line next generation systems to quadruple baggage throughput

While most of the discussion on this panel has focused on the checkpoint, I wanted to take a moment to discuss one advance coming from Rapiscan Systems' labs that is applicable to both the checkpoint and checked baggage inspection. This new technology, the CXR electronic CT, represents a dramatic leap forward in the basic EDS technology.

EDS systems, even current in-line models, are hampered by an inherent limitation of the basic technology. In standard EDS machines, an x-ray head spins around on a metal ring to provide a 360 degree view of the target bag. However, this design limits throughput to the speed the x-ray head can spin. And, with such heavy reliance on a mechanical moving part, maintenance costs are high and reliability suffers. Due to their slow throughput, multiple EDS systems have to be deployed to meet standard throughput demands of the in-line conveyor systems in airports. This dramatically increases equipment purchase, installation, operation and maintenance costs. And as any airport executive can tell you, the infrastructure costs of installing all these EDS machines has been astronomical.

Rapiscan Systems has been developing over the last 2 1/2 years an electronic, a non-mechanical CT, the CXR. We have done this development without any funding from the U.S. government. This system relies on a specialized glass tube ring filled with x-ray diodes that can within nanoseconds provide the same (if not better) 360 degree image of a bag without the speed and reliability limitations of standard EDS. The CXR should provide scan speeds that will quadruple baggage throughput to almost 1,400 bags per hour. This is done without any moving parts thereby dramatically reducing maintenance costs and improving reliability.

Rapiscan has already received significant interest from European aviation officials in this technology where speed of operation is paramount. The inspection speed and cost advantages are significant as a single unit can provide the inspection capacity of four current EDS machines. The system will work both for checkpoint and check baggage locations and represent a true next-generation solution for aviation EDS.

I want to again thank the committee for the opportunity to discuss these important issues and technological advancements. Rapiscan Systems is proud to be part of the United States homeland security effort and we take seriously our role as a final line of defense. Rapiscan Systems has designed and deployed many of the systems we rely on to catch terrorists today. We look forward to continuing to work with Congress and the Department of Homeland Security to bring the newest and most advanced technologies from the laboratories to the front line. I am happy to answer any of your questions.

Mr. ROGERS. The Chair now recognizes Cherif Rizkalla, the President of Smiths Detection, Americas.

STATEMENT OF CHERIF RIZKALLA

Mr. RIZKALLA. Good afternoon. Thank you, Chairman, Ranking Member, and distinguished members of the subcommittee. My name is Cherif Rizkalla, and I am the President of Smiths Detection, Americas, a New Jersey-based company providing security solutions to detect explosives, chemical and biological weapons, and contraband in homeland security and defense markets worldwide.

In the National Capital region, Smiths has been a long-term partner in securing government facilities such as the one we are in right now. On the global scale, Smiths has also provided and

continues to provide detection equipment to our troops in Iraq and Afghanistan and to many, many foreign governments.

The 9/11 Commission recommended that the TSA and Congress improve the ability of security checkpoints to detect explosives on passengers. While improvements have been made through recent legislation, it is beyond dispute that more can be accomplished, including the immediate deployment of high throughput portals that detect explosives on passengers.

Over the years, Smiths has been and continues to be true partners as we work with TSA to develop products that improve aviation security without disrupting commerce. To that end, I would like to highlight a few of Smiths' technologies that have enhanced security at airports.

In response to the general interest in providing a full-value, non-intrusive explosive screening method at checkpoints in high-traffic volume environments, Smiths has developed a trace detection walkthrough portal to detect explosives on passengers. After nearly 10 years, which is far too long given the present threats, a handful of walkthrough portals were deployed at test airports in the United States. In my opinion, this effort reflects the proper function of TSA in turning to the private sector to help solve a public problem.

Finally, I wish to mention two cutting-edge technologies. The first one is the TADAR camera and the second one is the TSA Manhattan II Project. The TADAR is a passthrough system designed to detect contraband by measuring differences in millimeter wave energies emanating from the human body. This non-ionizing energy can penetrate clothing and many other concealing materials of passengers carrying an explosive or weapon. These objects will stand out on the TADAR image while continuing to afford passengers the level of privacy they expect and demand.

The second project of note is TSA Manhattan II Project. Smiths and TSA have already begun working on next generation of check luggage security program. In its second phase, Smiths is combining state-of-the-art and emerging technologies to create a system that meets the goals of high detection rates, low false-positive rates, and sufficient throughput to satisfy the demands of the traveling public.

Mr. Chairman, Smiths offers several proven and New Age technologies that greatly assist the TSA. Tests of Smiths detection technology establish that the products improve passenger safety without disrupting passenger flow.

Thank you for inviting me to testify today, and we look forward to working with you.

Mr. ROGERS. Thank you, sir, for your statement.

[The statement of Mr. Rizkalla follows:]

PREPARED STATEMENT FOR THE RECORD BY CHERIF RIZKALLA

INTRODUCTION.

Good Afternoon, Chairman Lungren, Ranking Member Sanchez, and distinguished Members of the Subcommittee. My name is Cherif Rizkalla, and I am the President of Smiths Detection, Americas ("Smiths"), a Pine Brook, New Jersey-based company providing technologically advanced security solutions to detect and identify explosives, chemical and biological agents, weapons, and contraband. Employing trace detection technology together with Smiths-Heimann x-ray imaging, Smiths provides security solutions for customers in homeland security and defense markets worldwide. Here, in the United States, Smiths' technology helps protect many of the nations buildings and airports. In the National Capitol region, Smiths has been a long-

term partner in securing Government facilities such as the one we are in. Smiths has also provided and continues to provide detection equipment to our troops in Iraq and Afghanistan.

It is a pleasure to testify before your Subcommittee today as you and your colleagues examine government and private industry efforts to leverage technology to improve transportation security in general, and aviation security specifically. The stakes are high and we have been challenged. We as a manufacturer have been challenged to continuously adapt to an ever-changing threat. We have been challenged to innovate and develop new products that are better adapted to the evolving needs of our customers. We have been challenged to relentlessly search for breakthrough technologies that will become tomorrow's solutions. Governments worldwide are also challenged, challenged to identify and deploy the products and technologies that best respond to their specific needs.

Smiths looks forward to continuing to work with this Committee, the Congress, the Transportation Security Administration, the Department of Homeland Security, and the Administration to meet the challenges that we all face in protecting aviation passengers and the commercial aviation system from physical threats. As the Committee is well-aware, the 9/11 Commission made several recommendations regarding passenger, baggage, and cargo screening to improve aviation security including recommending that "[t]he TSA and Congress give priority attention to improving the ability of screening checkpoints to detect explosives on passengers. As a start, each individual selected for special screening should be screened for explosives." While improvements have been made through recent legislation passed by Congress and signed into law, it is beyond dispute that more can be accomplished, including the immediate deployment of high-throughput portals that detect explosives on passengers.

As a preliminary matter, I will present a quick vignette of Smiths Detection, which is one of four operating divisions of Smiths Group, plc. We are principally engaged in the development of high-sensitivity analytical instruments that detect chemicals and other substances found in explosives. In October 2002, Smiths acquired Heimann Systems, the world's market leader in X-ray security systems whose products are primarily used in the transportation security arena to inspect luggage and freight. The acquisition of Heimann significantly expanded the capabilities of Smiths to conduct checkpoint and other types of screening in the transportation security markets. As a market leader, Smiths has successfully deployed its security solutions for the Department of Homeland Security, the United States Armed Forces, the Federal Bureau of Investigation, the Department of State, and the Federal Protective Service as well as several foreign governments including Israel, France, the UK, Canada, Argentina, Hungary, Spain, U.A.E., Japan, Italy, and China.

I. HIGHLIGHTS OF SMITHS DETECTION'S IMPROVEMENTS TO PASSENGER CHECKPOINT SECURITY.

The Transportation Security Administration ("TSA") has the difficult task of deploying technologies that effectively provide adequate aviation security measures while not disrupting the flow of commerce, and must do so within budgetary constraints. Smiths has over the years, and continues to be, true partners with TSA as we work together to develop products that are both useful and efficient, and consistent with Congress and the TSA's stated goals.

Smiths is currently manufacturing dozens of security-oriented solutions that improve passenger screening; however, I will focus my remarks on three (3) particular product areas that I believe provide a good example of how Smiths not only develops security solution products for today's threats but is continuously looking out to the future needs of government's worldwide:

1. Smiths' IONSCAN technology and the Heinman X-Ray Security Systems, and their applications to efficient explosive detection efforts;
2. Smiths' efforts regarding the Sentinel II ("Sentinel II"), a trace detection walk through portal which is used to detect the presence of explosives on the bodies of passengers and which has been deployed at a handful of test airports in the United States, and is currently in operation at other security checkpoints throughout the world; and
3. Smiths' latest Millimeter Wave TADAR Camera innovation, which reflects the implementation of cutting edge technology to detect explosives through detection of differences in energy emitted by the human body.

1. The IONSCAN 400B.

Smiths Detection's original entrée into the world of passenger screening was with the IONSCAN[2] trace detection technology from the 1980s and 1990s which was developed in response to growing demands for technological solutions to narcotics problems. This technology has been deployed with numerous law enforcement agencies in the United States and throughout the world. More recently, the IONSCAN technology has been converted for the detection of explosives. The presence of trace explosives indicates that an explosives device may be present or that the person may have been handling explosive material in preparing a bomb and further investigation is necessary.

Trace detection works by sensing the presence of microscopic amounts of target substances on the exterior surface of a package containing an explosive such as a backpack or cardboard box. These traces are collected and analyzed in a matter of seconds to provide the screener with nearly instant notification that an explosive is present.

A simple wipe with a swab over items such as checked or carry-on luggage, portable electronic devices, and packages is all that is necessary to collect a sample which is then placed into the IONSCAN® for analysis. In 8 seconds the color-coded display presents results to the operator—red for a detection and green for the "all-clear". If a contraband substance is detected, the specific name is identified on the display. Leading aviation organizations, including the FAA/TSA in the United States, Transport Canada, and the BAA in the United Kingdom, have evaluated and approved the IONSCAN® for their aviation security needs. In fact, nearly every federal agency and every major airport throughout the world uses the IONSCAN 400B and its related products.[3]

2. The Sentinel II Contraband Detection Portal.

Another product of note is the Sentinel II,[4] which was developed in collaboration with the FAA, TSA, and the Sandia National Laboratory in response to the general interest in providing a full body, non-intrusive explosive screening method for use on personnel at checkpoints in high traffic volume environments. The Sentinel II has proven to be an effective and efficient system that complements proven technologies with cutting-edge improvements to create an efficient and reliable detection system. The Sentinel II has withstood all TSA evaluations and tests and meets all applicable manufacturing specifications. Just this year, TSA began field-testing the Sentinel II at four major airports in the United States and additional deployments nationwide are expected.

Despite the complexity of the technology behind the device, it is fairly simple to describe and understand its operation. The passenger steps into the Sentinel II for a period of only seconds. There are no true doors that must open or shut, it's more like walking into and stopping in a conventional metal detector much like I walked through this morning when I entered this building. Once the passenger is in the Sentinel II, gentle puffs of air dislodge any particles trapped on the body, hair, clothing and shoes. These particles are then directed into the instrument for analysis. The passenger then continues through the security process. The time in the Sentinel II takes only seconds—IONSCAN® technology combined with pre-concentration technology developed by Sandia National Laboratories allows for the high throughput of screening up to 7 people per minute. Trace amounts of more than 40 substances are detected and identified in seconds. Results are displayed in an easy-to-understand fashion.

I highlight the Sentinel II not only because it uses a proven effective technology for contraband detection but also because of the collaborative effort between Smiths and the FAA/TSA to implement the use of the Sentinel II. In my opinion, this effort reflects the proper function of TSA in turning to the private sector to solve a public problem.[5] As I mentioned above, I believe that transportation security in general and aviation security in particular could be greatly enhanced by immediately increasing the presence of the Sentinel II at airport passenger checkpoints throughout the United States.

3. The TADAR Camera.

Smiths is currently working on several new cutting-edge technologies for checkpoints and other types of screening, but I would like to highlight one innovative product that we feel is of particular interest to the Subcommittee: the TADAR Cam-

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[2] A picture of the IONSCAN is included as Appendix B.

[3] Recently, TSA used the IONSCAN 400B in its Transit and Rail Inspection Pilot by implementing the product at the New Carrollton, Maryland train station.

[4] A picture of the Sentinel II is attached as Appendix C.

[5] It is worth noting, however, that this collaborative effort took nearly ten years from its inception to deployment.

era.[6] The TADAR is a passive system designed to detect contraband by measuring millimeter wave energy. Its sensors detect differences in the energy naturally emitted or reflected by objects at a 3-millimeter wavelength. This nonionizing energy can penetrate clothing and many other concealing materials. An explosive strapped to the human body, for example, returns a different amount of energy to the TADAR than the body around it, therefore revealing the explosive. At the same time, the TADAR is unaffected by the presence of clothing because clothing is transparent at millimeter wave frequencies.

Again, the technology is complicated, but the function is simple: A passenger would stand before the TADAR camera which would measure his body's natural radiation of energy in comparison to a controlled background. If the passenger is carrying an explosive or a weapon, these objects will stand out on the TADAR image so that the screener can identify them. The image is processed to provide the passenger with privacy while still facilitating threat detection.

The TADAR features several benefits that place it at the vanguard of explosive detection systems:

• Passive Operation—TADAR uses natural, nonionizing millimeter wave energy to sense threat objects, which result in high quality images with no risk to the passenger.

• High Quality Images—TADAR scanning mechanism produces high quality, real time images that can be further sharpened using proprietary 'super-resolution' software algorithms.

• Simple Mechanics—TADAR employs a very novel and simple mechanical design that permits a passenger to be scanned very quickly and reliably.

• Lowest Cost Solution—TADAR's simple and efficient electronics and mechanical design makes it the lowest-cost solution available.

The TADAR employs cutting-edge technology that has matured to the point where the TSA and Smiths can once again begin a collaborative effort to implement this technology at various test airport passenger checkpoints throughout the United States. Smiths recommends using the template from the successful collaborative effort between TSA and Smiths to develop the Sentinel II as a guide. In addition, Smiths would welcome the opportunity to continue research and development efforts of the TADAR or its offspring so that passenger screening technologies can continue to improve as threats to passengers become more sophisticated.

II. HIGHLIGHTS OF SMITHS' DETECTION TECHNOLOGIES FOR BAGGAGE SCREENING.

In addition to Smiths' improvements to worldwide passenger checkpoint security, I would also like to briefly bring to the Subcommittee's attention the baggage screening solutions that we often provide in concert with our passenger screening technologies at security checkpoints. As with passenger screening, Smiths is producing dozens of baggage screening technologies, but in the interest of time, I will highlight two (2):[7]

1. Smiths-Heimann X-Ray Systems.

Smiths produces various x-ray driven technologies that provide useful cargo and baggage screening applications at security checkpoints. In fact, my briefcase was run through a Smiths-Heimann x-ray system this morning when I walked into this building, just as it's done for nearly every visitor to the Capitol. These systems come in a variety of sizes that permit the technology to be used in any transportation setting, in any airport security area, regardless of size. The HI–SCAN 5180i,[8] for example, is a newly designed X-ray inspection system for screening objects up to a maximum size of 20 inches wide, by 31 inches high. The system is perfectly suited to the inspection of check-in baggage in civil aviation, which is why so many airports worldwide have implemented such systems at security checkpoints. The compact dimensions, the low conveyor belt and the system technology ready for network operation make the HI–SCAN 5180i an outstanding basic system for integrated check-in counter systems featuring central image analysis.

2. The Explosive Detection Tomography System.

The Explosive Detection Tomography System[9] ("EDTS") is another product that is commonly used to improve aviation security. EDTS is a multi-view tomography

[6] A picture of the TADAR Camera is attached as Appendix D.

[7] Smiths is currently working with TSA regarding the "NexGen" Checked Luggage Screening program, named Manhattan II. In its second phase, Smiths is combining state of the art and emerging technologies to create a system to meet the goals of very high detection rates, very low false positive rates, and sufficient throughput to meet the demands of the traveling public.

[8] A picture of the HI–SCAN 5180i is attached as Appendix E.

[9] A picture of the EDTS is attached as Appendix F.

system capable of screening up to 1,800 checked bags per hour. The EDTS employs multidimensional image evaluation to detect blasting agents, including industrial and military plastic explosives and utilizes sophisticated multiplexing techniques for image queuing and alarm resolution. The EDTS can accommodate passenger baggage of up to 42 inches wide and 32 inches high, reducing the need for manual inspection of oversized bags.

EDTS technology is in use in airports throughout the world, except in the United States. However, EDTS has recently been judged a success in the United States following a successful pilot program at Washington's Union Rail Station where TSA utilized Smiths' EDTS technology to screen rail passenger baggage.

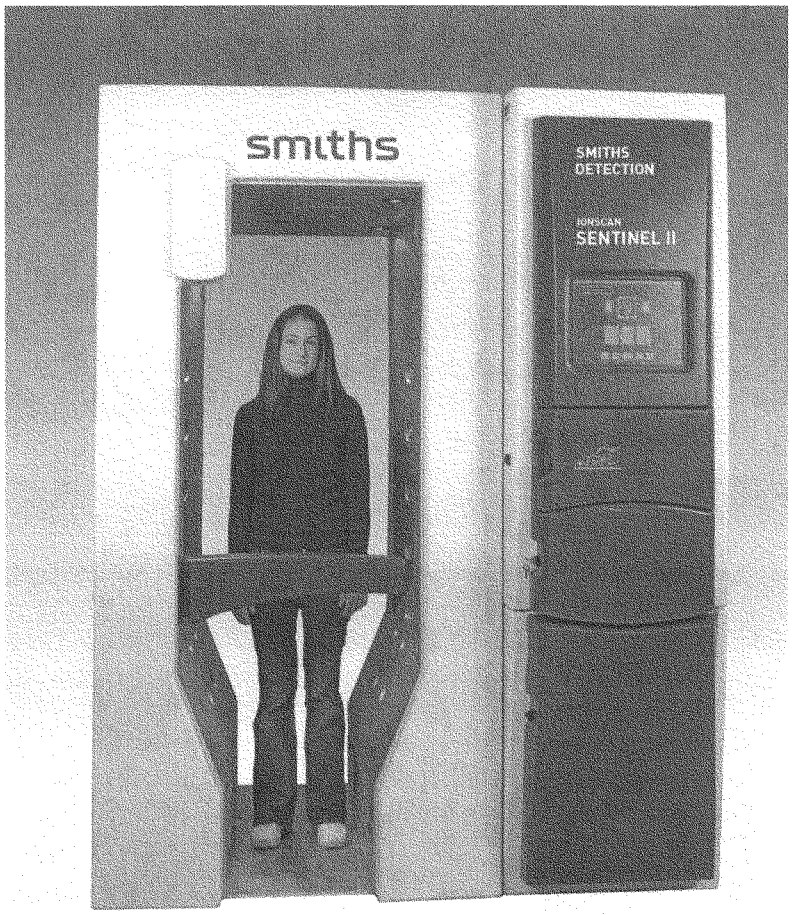
III. CONCLUSION.

Mr. Chairman, Smiths Detection offers several proven and new-wave technologies that greatly assist the TSA and Department of Homeland Security in achieving its stated goal of improved aviation security. Our technologies provide reliable and cost-effective means to detect the presence of explosives on passengers, in luggage, and in cargo. Tests of Smiths Detection's technologies have established that they improve passenger safety without disrupting passenger flow and we are continually working to ensure that passenger flow is as efficient as possible while maintaining an effective checkpoint process. Smiths Detection appreciates the opportunity to testify before the Committee and looks forward to working with the Committee members in continuing to implement its technologies.

APPENDIX B
The IONSCAN 400B

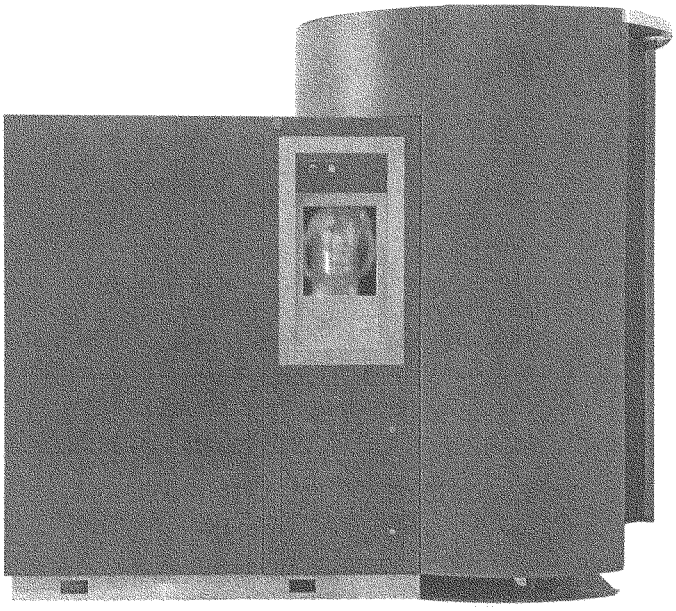
APPENDIX C

The Sentinel II Trace Detection Portal



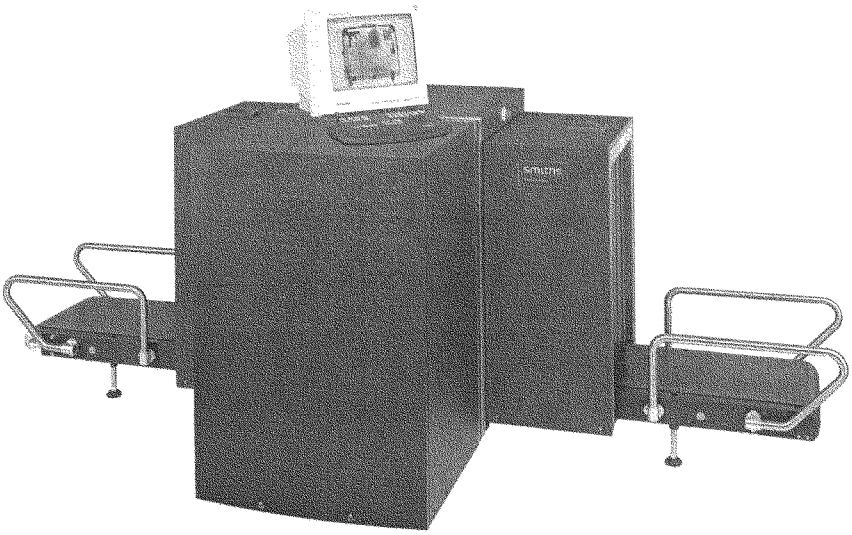
APPENDIX D

The TADAR Camera



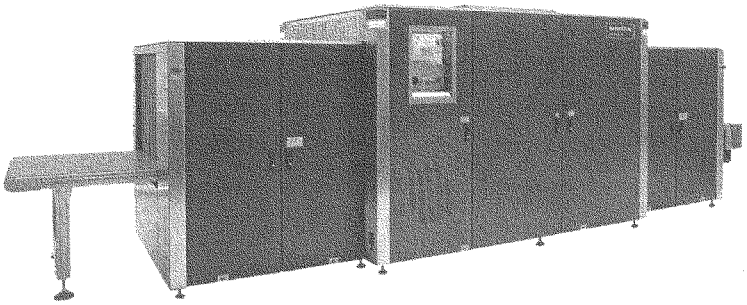
APPENDIX E

The HI-SCAN 5180i



APPENDIX F

The EDTS



Rapiscan Secure 1000

Rapiscan® systems
An OSI Systems Company

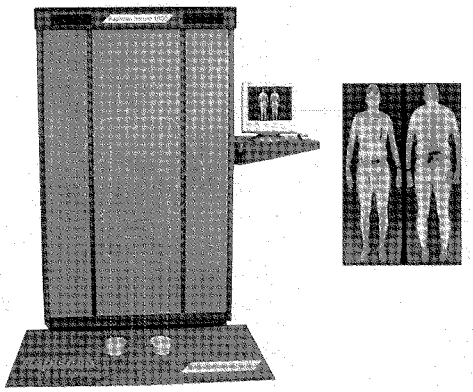
PEOPLE SCREENING

Hands-Off Screening

Quick and Effective

Privacy Protection

High Resolution Imaging



The **Rapiscan Secure 1000** is the most effective and comprehensive people screening solution available. The images produced by the system enable the operator to easily identify concealed threat items. The backscatter technique utilized in the system provides high resolution images of both organic (e.g. explosives, narcotics, ceramic weapons) and inorganic (e.g. metal) items.

Rapiscan Systems has also developed techniques to protect the privacy of the person being screened while enabling effective detection of threat items. In a recent study, 19 out of 20 people preferred a **Secure 1000** scan to an invasive pat-down physical search. The system is completely safe for all people and exceeds the requirements of health authorities worldwide.

The **Rapiscan Secure 1000** is the most widely deployed image-based people screening solution in the world and can be part of any high security checkpoint.

HOW BACKSCATTER TECHNOLOGY WORKS

An image is produced as a result of Compton Scattering; meaning when the emitted beam contacts a material, it is "scattered back" toward the system. This information is received by high resolution detectors and is passed to image processing software which creates a display on the video monitor for operator analysis.

Advanced Options

REMOTE WORKSTATION

DETECTION ENHANCING BACK PANEL

Applications

AVIATION SECURITY

MILITARY BASE SECURITY

CORRECTIONAL FACILITIES

BORDER CROSSINGS

ONE COMPANY - TOTAL SECURITY

Rapiscan® systems

An OSI Systems Company

Rapiscan Secure 1000

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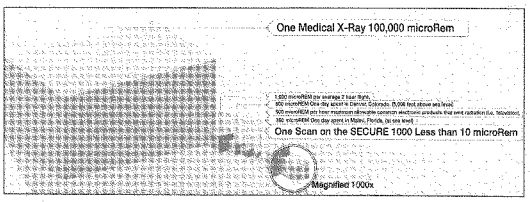
SPECIFICATIONS	
Regulatory Compliance & Safety	The SECURE 1000® complies with the applicable FDA requirements and ANSI Standards. The FDA has classified the Secure 1000® as a device under Section 201(h) of the Federal Food Drug and Cosmetic Act (FFDCA) and the safety of the product is addressed by the provisions of Subchapter C – Electronic Product Radiation Control. The Secure 1000 has been assigned the FDA Succession number 9110663-03. The ANSI Standard is N43.17 and is titled "Radiation Safety for Personnel Screening Systems Using X-ray".
Image Acquisition	Scan rate: Less than 8 seconds per view Display: 17 inch high-resolution color monitor Emission Per Scan: Less than 10 microRem per exam
Power Requirements	Main Controls: On/Off Switch; 110V or 220V, PC & Monitor
Features	Image archiving, Scan, Zoom, Clear, Redraw, Save, Recall and Print.
Physical Details	Floor Space: 5.5 ft. x 9 ft. in front Overhead Clearance: 80 inches (204 centimeters) minimum Unit Weight: 1097 pounds (499 kilograms) Physical Dimensions: 48.75 inches wide x 36 inches deep x 79.5 inches high (123x92x202cm)
Warranty	One (1) year

X-RAY COMPARISONS

The Following are some of the typical exposure levels that can be experienced with other types of x-ray systems and some naturally occurring sources *(see chart below for comparisons.)*

Medical CT (CAT Scan): Up to 1,000,000 microRem Chest , Mammography: Up to 10,000 microRem **Background Radiation** Denver (5000 ft): Up to 600 microRem per day Miami (sea level): Up to 300 microRem per day Inside vs. outside a building: Up to 25 microRem per day **Airline Passenger Dose** One hour flight: Up to 500 microRem per hour	**SECURE 1000®** **LESS THAN 10 MICROREM PER EXAM**



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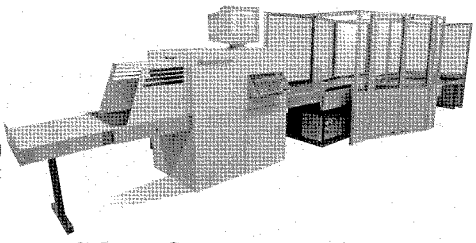
www.rapiscansystems.com

CUSTOMER SUPPORT SERVICES: Our team is dedicated to providing a prompt, effective and personalized response that exceeds your expectations. With spare parts inventory and skilled technicians all over the world, you can be certain Rapiscan Systems will always be prepared with a solution to address your requirements. By measuring response time, parts delivery and support status, our team embraces a customer centric philosophy to ensure continual improvement of our products and services.

With continual development of our products Rapiscan Systems reserves the right to amend specifications without notice.

Rapiscan Systems Introduces the
Checkpoint Efficiency System (CES)



Rapiscan Systems is pleased to offer a revolutionary advancement in checkpoint security. The **Rapiscan Checkpoint Efficiency System (CES)** brings the in-line checked baggage screening model to the security checkpoint where it is applied to carry-on baggage screening. Any airport which installs a **CES** at a checkpoint will experience four areas of improvement:

1) Increased Security

The **CES** is a double conveyor system that responds to the screeners' decision to perform a secondary search by diverting a bag containing a suspect item in a different direction than the cleared baggage. Suspect bags are only accessible by checkpoint staff. Security is improved when suspect bags are isolated from their owners.

2) Increased Throughput and Lower Passenger Wait Times

The **CES** was designed to realize a 50% minimum throughput improvement during peak hours. Passengers with cleared baggage will no longer have to wait for screeners to perform secondary searches on other passengers' suspect baggage. Clean bags and passengers will be processed through the checkpoint much quicker as a result of the diversion conveyor.

Research of current checkpoint designs has shown that it takes up to two minutes to clear baggage that has been identified for secondary screening. By diverting cleared bags to a separate lane, this new checkpoint design saves time and money.

3) Lower Costs

Because of improved throughput and higher efficiencies, the **CES** can reduce the total number of lanes required in a screening facility. This can significantly decrease overall labor costs and the initial capital expenditure can be fully recovered in a matter of months.

Because fewer lanes are required to maintain the same or greater level of service, there are fewer machines to maintain and lower service costs as well.

Also worth noting is that the less time the passenger waits in line,the greater the opportunity to generate revenue at shopping and dining establishments within the airport.

4) More Available Space

As described above, the **CES** can consolidate two (or more) checkpoint lanes into a single new lane that operates at a higher level of service.

With the **Rapiscan CES**, airports can reduce labor costs,wait times, and occupied space, while increasing airport commerce, passenger satisfaction, and general airport security. Overall cost of ownership is minimal, because investment costs are likely to be recovered within months after system deployment.

Rapiscan® systems
An OSI Systems Company

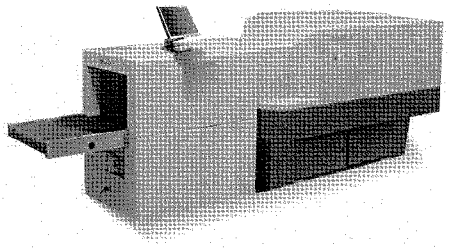
For more information contact:
ProductMarketing@RapiscanSystems.com
or visit www.rapiscansystems.com

ONE COMPANY - TOTAL SECURITY

Rapiscan Systems Introduces the

Rapiscan QXR1000

for Enhanced Checkpoint Screening



Retains proven X-ray performance for threats like guns, knives and IEDs

QR provides automated explosives detection of substances most likely to be missed by X-ray

Built-in countermeasures detection

Improved X-ray automated threat detection based on focused algorithm

Leverage existing capital investment in X-ray systems

Very low cost in comparison to EDS solutions

Very little change in operational protocols (screener training etc.)

Space saving solution, eases bag tracking and handling (vs. multiple system standalone use)

Single contact for customer service & support

Dual Energy X-ray imaging systems, like all security equipment, are vulnerable to some threats. Now, with the **Rapiscan QXR1000**, security professionals can implement a quick and efficient upgrade to already deployed X-ray systems. The **Rapiscan QXR1000** is an an upgrade path to users of Rapiscan X-ray systems. The QXR1000 utilizes Quadrupole Resonance (QR) technology combined with dual energy X-ray and countermeasures detection in a single, integrated platform. The System can enhance any checkpoint in a cost effective and operationally efficient way without disrupting airport design or passenger flow. Because QR is an upgrade to existing systems, implementation is only a fraction of the cost of a replacement EDS system.

X-ray machines used at checkpoints offer excellent image quality, and with a skilled operator, a high probability of detection for a greater range of both explosive and non-explosive threats. The **Rapiscan QXR1000** will provide improved checkpoint detection of a broader category of aviation threats. For example, QR can dramatically improve detection of plastic and distributed explosives. Combining QR technology with existing X-ray systems results in an enhanced checkpoint screening solution that is capable of automatically detecting explosives.

The QXR1000 solution leverages the years of training and operational protocols currently used by airport screeners. The **Rapiscan QXR1000** requires limited initial training and requires no additional screeners, space, or checkpoint lanes.

Rapiscan® systems
An OSI Systems Company

For more information contact:
ProductMarketing@RapiscanSystems.com
or visit www.rapiscansystems.com

ONE COMPANY . TOTAL SECURITY

Mr. ROGERS. The Chair now recognizes Mr. Rick Rowe, Chief Executive Officer of SafeView, Inc.

STATEMENT OF RICK ROWE

Mr. ROWE. Thank you, Mr. Chairman.

First of all, I would like to echo some of the comments of the other panelists, particularly Rapiscan and AS&E, talking about the fact that there are technologies today that can be used to screen passengers very effectively. And the only thing that I would add from our case is we do use millimeter wave, which is what Mr. Parker talked about in the first panel, non-ionizing radiation non-x-ray. And the only thing that I would disagree with their testimony is that we also have our system available today.

But what I wanted to really focus my comments on today was the way we go about fielding these technologies. We are a California-based start-up, using technology developed at U.S. Government. We are the exclusive licensee. When we made our decision of how we were going to go out and deploy these in the field, we actually made a conscious decision to spend the majority of our time outside the U.S., and the reason is that I think we all know that the U.S. is very slow to deploy technologies, and we felt we could get in the field faster and learn more by working directly with the users.

So the bottom line to my testimony is really two things: One, encourage more fielding of pilot programs or whatever you want to call them, and get these things out in the field. And the second is to work very closely with the end users on the concept of operation. That is where you learn. You don't learn in the lab with endless testing, you learn by getting into the field.

We have been very aggressive in trying to do the field testing, and I will give you a couple of examples. But first of all, I think it has been said by many panelists, there is no silver bullet; there is no one technology. So we are really dependent on a number of different things to try and layer to provide a defense.

In our particular case, we screen people for threats using millimeter waves, as I stated earlier. We are a totally safe technology, and we essentially also look at all materials and can detect those. But what enabled our speed to market, we started essentially 2 years ago, and we are in the field today around the world, except the United States, and what we did was we essentially did our betas offshore. We spent a lot of time in Israel, Europe, and other Middle Eastern locations.

The good news in our story is that we also have two systems today in Iraq at checkpoints operating today. And I am the person that goes out and spends hundreds of hours with our soldiers, as we have been up and running for the last several months, and we are essentially screening people, looking for suicide threats.

As was said earlier, what we can do today is we have replaced hand-pat searches in Iraq. At the two checkpoints that we are operating at, there is no longer a U.S. soldier doing a hand-pat search, which is a very dangerous activity.

When we go out with the users, we tend to be able to work with them and learn what that CONOP needs to be, the concept of operation, how to adjust the technology. Let me give you a real brief

example. I was in Iraq last month working with the soldiers, and we decided we needed to adjust their technology. Through the miracle of technology, if you will, I was able to call on a cell phone back to the United States, talk to my engineers; in 24 hours they e-mailed me a new set of software which we dropped into place and changed that. We could not have done that if we were not out sitting with the users, working through the concept of operation.

This doesn't mean that technologies that we look at or agencies and labs don't have a critical mission; I think they do. That is to ensure that these technologies have promise, but not to spend endless hours training engineers the final solution. Again, so we are advocates of getting out in the field very fast.

And we would also say don't try to pick a single technology. All your good companies here will work very hard for everybody over the next several years to develop our technologies, to improve them. So our belief is, field as many of them as you can. You will have some failures—that goes with the territory—but you will have more successes than failures. And that way we all learn the technologies will improve. If they sit in the lab they don't go anywhere.

So I thank you for the opportunity to talk to you about our company and about our beliefs on fielding.

[The statement of Mr. Rowe follows:]

PREPARED STATEMENT OF RICK ROWE

Chairman Lungren, Ranking Member Sanchez, and other Members of the Subcommittee, I thank you for the invitation to testify before your Subcommittee today. My name is Rick Rowe, and I am the CEO of SafeView, Inc., a company that makes highly sophisticated security screening portals for checkpoints. I also serve our country as a member of the National Academy of Science's Committee on Assessing Technology for Transportation Security, and I strongly recommend to you the work of our Committee and its subsequent reports, but I wish to clarify that I am here today in my capacity as SafeView's CEO, and that my testimony is my own and not in any way to be construed as a position of the National Academy of Science.

It is my privilege to be with you this afternoon to discuss security checkpoints, and the process changes that I believe are necessary to get more new technologies into the field to improve the safety, speed, and effectiveness of these checkpoints. These changes apply for any venue, be it airport, rail or subway, government or private building, nuclear power plant, prison, or military checkpoint. All checkpoints for screening people have a great deal of commonality. All have threats or contraband they are trying to control, and entry or exit that needs to be efficient. All have a rush hour—meaning, peak throughput requirements—and all have a need to be safe for use around human beings.

I and members of my company have spent much of the last two years sitting at the most dangerous checkpoints in the world, principally in Israel's Gaza strip and of late, in Iraq, working on these very issues. Safety, efficiency, and throughput are the driving needs at checkpoints.

I truly believe that our nation does not deploy new solutions to address ever changing security threats and therefore improve our "checkpoints" as rapidly as it should or is able. This is critical not only to save lives, but to provide peace of mind that people are as safe as reasonably possible from tragic events such as those that just occurred in London. While not all attacks can be prevented, we can harden our targets and reduce our vulnerability. By hardening our targets, I mean making it obvious to all that this is a "hard checkpoint" to get through with hidden items. The technology and methods used need to create a very high probability that you will be caught. Terrorists and criminals do not like to try and get through "hard targets" and they know which ones they are. We all know that new technologies are needed to replace those of the 1970's such as metal detectors, which is still our backbone of technological capability.

As a small start-up with unique technology, we purposefully planned our testing and deployment of our technology in other countries first, because we knew that the United States government is extremely slow systemically in its implementation of new approaches.

We are not alone. Many start-ups, often holders of the most sophisticated and advanced technologies, do this as a matter of course. We all tend to "prove our solutions" elsewhere, if for no reason than investor pressure for quick results. We do not have the luxury of years of endless lab testing driving toward some perfect engineering solution that all too often works in the lab, but not in the field, or, at worst, provides diminishing returns when compared to lost time to market. For example, in the years a developing technology sat in the lab going from say, 80% effective to 95%, or whatever criteria set, we lost all that opportunity to have at least a more effective solution than present methods, confuse our adversaries as they see targets harden, and learn what is important in the field, where it matters, to drive to higher levels of efficiency. In our view, there is no silver bullet. There is no single technology that makes us completely safe. Our view is to reap the benefits of developing solutions as they are perfected in the field, and layer them into an overall integration of systems that creates synergy so that the sum of the parts is greater than the whole.

In our particular case, we screen people for threats using millimeter waves. This is a totally safe technology, not ionizing radiation that frightens many, and one that was developed at the Pacific Northwest National Lab in the late 90's. It bounced around government labs for almost five years. But in just two short years, as a private company, we designed a commercial product, and, rather than wait for the United States to go through its motions, we actually spent the majority of our time in Europe, Israel, and other Middle Eastern locations, perfecting our design, because we knew we could quickly get into the field there. While we have worked with various U.S. agencies in parallel, we have, again, spent the bulk of our time with foreign governments, who are much more prone to encourage our use of what we call "beta" field testing. Some call it demonstration projects or pilot projects. What it all boils down to is that we take systems that may be early in their maturity and not be perfect solutions in the lab, but we get them out of the lab and into the field. Then we can adjust and tailor them to the threat and throughput requirements. It was because these countries were willing to put new technology in the field that allowed us and them to learn while strengthening on-going security.

There are successes in the military side. Shortly after the terrible bombing that killed our troops in Mosul, Iraq, last December, there was a rush as the U.S. military reached out to industry to look at technologies to protect U.S. troops from IED's and, in our case, walk-in suicide bombers. To the eternal credit of key members of our military, I was able to convince them to let us, at only a transportation charge to the government, set up our systems to prove their worth in Iraq.

Today we have two systems in Iraq at checkpoints that are exceeding anyone's expectations, even mine. They have totally replaced hand pat down searches, which was the only previously used method of checking for everything from suicide bombers to normal contraband. It has been proven to be safer, faster, and more effective.

I have spent well over 120 hours in the past two months, sitting side by side with our soldiers in Iraq. Observing, coaching, learning. . .and changing our technology design to meet their needs. I leave again this Sunday to sit at the checkpoints with them again. Not a five minute visit for an overview, but rather days to understand their needs and missions. This is because we are committed to helping protect them by providing the best technology possible. I think most of the companies here today, if given the opportunity, feel the same way.

As an important aside, it is also critical to understand that hardening of checkpoints is as much about deterrence as catching someone. I often get asked about "how many explosives have you discovered in Iraq or Israel." This misses the point entirely. The worst checkpoint in the world for suicide bombers in 2004 was in Israel. They screened over 1.5 million people, yet had only 2 suicide bombers and two outright attackers. But these four incidents resulted in over 19 soldiers killed and scores injured. Some who were maimed forever. But everyone now knows this checkpoint is being hardened and the Concept of Operation changed. By Concept of Operation, I mean the method of how you run the checkpoint. It is the process or way of screening people, the melding of technology and people who operate the system.

One of the biggest changes in systems today is that so much is software based. You can get the physical hardware into the field and keep improving and updating the software as you go. Enjoy the advantage of having faster time to market, knowing the system can keep getting better. We recently did this in Iraq. After sitting with the soldiers working the Concept of Operation at the checkpoint, we together decided they needed more "views" of the people being screened. I called back to the U.S. on my cell phone and our engineers emailed me a new software program, and within 24 hours I had that update installed and operating.

This coupling of getting into the field early and working together on the Concept of Operation is where you learn what works and what does not. You learn and adapt both the Concept of Operation and the technology. What needs to be changed in each and what does not. You do not learn this in the lab.

This doesn't mean the agencies and labs don't have a critical mission. They do. In my opinion they should concentrate on initial testing and review on an expedited basis to ensure they technology does indeed have promise and does have the potential to reach some threshold of efficiency, but let it be practical with room to improve. Don't require perfection right out of the blocks. Prove that it is safe to use with and around people. We need our government agencies to be at the threshold, positively encouraging and helping industry provide the answers, not some onerous gatekeeper that refuses to let anything pass without enormous scrutiny and over-engineering that serves no real purpose. Tell us in industry what the problem is, not the solution. We in industry are and need to be treated, as suppliers and solution partners, not as adversaries who cannot be trusted.

What this country needs now, in our airports, in our subway and train stations, and in our buildings is more "pilots" or "beta-testing." If we wait for our agencies and their labs to churn out the perfect solution. . .the silver bullet. . .we will have a very long wait. . .if it comes at all. In my past life in commercial and industrial businesses, we used to have a favorite expression. . .it is time now to end the engineering and deliver the product. It is time now for our Nation to adopt the same approach. We need rapid movement of technologies from the lab to the field.

And please don't pick a single technology. . .Don't narrow your choices too soon. . .let good companies prove their mettle and get their technology out of the lab and into the field. We will all learn and grow from it and the best solutions will surely rise to the top and be the commercial successes companies hope for, and our Nation, its citizens, and our men and women in uniform will be safer.

About SafeView

SafeView, Inc. is a privately held developer of systems using patented detection technology for various security applications, and is based in Santa Clara, CA. SafeView holds an exclusive license to commercialize the active millimeter wave holographic technology from Battelle, which manages the Pacific Northwest National Laboratory for the Department of Energy. SafeView's system uses an active millimeter wave technology that is safe and offers unique detection of objects made of metal, plastic, ceramic, and other materials that may be hidden under clothing without using ionizing radiation. SafeView's system offers a more effective and less intrusive alternative to metal detectors, pat down searches, and other means used to ensure safety in public areas. Additional information about Safeview can be accessed from the company's website at http://www.safeviewinc.com.

Mr. ROGERS. Thank you, Mr. Rowe.

You made a reference in the early part of your statement where you said that you decided to go overseas to implement some technology because this country was so slow in embracing technologies. And I get the impression from all of your statements that that is what you have experienced.

What can we do and what can DHS do to improve the relationship—or what is the appropriate relationship between vendors such as yourself in new technologies and DHS, and ways that we can enhance that and make it more efficient and effective and get these technologies in the field more quickly?

Mr. Chopra, I will invite you first. You seem the most aggressive on that point in your comments.

Mr. CHOPRA. I don't want to be called aggressive. I think it is the size of the country; some of the other places it is easier. And I think it is a little bit also of what I call a clique, that if—somebody made on the first panel that if you are in the EDS mode, the whole DSA or DHS for baggage, and now check baggage is being expanded into carry-on baggage, and there is also talk about cargo, so that it sort of goes into the same mode; and all the other technologies on the side, or new technologies that don't follow that path, are more difficult to get through to get some funding.

So people who are smaller companies, not the GEs or the big companies, we basically run to offshore. We have more success in the U.K. For example, we have got this unit actually deployed and being tested on a quarter million passengers, while here the debate is still going on between privacy. And they have already done that. They have found a way; women are checking women. There is no imaging being archived. People who are checking are not even looking at them, and they give a person a choice.

So I agree with my companion that it is easier because of the size and the enthusiasms outside here. When it succeeds it becomes like you have got to get to it tomorrow, but to get there it takes a long time, and if you are not in the mainstream, forget it.

Mr. ROGERS. Earlier in your statement you made reference to the fact that your company manufactures the same technology that was referenced by Mr. Fabiano and Mr. Wood in particular. You seem to feel like—or I understood your statement to say that rather than moving to those technologies now, you think we should take the existing systems and enhance them. Why? Is it because of cost?

Mr. CHOPRA. Well, the two different things I said, for the people screening the present units that are deployed at the airport, we all know it don't work. What Mr. Fabiano's company has, what we have are actually deployable. We have sold more than 300 units, all known aviation, all over the world, that can be deployed today. Mr. Fabiano's company makes the same thing. We can both deploy them today.

What I meant on the other side is, 2,000 machines exist at the present checkpoint x-ray. Definitely they have limitations, but it is easier to enhance them and improve them than to obsolete them and bring other technology and teach the old screening force for EDS.

Mr. ROGERS. Because of the procurement problems you described earlier?

Mr. CHOPRA. Well, the procurement problem, new things have to be learned, and the present machines have done a good job. I have heard statements saying an incident hasn't happened. Yes, there are weaknesses. We have done something right. Enhance them. People are already used to them. And we are working with DHS to come up with systems to enhance, and the cost may be one-third than to go back and replace 2,000 machines.

Mr. ROGERS. Mr. Fabiano, did you say that the Backscatter system that you have is available to go into the field today, or is it still in development?

Mr. FABIANO. It is available today, yes. And I would like to specifically answer the question you raised to the others.

What you can do is ask TSA today to expedite the tests that they are planning to qualify the Backscatter units for the airports. We have been waiting to have systems deployed in the Continental United States in two airports, as has my colleague, and we are waiting for the word to deliver those units, and to be told where, for several months. As soon as the testing is done, it can be done very rapidly, we believe it will be a positive outcome and those systems will be deployed.

Mr. ROGERS. If the testing was complete immediately, how long it would take to deploy those systems?

Mr. FABIANO. Weeks.

Mr. ROGERS. Throughout the country?

Mr. FABIANO. Yes.

Mr. DEFAZIO. Mr. Chairman, are we talking about portals here, or are we talking about baggage screening Backscatter?

Mr. FABIANO. No. We are talking about personnel-scanning Backscatter system.

Mr. DEFAZIO. Right. Thank you, Mr. Chairman.

Mr. RIZKALLA. If I may make a comment, currently there has been testing on the trace portals. Right now the weakest link in the aviation security—aside from the comments earlier made on the cargo, which is an issue—is really the explosives on individuals. Right now there is nothing deployed in the U.S. airports that allow us to detect explosives if they are on—specifically on the individual. If they are in his hand-carried luggage, there is a chance that the operator will recognize an issue and open the bag and find it. But if it is on the individual, right now there is nothing.

There is a program in place, and testing has been made on five of our trace portals, and there is a deployment underway as we speak right now. We have shipped 25 units to TSA. Could this be accelerated? The answer is I am sure it could. And should it be? Absolutely it should. We are ready at Smiths to manufacture 50 of these per month. We have six teams ready to be deployed as we speak right now, to install these systems in the airports.

We need TSA to accelerate this process. And it is not that they don't want to; they don't have the resources, the human resources, the people to go ahead and identify the different airports, prepare the different airports and install these systems. The technology exists, the testing is done, it is approved, it is going to be deployed. The question is how quickly.

It has been stated that 147 of these portals that are manufactured by Smiths and by GE will be deployed by the end of the year. Right now, a total of 11—or I am sorry, 16 are currently deployed, with an additional 25 from our company that are going to be deployed. But a lot more could be done, and this could be done quickly. And this is an immediate solution ready, available, manufactured, sitting in our warehouse that could be deployed and resolve the biggest problem right now in aviation security in the United States, the possibility of having explosives on the individual literally walk through the checkpoint undetected.

Mr. ROGERS. I thank the panel. My time has expired.

The Chairman now recognizes the Ranking Minority Member, the lady from California, Ms. Sanchez.

Ms. SANCHEZ. Thank you, Mr. Chairman.

What do we expect our aviation screeners to do if they have a suicide bomber who is detected at the portal when they are coming through? I mean, does technology prevent them from a problem, and then blowing themselves up right there where all the people are at a bottleneck?

Mr. ROWE. If I could take the first shot at that question, since that is what we are doing in Iraq today. We have been doing it in

Israel for the last year. What you raise is really an excellent question.

I think that one of the issues we have in a lot of checkpoints in the world is that we don't experience bad people, and so we almost set up a concept of operations that does that. And the interesting question really to ask, that I like to ask people, is if there is a suicide bomber and you detect them, what do you do? And one of the issues is, is if the technology is something that I am this close to a suicide bomber, I am now dead. So one of the concepts is to take these technologies and do two things: One is to make them remote. So that is what we do in Iraq is, we actually—the system, the portal people walkthrough is remote from the operators, if you will, from our soldiers, to give them distance to react.

The second thing is—and I talked earlier about technology and layers, so I think it is not about millimeter wave and Backscatter x-ray and trace, it is actually both quite often layered together. Now, millimeter wave is the same as Backscatter functionally. We just want the chance to be able to show that we also are delivering in the world, so we are also ready to go today.

But we talk about trace portals. You actually can put those two together. Because if you go through a trace portal, you may detect explosives but you don't know when or exactly where. If you go through an imaging system, you are not always sure it is trace. But if you put the two together, it shows that they feed off of each other. So if you get a hit on trace, you put them through a screening portal to see what and where it is; if you put the other one as a primary, you don't know what it is, it may be an explosive, then you can run it through trace portal.

Actually, the people perfecting that, if you will, are the Israelis today. And Smiths Detection and our company were involved in field trials in Israel early this year doing exactly that, putting the multiple technologies together, because none of us have the total solution.

Ms. SANCHEZ. Let me just—so, I mean, I am thinking about my experience, our experiences, when we go to the airport. I mean, everybody is together; we are all together, we are right behind each other. So one guy goes through, and maybe we detect that something is going wrong with him and he figures out that we detected that something is going wrong with him; I mean, what would we do at airports? Put everybody 20 feet apart as we put them through these systems?

Mr. RIZKALLA. Your comments are absolutely accurate. The whole concept of aviation security right now as it stands is to avoid allowing explosives to make it on the plane. That argument could be exactly the same whether you are queueing in front of the airport or if you are queueing at the bank machine. Ultimately, whether it is at an airport or not doesn't change.

I would just like to make additional comments on what Rick was saying earlier. I am absolutely in agreement with this. These trace portals, or millimeter wave, allow you indeed—because you can remote the detection, and therefore you could isolate, if you wanted to, the threat and have the operator further away. But your comments are absolutely accurate. Right now the whole concept of aviation security is solely to avoid for that explosive to make it

onto the airport. If he blows himself up at the checkpoint, right now there is absolutely nothing we can do about it.

Mr. ROWE. One more comment on the same subject, since we are in agreement here. Of the things people are doing is they are pushing the perimeter farther out. So, for example, you can use a technology at the very front of the perimeter that starts to protect the building and the people in it, so you keep it out of the building, if you will. You are screening for large threats like large weapons, and you are screening for explosives or suicide bombers. The kind of explosives that people are worried about getting on the plane, as we said, are much smaller. You can do a further screen there.

So again, not speaking for Israelis, one of their concepts is you do a screen at the very perimeter for a major threat of a suicide bomber or someone with a weapon, and then when you get inside the perimeter, you have a second check, if you will, more of what you are accustomed to when you are screening for all of the other things that we are looking for.

Mr. FABIANO. Congressman Sanchez, just one quick comment. At American Science and Engineering we have over 50 of our Backscatter vans in Iraq looking for bombs and suicide bombers. And one of the other answers to the remote screening issue—because we can screen up to half a kilometer away and remotely operate our equipment—is to put in jamming technology as well. So assume, to your point, as a person is identified, a signal can be jammed that could cause them to not be able to activate their explosive.

Ms. SANCHEZ. Thank you, gentlemen. I see my time has expired.

Mr. CHOPRA. If I could just add on to that. Iraq has taught us a lot about security and how to handle its suicide bombers. All of the people sitting there, our equipment is there, and we have learned a lot. I think the most separation you do from a crowd of people to this terrorist, the better off. And remote technology exists, and I think that we are moving in the right direction. The real frustration is how fast it can be implemented at home.

Mr. ROGERS. The Chairman now recognizes the Ranking Member of the full committee, Mr. Thompson of Mississippi.

Mr. THOMPSON. Thank you very much, Mr. Chairman.

This has been quite enlightening. What I fear is the notion of best practices; that if we put in place at TSA the notion of best practices, we can determine a number of situations about how we do it. So if it is working with the person to get on a plane, there is a best practice scenario for that; if it is to keep people out of the airport with explosives, there is another best practices scenario for that.

I guess my question is, do we presently have equipment that can detect all of the potential dangers that a passenger might carry onto a plane at one time, or are we going to still have some layered system of detection?

Mr. RIZKALLA. If I may try to answer that question. Currently there are several different technologies that exist, but none of them in itself—and, to my knowledge, that is under development—will be able to address all the threats that we are currently concerned about at U.S. airports.

Now the approach nevertheless has to move from a single box-type approach where we are looking at an x-ray unit and saying, well, what is the x-ray unit going to do; and then you look at the metal detector, this is what the metal detector is going to do; and you look at check baggage and look, well, are there any explosives in this? And we have to start looking at the airport as a whole.

An example. We are going to be deploying trace portals in airports. Well, if we have a passenger that alarms and has traces of explosives on him, what have we done with his check baggage? Are we going to further inspect his check baggage? Traces on him does not necessarily mean that he has explosives physically on him. It can be in his hand-carried items, or it can be in his check luggage. Are we going to have a communication between this looking at the system, the entire security system, and have something that is going to alert that we need further inspection on his check baggage? Well, the future is that we have to start looking at the system in combination rather than isolated boxes.

Mr. THOMPSON. And in your experience, gentlemen, do you see TSA promoting this kind of thought processes, or are you all having to bring the idea back to TSA? And if so, how is it being received?

Mr. WOOD. I can give you a specific example of how the process could be accelerated in the case of our CT-based equipment for screening carry-on baggage. We have been ready for a year to have that system certified or qualified, but the TSA has not established standards and they are concerned about the accomplice effect. In other words, in the case of a check bag, the traveler loses control and contact with their luggage once it is checked. In the case of a carry-on bag, they retain control. And the concern is that you might have several people carrying on multiple components of an explosive.

As a result, there has been a long delay, and is yet unresolved, as to what the standard should be as to the amount of explosive permitted. This was established shortly after 9/11 for EDS systems for check baggage, but not for carry-on. With that, those of us in the industry could submit equipment for certification, have it approved, and have this equipment operational.

Mr. FABIANO. Congressman Thompson, clarifications of the gentleman from Smiths. I believe today with our Backscatter technology that any explosive or any bomb can be detected. The question, then, I think that you were alluding to is chemical and biohazards as well. What we can do is we see the vials or the canisters that they are in, so we can detect that there is an anomaly there that could be one of those threats as well.

Mr. THOMPSON. Thank you. Anyone else?

Mr. CHOPRA. Just to add, that trace definitely will work if the explosive is on the person; but there are other threats like ceramic knives—I mean, some of those are 18 inches long—or plastics, that needs what we call the body scanner. And the body scanner will do—as Mr. Fabiano has said, any object that should not be present on the human body is visible. So that it does work.

And the answer to your question about it is—what can we do to deploy it? One of the problems is that what I am trying to push is, there are bits and pieces that exist. Suicide bombing is defi-

nitely a problem. In 4 years it has not been solved. Fortunately for us, no incident has happened on our soil. If you keep waiting for all the bits and pieces and wait for the 4 years, chances are there might be an incident. We need to start deploying, then.

One of the colleagues here said, it is one thing to be in the lab; the other thing is to be in the field. We are always going to keep improving them. We must deploy some of the major elements of weaknesses in a present security system in aviation, cargo, wherever it is, and not wait for the ultimate system solution, because it might take a long time. And we need to keep plugging the holes, keep persevering and keep going at it from day to day to improve it. That takes a lot of guts. That is the problem.

Mr. ROWE. Mr. Thompson, if I could have a real quick comment. I think we are sort of preaching to the choir here among ourselves, which is good that you see all this unanimity in the industry. But one of the things I just wanted to add to your question, I don't think that it ever works very well for some group to say here is a solution, meet that. I think it is better to say what is the problem, and let industry come in and work directly to develop the concept of operation, and merge those.

So the problem I see, and I think we have all seen in places like Iraq, which is a real learning place for us right now, is that when you go out in the field, they don't know technology, they don't know what to ask for. And when you are a technologist, quite often you are never in the field.

So we need this combination where we sit down together and say we are pretty sure we know what you are afraid of. What are the best solutions, whether it is putting pieces together or whether it is a single box or what it is, and get it in the field and figure out what is important and what is not important. And you will never learn that in the lab.

So what I worry about is if part of the message is if TSA is supposed to go off in its infinite wisdom and say here is the 18 threat vectors, here is exactly the right solution, you guys just go bid on it now. But that is not the right solution. It has got to be this combining and sharing together between industry, and here is the problem, and we will solve it together.

Mr. ROGERS. The gentleman's time has expired. The Chair now recognizes the gentleman from Washington, Mr. Dicks, for any questions he might have.

Mr. DICKS. Thank you. That approach that you just described is how the Defense Department normally does it. And we have found over the years—I have been on the Defense Subcommittee for 27 years—that when we just say here is the problem, come back with a solution, we do a lot better; and it is a lot less expensive and it takes a lot less time to develop. So I completely agree with you. And I agree with your idea of getting out in the field as well.

Now, let me ask, Mr. Rizkalla, you say that you have got this equipment ready to go for the enhanced screening process, right?

Mr. RIZKALLA. Yes.

Mr. DICKS. What do you call it again?

Mr. RIZKALLA. It is a trace portal. It is the Sentinel II explosive detention portal.

Mr. DICKS. And what is the status with the TSA? Would you review that again?

Mr. RIZKALLA. Yes. We had five units deployed in tests in various airports, and now have delivered 25 additional units for further deployment.

Mr. DICKS. And you are saying that—so is this a money problem, that they don't have the money?

Mr. RIZKALLA. No, that is not the issue. I think TSA, they are trying really hard. And it is certainly not a criticism of TSA. They are really overburdened with all kinds of deployment processes, and to identify appropriately the airports and get the airports ready to receive the equipment is not something easy. And we are helping them in that. So we have a very high level of cooperation with the TSA to expedite the deployment of these units. They do need to deploy many more units than these 25.

Mr. DICKS. How many, roughly, would you—thousands?

Mr. RIZKALLA. Well, it always depends. If you decide that they are going to go at every checkpoint or if you are going to use them for cellar T. That remains an issue. If it is every checkpoint, then it will be in the thousands; if it is cellar T, then it is probably going to be 300 to 400 additional units. So that is a question that will be—

Mr. DICKS. We were just discussing the question that properly was asked by Ms. Sanchez about the person coming through with a bomb, as we saw just a few days ago in London, tragically. The question is, what would be the incentive for the bomber when you could go to a football game or the supermarket where there is absolutely no security? I mean, that is what I worry about is that these people will not go, thank goodness, to the airport, but they will go to a place where they have the least resistance.

Mr. ROWE.

Mr. ROWE. I spent a lot of time in Israel in the last year, and I think Israel has probably seen more suicide bombers than anybody, so I would like to take a shot at that question.

First of all, as you harden targets—which is another concept I think we would all believe in and as we have talked about—people know those checkpoints are hard. In fact, it is interesting when you sit and talk to Iraqi interpreters, they know which checkpoints are hard to get through and which ones are easy based on that. So as you harden targets, you do expose the softer targets.

We take Israel as an example, though. All of their major places where people gather in large numbers are hardened. That is why you see them bombing night clubs, you see them bombing any target now because they have taken the hard ones away. Now, none of them are good, but you would rather have it be small than big, and then eventually in time they are going to keep doing that.

The other thing you see that occurs in Israel is that they go after anyplace that would discourage people. So in this case, it is lines of people. Or in Iraq, people who are trying to go in and cooperate or do things.

So I think you, unfortunately, have to start with harden your targets so it has a major economic and emotional disruption to the country, and you kind of work your way down. And hopefully, you know, 3 years or 4 years from now, the economy of scale will kick

in, because if we were all very busy and making lots of units, the prices will fall and suddenly it will become very affordable to have these kinds of systems at all kinds of sites.

Mr. RIZKALLA. If I may just make a quick comment on that. Indeed, the reason why the aviation industry is so interesting for the terrorists is because of its destruction on commerce. If a plane goes down tomorrow, there is going to be a real economic impact. If you blow up a market, outside market, you will have some impact, but the impact is not going to be as significant economically. That is why the profile of the aviation industry is so high. And that is why it is so imperative to not let suicide bombers get on these—

Mr. DICKS. Well, and I agree with that because the economic consequences, as we saw in 9/11, there was just a tremendous drop in traffic; and the effect on the economy, tourism, all of it was devastating to the economy of the United States. We suffered billions, maybe even trillions of dollars of economic loss because of this one, tragic, awful incident.

Mr. RIZKALLA. And the technology right now to avoid that exists, is ready to be deployed. We need to accelerate that process.

Mr. DICKS. So we have got to sit down with TSA and talk to them about how to accelerate the deployment of what is available that would improve the situation.

Mr. RIZKALLA. That is correct.

Mr. DICKS. Thank you.

Mr. ROGERS. Well, I want to follow up on that. As I understand—he asked about the deployment. As I understood it, it is the testing process that is the bottleneck; is that not correct?

Mr. FABIANO. Correct.

Mr. RIZKALLA. From our perspective, it is not, because the testing for the trace detection portals is completed. It has been improved, all the testing is done. We are beginning the deployment. So it is not our issue. It is not.

Mr. ROGERS. Thank you.

The Chair now recognizes the gentleman from Oregon, Mr. DeFazio, for any questions he might have.

Mr. DEFAZIO. Thanks, Mr. Chairman.

Mr. Fabiano, as I understand it, I mean, for several years now, since I was exposed, so to speak, to your technology, I have been pestering the TSA about it. And they kept saying, oh, there is privacy concerns. I said, look, there has got to be an easy software fix. You know, people can choose their body; you will just show where the things are on that body, Arnold's body, whatever body you want, it is fine. So you have solved that problem. They can no longer throw up the smoke screen: Oh, there is a horrible privacy concern here.

Mr. FABIANO. They have clearly defined the problem, and we have solved it.

Mr. DEFAZIO. Okay. And in Mr. Chopra's case, when you haven't even provided that privacy screen, people say I would rather than being handled by a person—and I have been through the Heathrow searches, they are much more intrusive than ours—they are saying 90 percent of the time we don't care.

Mr. CHOPRA. Well, you know, the thing is that there is a compromise of security. It comes back to the same thing: There is no

silver bullet. The more talking you do, the more games you play with the software, you are going to find some places that you can't be very sure that there is a threat object on the human body.

So one of the things, the European approach has been is yes, software has helped, but at the end of the day—I don't know whether you have been subjected to it, but I fit the profile—35 percent of the time I am spread eagle in the airport. And that is a pretty embarrassing thing, whichever way people talk about privacy. But given the choice—and Britain has come up with this idea and they are deploying them all over the terminals. Just put a system in there; there is no archiving, and basically you have a woman looking at a woman, a man looking at a man, and you basically tell the person do you want to be pat-down searched or do you want a scan?

Mr. DEFAZIO. I have used that with the TSA, too, and they are reluctant. I think either would help.

Mr. Fabiano.

Mr. FABIANO. Yes. There is a lot of emotionalism about this privacy issue. And you read a lot of things in the paper about people talking about they don't want their daughter or their wife, because you can see private parts. I think the best thing is for us to live demonstration to folks like yourself and let you see exactly what the systems do.

Mr. DEFAZIO. Right.

Mr. FABIANO. And I think it would be highly convincing for you, and you would be motivated to want to get it in the field.

Mr. ROWE. And I just want to add to that same litany, but I think two added points. One was I think you will find out, number one, that these images aren't that good; they are not photographic quality; they are not something you are going to want to send home.

And the other thing is that when you train operators, they are not spending time—if they are doing their job that they are trained to do, they are looking for objects, they are not looking at bodies. We are banging through 420 people an hour in Iraq. You don't have time to spend time doing that.

So I think a lot of the comments about that—and I will make one challenge for you all—is that, you know, this isn't just about airports, this is about congressional buildings like this building. I think it might encourage people if we started to see some of these systems tested in like this office building right here to show that you are willing and have the political will to screen people and see what their reaction is about privacy. And that would certainly encourage, I think, the people who are in airports to say, well, if they will do it at the Capitol, they will do it in the office building. And if you all will support it, have the political will to support it, it is not going to become an issue in the airport.

Mr. DEFAZIO. You are all experts on these metal detector portals we walk through. If I have a suicide belt that is composed of plastic and fabric holding it together and I have concealed a detonator elsewhere, not on my person, what will happen when I walk through that portal? Nothing, right?

Mr. RIZKALLA. Nothing at all.

Mr. DEFAZIO. Right; nothing at all. And that is the same, obviously, at airports as well as this office building.

So that is—you are making a point; I am familiar with the trace portals. I am very supportive of that. We just need to move this administration and the TSA on this.

Let me ask about another threat, because these people do seem to have patterns and come back to things. I assume most of you are familiar with Project Bojinka, which was Ramzi Yousef, and it was his idea to take down simultaneously a number of 747s over the Pacific, and he was only discovered by mistake. He had tested the bomb, had blown a hole in a 747, killed a number of people. Didn't happen in quite the right place; the plane didn't go down, but it worked. It was a contact lens cleaning solution, a container full of nitroglycerine and a very small detonating device using a digital watch. What are we doing to detect those sorts of things at our checkpoints today?

Mr. WOOD. The CT-based cargo solution would be perfect for that. It will find the nitroglycerine, it will find a container that would have sufficient volume. In fact, I can show you—

Mr. DEFAZIO. But I mean, people do carry on—I was behind a guy who had six bottles of wine, and they said what is all this stuff, and he said oh, they are bottles of wine. Well, they don't open the bottles of wine—and it is pretty easy with a certain kind of cork to remove it, put something in, et cetera. So you could tell it was a container, but we aren't analyzing those containers.

Mr. WOOD. No. There are other technologies that would discriminate between hydrocarbon and wine.

Mr. DEFAZIO. Right. The Japanese make one that I have heard of that can do the specific gravity or something. Whatever.

Mr. Chopra.

Mr. CHOPRA. If I could make a comment here. We have a technology that is based on thermo-neutron analysis, which actually was a demonstration, and detect the difference between nitroglycerine and a bottle of wine. It would detect it; it will do it in a very specific manner, with no false alarm rate. But again, it is another gadget, it is another set of equipment to be at the airport.

And I think TSA in a right way has this nightmare that it will start looking like a Best Buy shopping center with 46 different gadgets that you have to go through and run a system. It needs to be evolved. Like I said, these technologies have to be brought from the lab out to the open. Everything exists. It is a question of putting them together and deploying them. And there is no silver bullet.

Mr. DEFAZIO. And accessing threats. I mean, we have also had attacks in the past where people just simply put gasoline in bottles.

Mr. ROWE. I just wanted to add to that. I think what you said is sometimes is what I fear, in that we start to come up with scenarios that we can't solve; and so we say, well, because we can't solve an ounce of explosive or we can't solve this problem, let's not deploy anything. And yet if you look at all the history of suicide bombings, whether they are in Iraq or whether they are in Israel—which is where the majority are—they still tend to be relatively

crude. They are not that sophisticated. I think sometimes we over-engineer the problem.

And also if we would quit disclosing to the terrorists how our systems work, they are not going to know exactly what will get through and what doesn't. So when we see USA Today or when we see CNN saying here is how this new technology works, that is a huge security risk. Kind of back to—if it ran like DoD, probably more things would be classified, because most of this information should not be out.

Mr. DEFAZIO. And the other thing is to introduce, as I think a number of you have offered, kind of a randomness factor; we are not going to use a uniform technology at every checkpoint for all threats. If you have trace at one place or you have the portals and the Backscatter portals in another, you create some uncertainty for these terrorists on exactly what—and they may study the airports and come back. But it just makes it a lot more difficult. If you have a trace and a Backscatter, you don't know which portal you are going to go through, I think you create a success factor uncertainty for these people.

This will be my last line because I am out of time.

Mr. FABIANO. There is a common thread in both committees that we are here today.

Mr. FABIANO. There is a common thread in both committees that were here today. One is the technologies are evolving because the threats are evolving and we are all investing in that. But the point today is let us not get into paralysis from analysis. Let us act. Because we have systems that can be highly effective today that are in order of magnitude better than what we have. Let us use them.

Mr. DEFAZIO. All right. Thank you.

I think this a good note to end on. Thank you, Mr. Chairman.

Mr. ROGERS. Thank you. The gentleman yields back.

I want to thank the panel for their time and the members for their questions. It has been very valuable. There are some members who aren't here that may have some additional questions for the panelists, and we are going to leave the record open for 10 days. If you do have any questions provided to you, I would ask that you would reply to them in writing.

With that, the Chair would entertain a motion to adjourn.

Mr. SANCHEZ. I make a motion that we should adjourn, Mr. Chairman.

Mr. ROGERS. We are adjourned.

[Whereupon, at 4:05 p.m., the subcommittee was adjourned.]

LEVERAGING TECHNOLOGY TO IMPROVE AVIATION PART II

Tuesday, July 19, 2005

HOUSE OF REPRESENTATIVES,
COMMITTEE ON HOMELAND SECURITY,
SUBCOMMITTEE ON ECONOMIC SECURITY,
INFRASTRUCTURE PROTECTION, AND CYBERSECURITY,
Washington, DC.

The subcommittee met, pursuant to call, at 2:05 p.m., in Room 2261, Rayburn House Office Building, Hon. Daniel Lungren [chairman of the subcommittee] presiding.

Present: Representatives Lungren, Cox, Linder, Pearce, Thompson, Sanchez, Dicks, and DeFazio.

Mr. LUNGREN. [Presiding.] The Committee on Homeland Security, Subcommittee on Economic Security, Infrastructure Protection, Cybersecurity will come to order.

The subcommittee is meeting today to hear the Transportation Security Administration's testimony on how technology can best be leveraged to improve aviation security.

I would like to welcome everybody to today's hearing. This afternoon we will hear from the TSA following on the heels of last week's hearing on current and emerging aviation technologies.

Last week, we heard from leaders in the aviation technology sector to discuss checked baggage, passenger and carry-on baggage screening technologies. During the hearing, we discussed various technologies, from backscatter X-ray technology to screen passengers, to advanced computer tomography to scan carry-on baggage for explosives. These technologies are available for deployment today but their cost-effectiveness as part of an overall screening system remains somewhat unknown.

The problem appears to be that TSA takes a technology-specific approach to testing and evaluation, and while this process may be rigorous, it appears to be somewhat slow-going and lacking an overall context or plan.

Not surprisingly, we have made little headway in deploying the next generation of screening technology as we continue to rely on outdated technology of limited effectiveness.

TSA, working in partnership with the leaders in aviation security technology, must develop a plan to develop an integrated system of technology to improve aviation security—plain and simple. As GAO noted last week, this will require airport-specific technology plans, given the differing risks, volume and infrastructure profiles among

the nation's many airports. Technology improvements should reduce operating costs and increase our ability to thwart a terrorist attack.

Of course, we all know that no single technology will offer 100 percent of the solution to the multitude of aviation security threats. The key, therefore, is to identify the most effective technology suitable to the particular aviation environment and to place them within a sound strategy for technology development and deployment.

I look forward to hearing TSA's views on how they plan to accomplish this and soon.

I thank our witness for appearing before us today and now recognize the ranking member of the subcommittee, Ms. Sanchez, for any statement she may wish to make.

PREPARED STATEMENT OF THE HONOABLE DANIEL E. LUNGREN

JULY 19, 2005

[Call hearing to order]

I would like to welcome everyone to today's hearing of the Subcommittee on Economic Security, Infrastructure Protection, and Cybersecurity.

This afternoon we will hear from the Transportation Security Administration (TSA) following on the heels of last week's hearing on current and emerging aviation technologies.

Last week we heard from the leaders in the aviation technology sector to discuss checked baggage, passenger, and carry-on baggage screening technologies.

During the hearing, we discussed various technologies—from Backscatter X-ray technology to screen passengers to advanced Computed Tomography to scan carry-on baggage for explosives.

These technologies are available for deployment TODAY, but their costs and effectiveness, as part of an overall screening system, remain unknown.

The problem appears to be that TSA takes a technology-specific approach to testing and evaluation. While this process may be rigorous, it is entirely too slow-going, and lacks any overall context or plan.

Not surprisingly, TSA has made little headway in deploying the next generation of screening technology, as we continue to rely on outdated technology of limited effectiveness.

TSA, working in partnership with the leaders in aviation security technology, must develop a plan to deploy an integrated system of technology to improve aviation security—*plain* and *simple.* As GAO noted last week, this will require airport-specific technology plans, given the differing risk, volume, and infrastructure profiles among the nation's many airports.

Technology improvements will reduce operating costs and increase our ability to thwart a terrorist attack.

Of course, no single technology will offer a 100 percent solution to the multitude of aviation security threats.

The key, therefore, is to identify the most effective technologies suitable to the particular aviation environment, and to place them within a sound *strategy* for technology development and deployment.

I look forward to hearing TSA's views on how they plan to accomplish this, and soon.

I thank our witness for appearing before us today and now recognize the Ranking Member of the Subcommittee, Ms. Sanchez.

Ms. SANCHEZ. Thank you, Mr. Chairman.

And thank you for being before us today to testify.

I am pleased that we are holding this part two hearing today to continue to discuss the importance of using technology to improve aviation security and security for other modes of transportation, which TSA is also responsible to some extent.

Last week, we heard from the representatives of the screening technology industry about the technologies they are developing and their views of how it could be used, what has been the holdup on

trying to get some of this deployed in a timely manner, et cetera. So today I am sure you have taken a look at that information, and today I hope we get some answers from this side.

I am looking forward to hearing from you regarding TSA's process for developing, testing and deploying new technologies, how we improve that process and how we can apply these technologies to the other modes of transportation security.

We have been a little frustrated because we have seen billions of dollars invested in aviation and yet some of us still experience it ourselves when we go through that there are different practices in different airports, and depending on the person checking you or working security, you have a different experience each and every time.

Some screeners have complained, as is the case, a lot of people recognize me when I go through the airport and the TSA employees will begin to tell me some of the problems they see firsthand, not having the right equipment, in particular, to check some of the things that passengers may be carrying through and of course the 9/11 Commission recommendations and the 9/11 Act passed by the Congress at the end of this past year directed TSA to see the deployment of in-line technology to improve screener performance.

I am happy that it is done at John Wayne Airport, which is the airport in my area, and that it does have EDS. And I know that LAX, which is an airport I use frequently, has revised a letter of intent from TSA for reimbursement for the installation of in-line of EDS, but there are still too many airports that do not have this, and I think we need to talk about what the delay is and where we really plan to have that.

And I think, more importantly, we need to see some sort of a long-term strategy of not just what are we doing with aviation but with respect to what happened in London this last week, what are we doing here with respect to our other modes of transportation.

So we look forward to hearing from you, and these are important issues, and I think we just need to be reassured that as big a task as this is, and we understand that, that we are making progress and we have some long-range strategies and plans on how to get this done.

Thank you, Mr. Chairman.

Mr. LUNGREN. I thank the gentlelady for her statement.

And the chair now recognizes the chairman of the full committee, the gentleman from California, Mr. Cox, for any statement he may have.

Mr. COX. Thank you very much, Mr. Chairman.

I would like to welcome our witness. I am looking very much forward to hearing your testimony as we meet this afternoon to examine how the Transportation Security Administration can leverage technology to improve our security screening operations.

As we heard last week, a clear technology strategy is necessary if the private sector is going to help us to deploy the next generation of equipment. It is vital that new screening technologies that could fill critical security gaps and reduce operating costs at our nation's airports move from TSA evaluation into the field.

We want TSA to be relying on the very latest technology, not on outdated technology. We want to move beyond X-ray machines and

magnetometers that did a good job at finding metal items but have a much harder time catching the more menacing terrorist threats, such as IEDs, improvised explosive devices.

The deficiencies with older technologies are forcing taxpayers and the federal government to employ more time-consuming invasive secondary procedures—pat-downs and hand-conducted luggage searches. They also require screeners to make judgments based upon limited information, introducing more human error into the system than we would like.

Testing conducted by the Department of Homeland Security's Inspector General and by the Government Accountability Office puts questions before us that we can discuss this morning about how the current screening system can be changed to operate at more optimal levels of efficiency or effectiveness.

The labor-intensive nature of current equipment has made TSA's on-the-job injury problems larger perhaps than we would like them to be. Thirty percent of TSA screeners filed workers' comp claims during 2004. That is a high number, and it is related, of course, to lifting heavy baggage during the screening process.

Despite all of this, TSA, in my view, is poised to make big changes and big progress. We have to admit that many of the problems that TSA has experienced are due to mandates imposed by this Congress. To correct the situation, TSA and the Congress have to work together to identify and prioritize investment in technologies that can reduce TSA's annual operating budget while improving its detection capability.

I want to thank our distinguished witness in advance for appearing today to provide TSA's views on these issues, express my willingness and this committee's willingness to work very closely with you as we work together to achieve these objectives.

Thank you, Mr. Chairman, for scheduling this second in a two-hearing series on this very important topic.

PREPARED OPENING STATEMENT OF HON. CHRISTOPHER COX

JULY 19, 2005

Thank you, Mr. Chairman.

We are meeting this afternoon to examine how the Transportation Security Administration (TSA) can leverage technology to improve its security screening operations.

As we heard last week, TSA's lack of a technology strategy has hampered private sector efforts to develop next generation equipment. As a result, new screening technologies that could fill critical security gaps and reduce operating costs at our nation's airports are languishing in TSA labs.

TSA continues to rely excessively upon outdated technology. X-ray machines and magnetometers do a very good job at finding scissors and nail clippers, but they have a much harder time catching the more menacing terrorist threats, such as improvised explosive devices.

The deficiencies with the current screening machines have forced TSA to employ time-consuming and invasive secondary procedures such as pat downs and hand-conducted luggage searches. They also requires screeners to make judgments based upon limited information, introducing an excessive amount of human error into the system.

In fact, testing conducted by the Department of Homeland Security's Inspector General and the Government Accountability Office raises serious questions as to whether this current screening system can ever operate at optimal levels of efficiency or effectiveness.

Furthermore, the labor-intensive nature of current equipment has made TSA the lead federal agency in on-the-job injuries. In fact, 30 percent of TSA screeners filed

workers compensation claims during 2004, mostly related to lifting heavy baggage during the screening process.

Despite all of the shortcomings of its current screening systems, TSA has gone about its technology development and deployment in a haphazard fashion—and we must admit that this is partly due to mandates imposed by Congress.

To correct the situation, TSA must promptly move to identify and prioritize investment in technologies that can reduce TSA's annual operating budget while improving its detection capability.

I thank the witness in advance for appearing today to provide TSA's views on these issues, and yield back my time.

Mr. LUNGREN. I thank the chairman.

Other members of the committee are reminded that opening statements may be submitted for the record.

We have to testify here today the Assistant Administrator and Chief Technology Officer for TSA, Mr. Clifford Wilke. He has a distinguished record of achievement in both the private and the public sector, one of the first few people who knew anything about smart cards, someone who then joined the federal government where he served in distinguished capacity in the Office of Comptroller of the Currency where for 5 years he served as Director of Bank Technology.

We thank you for appearing. Let me just remind you that your prepared remarks will be included in the record in their entirety. We would ask you to attempt to limit your remarks to begin with for 5 minutes, and then we will go to a round of questioning.

Mr. LUNGREN. Mr. Wilke?

STATEMENT OF CLIFFORD A. WILKE

Mr. WILKE. Good afternoon Mr. Chairman, Representative Sanchez and members of the subcommittee. I am pleased to have the opportunity today to discuss the vital role that technology plays in ensuring the security of our aviation system.

We are working rapidly to deploy and develop the next generation of technology. Our work is focused on not only increasing the capabilities of our security but in providing the best tools available that improve the experience of the traveling public as they go through the security screening process.

In general, TSA provides two distinctive types of screening: Passengers and the property they carry into the cabin of the aircraft as well as the checked baggage carried in the hold of the aircraft. These two types of screening require two different types of technologies.

Frequent travelers are very familiar with the technologies used for checkpoint screening. Currently, TSA relies on enhanced walk-through metal detectors, threat image projection equipment X-ray machines and explosives trace detection units. They are all intended to assist screeners in determining whether or not a passenger is trying to bring a weapon, explosive or a prohibited item on board.

We are very excited about the technology that is in the research and development stage, such as the backscatter X-ray, automated explosives and weapons detection for carry-on baggage, bottle screeners and enhanced trace detection devices.

We are also right now in the pilot phase of two technologies at selected airports: Explosive trace detection portals and explosive detection document scanners. The explosive trace detection portal

is an automated passenger screening system using a whole body portal to inspect passengers for traces of concealed explosives. The portal conducts a trace sampling process with puffs of air when the individual enters the portal. We are conducting pilot tests right now at 14 airports and are operationally testing this in airports across the country.

The pilots are quite successful and therefore we are proceeding with the purchase and installation of 147 more of these units across the country. TSA has identified potential airports around the country that will be receiving the majority of these portals later this year, and we are also working on site surveys for the remaining units.

In our pilot test in explosive detection equipment, we deployed four scanners that require a screener take a travel document from a passenger, pass it through a sensor on the instrument to detect the presence of explosives. TSA found that this system would be more effective if the passenger themselves could use it and pass the document through the screening system without intervention from a screener. Right now we are working to further refine this technology for actual field use.

I would like to discuss one other technology we are developing which is whole body imaging and backscatter X-ray technology. The technology would allow TSA screeners to visualize metallic and non-metallic items carried on a person without physical contact between the passenger or the screener.

TSA is well aware of the privacy concerns raised by the media regarding this technology, and we are working very closely with the vendors to ensure that software algorithms are incorporated into the device to produce images that will access and really address the privacy concerns. We believe this technology can enhance privacy because passengers going through this process will no longer need to endure pat-down searches in the future.

For fiscal year 2006, the administration has requested a total of $72 million for emerging checkpoint technologies. I respectfully ask the committee support our request.

In the checked baggage area, TSA utilizes in-line as well as stand-alone explosive detection systems and explosive trace detection machines. Under our next-generation explosive detection system, Phoenix, we are making significant incremental improvements to the present generation of explosive detection technology.

First, TSA certified the Reveal CT–80 in December of last year. This is a system that is smaller in size and can be used for smaller airports or it can be deployed as a stand-alone unit or as part of a small in-line solution to any airport that needs it.

Another part of our Phoenix project is the Analogic 6400 machine, which is a software upgrade to enhance the capability of the eXaminer 6000 EDS system that is currently deployed. It gives us the ability for 3–D imaging and reduced false alarm rates.

We are also looking at eight letter of intent that we have currently right now to provide multiyear financial assistance based on the availability of funds to nine airports across the country, enabling them to perform work on installing in-line systems.

The request in fiscal year 2006 includes $264 million to support this existing letter of intent. We believe that the 75–25 cost-sharing

model right now is very equitable, and if it were to be change, it might create hardships for other parts of the industry.

Mr. Chairman, technology development is a high priority for the agency and with the Department, and we are working very closely with these efforts with our technology vendors. This partnership is important as we pursue cutting-edge technologies and work on successfully deploying them.

This concludes my opening remarks. I would be very pleased to answer any questions at this time.

[The statement of Mr. Wilke follows:]

PREPARED STATEMENT OF CLIFFORD A. WILKE

Chairman Lungren, Congresswoman Sanchez, and Members of the Subcommittee, thank you for inviting me to testify regarding the deployment of checkpoint and checked baggage screening technologies at our Nation's airports. With the summer travel season well underway and airline travel now exceeding the pre-September 11th levels, it is an appropriate occasion to examine the role that technology plays in support of our mission of screening passengers and property, in a manner that not only ensures security but also operational efficiency. By measuring the capabilities we currently possess against emerging threats, we are able to conduct the necessary research and development to support the next generation of technology solutions that will continually increase our capabilities, minimize staffing requirements, and improve the experience of the traveling public. An element of TSA's Office of Security Technology is our Transportation Security Laboratory (TSL) at Atlantic City, NJ. The TSL is the premier laboratory leading the way in explosives and weapons detection in support of protecting the transportation infrastructure. I invite you to visit the TSL at your earliest convenience, so that you can get a firsthand glimpse of some of the technologies that I will be describing today.

Checkpoint Screening Technologies

TSA's technology program is designed to provide the optimal tools to our screeners. For checkpoint screening, TSA's screeners conduct pre-flight screening of passengers and their property to ensure that they do not bring aboard a commercial flight any concealed weapons, explosives, or other threat items. The following are the tools currently deployed to support this part of our mission:

- 1,910 enhanced walk-through metal detectors: Designed to alarm when a metallic item of sufficient weight and density is detected, these alert screeners to the need to perform secondary screening to ensure that the item causing the alarm is not a prohibited item. After 9/11/01, TSA established a new standard for airport metal detectors and replaced the units that had been previously deployed.
- 1,904 threat image projection (TIP) ready x-ray machines: Designed to portray images of items being screened, these allow screeners the opportunity to use image interpretation to identify potential prohibited items. The incorporation of TIP into this technology allows TSA to randomly and covertly insert images of threat items into bags that are processing through the x-ray unit and measure screener alertness and effectiveness. As new threat concealment techniques are designed, TSA can design TIP images to educate screeners without removing them from their work station.
- 1,273 Explosive Trace Detection (ETD) units: Designed to detect traces of explosives particles, these provide screeners with a technology to assist in the clearance of items that cannot be cleared through x-ray and/or visual inspection alone. This is a particularly effective technology with regard to screening bags i.e., a suspected false bottom or lining that reveals evidence of tampering, as well as shoes and electronic/electrical items. The screener uses a collection media to obtain a sample for the surface of the object to be screened and submits that media for analysis. The unit will alarm if the presence of explosives particles is detected.

The effectiveness of each of these technologies is dependent upon screeners being alert and attentive to their duties 100 percent of the time and following established processes and procedures. For example, by definition, the use of metal detectors only alerts screeners to the presence of metallic objects, which would encompass most weapons and most prohibited items. Further, these devices alarm when detecting a broad array of metallic items, which then requires a more time consuming alarm resolution process to begin, to include use of hand held metal detectors to isolate

the area of concern and a limited pat down search to identify and resolve the item(s) causing the alarm. X-ray screening requires image interpretation as bags process through the unit, allowing only seconds to make a decision. Therefore, screeners must not only be well-trained but also continually alert. Finally, the ability of the screener to obtain a proper sample is critical to the effectiveness of ETD technology.

Going forward, TSA's checkpoint technology research and development program focuses on overcoming the shortcomings of existing technology, especially through automation of threat detection. In addition to improving detection capabilities, TSA also seeks to develop technology that has a minimal "footprint impact," so that their installation or actual operations will result in minimal disruption to the flow of passengers and require minimal construction investments. TSA must also ensure that any technology that is introduced does not pose an unintended health or safety risk to passengers and/or screeners. Finally, TSA is mindful that with increased technology capabilities comes the responsibility for ensuring that such capabilities do not lead to undue intrusions into the personal privacy of passengers.

TSA has conducted operational testing and evaluation of two new technologies that will enhance TSA's ability to detect explosives at airport checkpoints. The first technology is Explosives Trace Detection Portals, designed to inspect passengers for concealed explosives using non-contact trace detection as passengers walk through the portal. The testing revealed that the portal offers a viable first generation solution for explosives detection on people. With the successful completion of 14 pilot projects, TSA is planning to purchase and install 147 of these portal units in calendar year 2005.

The second technology undergoing testing and evaluation at four airports is a manual explosives detection document scanner. The four units currently deployed on a pilot basis require that a screener handle a passenger's travel document and pass that document across a designated area on the unit to obtain a sample for analysis for the possible presence of explosives. TSA has found that while the underlying technology is effective, we would achieve more effective results if the system were designed to accept travel documents directly from passengers. Such a direct approach would not only streamline the screening process but would also preserve the integrity of any traces of explosives that might be present. TSA is therefore continuing to work with technology vendors to develop an automated explosives detection technology that will include a document scanner and expects to have a prototype to pilot in FY2006.

TSA is also currently pursuing research and development on a number of next generation technology solutions to further expand our capability to detect weapons and explosives at the checkpoint. One technology that TSA finds especially promising is whole body imaging/backscatter X-ray technology, which would allow TSA screeners to visualize metallic and non-metallic items carried on persons without physical contact between the screener and the passenger. The device operates by producing an approximate body image that can highlight possible weapons or explosives on that individual without unduly infringing on personal privacy. TSA is currently developing an operational test and evaluation pilot project proposal for this technology, including techniques for protecting personal privacy. TSA is working closely with vendors to perfect software algorithms that would be incorporated into this technology to protect the personal privacy of individuals that would undergo backscatter screening. Simultaneously, TSA is evaluating other body imaging technologies, such as millimeter wave and terrahertz technology. We believe that if whole body imaging systems are successfully developed and deployed, with effective means to protect personal privacy, this technology could improve the secondary screening process and potentially minimize the necessity to conduct patdown searches.

In addition to whole body imaging technology, TSA has a number of research and developments projects underway to identify increasingly effective and efficient checkpoint technologies, including:

- Explosives Detection System (EDS) for carry-on baggage: TSA is conducting preliminary evaluations of an EDS for carry-on baggage that would automate the detection of explosives in carry-on baggage, similar to the capabilities TSA has achieved for checked baggage screening. TSA currently has one unit located at Boston Logan International Airport to collect engineering data needed to support further development of the technology.
- Cast and Prosthetic Device Scanner: TSA is working to develop a technology solution to more effectively screen casts and prosthetic devices for weapons and prohibited items.
- Explosives Detection Bottle Scanners: TSA is working with industry to evaluate the effectiveness of bottle scanners to screen for liquid explosives. TSA has issued a solicitation to industry to submit products for laboratory evaluation.

TSA plans to invest $28.3 million in FY 2005 and has requested $71.7 million in the FY 2006 budget for emerging technologies to begin to equip airports with additional explosives detection technologies for passenger screening.

The FY 2005 purchase and deployment plan for explosives detection portals and document scanners is outlined below:

FY 05—$28.3M	# of Airports	# of Units	Cost Per unit *(does not include installation costs)*
Static Trace Portals	41+	147	$175,500

For FY 2006, the Administration is requesting an increase of $43.7 million, for a total of $72.0 million, to direct additional resources to field emerging technology equipment at checkpoints. As emerging checkpoint technologies continue to be developed, operationally tested, and evaluated, we will be able to determine which other technologies are appropriate for deployment.

Checked Baggage Screening Technologies

For checked baggage screening, TSA conducts pre-flight screening of all checked baggage that is carried on a commercial flight for the presence of explosives. Currently, TSA uses two types of devices to screen checked baggage for explosives: explosive trace detection machines (ETD) and explosive detection systems (EDS). ETD machines are roughly the same size as a common laser printer, with an average cost of $37,500. ETD machines can detect minute traces of explosive residue, which may have been transferred to surfaces through direct or indirect contact. While the ETD machines themselves have extremely high detection rates and very low false-positive alarm rates, the process for collecting trace samples is slow, very labor intensive, and susceptible to human error. ETD machines work best as a primary means of explosive detection at low-throughput airports and for alarm resolution when coupled with an EDS machine. As indicated earlier, this technology is also used to support screening at passenger checkpoints.

In contrast, EDS machines scan objects in bulk and compare their density to the density of known explosives. The EDS can be highly automated and networked and can scan several hundred bags per hour. Currently, TSA has deployed at our nation's airports over 1,300 EDS machines, which operate from a computed tomography (CT) technology platform, and all of which are manufactured by L–3 Communications Corporation or GE/InVision Technology, Inc. The greatest advantages of EDS over ETD are that threat detection is automated and their throughput rate is significantly higher. The EDS does produce higher rates of false alarms, and as a result, screeners must resolve those alarms by either using on-screen alarm resolution protocols, or by using ETD to inspect the item(s) causing the alarm. In addition, the current generation of EDS is generally large and bulky (weighing around 10,000 pounds and measuring on average approximately 24'x6'x6'). EDS units are also costly to purchase (as much as $1 million per EDS machine). Finally, to accommodate the size and weight of the EDS machines, some airport terminals require facility modifications prior to installation. Installation costs vary but average approximately $340,000–420,000 per unit.

Further efficiencies can be achieved at the Nation's largest airports if EDS is integrated inline with an airport's baggage conveyor systems. Inline screening solutions allow TSA to realize maximum efficiencies with regard to equipment throughput capacity. For example, a standalone EDS unit typically deployed in an airport's lobby will process approximately 150 bags per hour, while that same unit installed inline will process approximately 450 bags per hour. Unfortunately, facility modifications needed to support inline EDS screening solutions usually entail extensive terminal modifications—such as reinforced flooring, IT networking, electrical upgrades, new conveyer systems, and construction of new facilities.

To date, ten airports have moved to full inline screening systems. Many of these airports undertook this work using their own funds, funds from FAA's Airport Improvement Program (AIP), or some combination thereof. Since 2003, TSA has also issued eight letters of intent (LOIs), covering nine airports (of which one, Boston Logan International, has completed full inline EDS installation), to provide assurance of a multi-year funding stream for selected airports to make the necessary airport infrastructure modifications to accommodate installation of inline EDS. To this point, TSA has issued the following LOIs, which will be paid over several years subject to the availability of funding:

Airport Total	*Project Cost*
Denver International	$95 million
Dallas/Fort Worth	$140 million
Los Angeles/Ontario	$315 million
Boston Logan	$116 million
Las Vegas McCarran	$125 million
Atlanta	$125 million
Seattle/Tacoma	$212 million
Phoenix	$115 million

The Federal Government's total investment over the duration of the LOIs, at a 75% Cost Share Rate, would be $957 million.

The FY 2006 President's budget request includes $264 million to support the existing LOIs. This amount includes $240.5 million in direct reimbursements and an additional $20 million for equipment multiplexing and installation. The FY 2006 President's budget also includes $130 million for the purchase of EDS and ETD technology in support of checked baggage screening.

TSA is also developing prioritization criteria that will result in a comprehensive strategic plan in which TSA will identify the universe of airports that may benefit from an inline EDS system or other physical modifications to support the optimal screening solution. This plan will identify estimated project costs and potential savings that could be achieved through minimizing staffing requirements, capital investments and maximizing technology capabilities. It is important to note, however, that inline EDS systems are not appropriate for all airports, from both operational and cost considerations. For example, in December, 2004, TSA certified the CT–80, which is manufactured by Reveal Imaging Technology. This unit operates from a CT based platform similar to the current L–3 and GE/InVision technologies, but it only weighs about 3500 pounds and will cost approximately $350,000 per unit The Reveal CT–80 provides TSA with a smaller and less expensive EDS unit to include in its planning. At certain airports, the Reveal CT–80 may be appropriate to install as standalone units within and/or immediately behind airline ticket counters at airports. They would replace screening currently performed using ETD. For FY 2005, TSA has available for obligation $30 million to purchase and install CT–80s, of which about $25 million would be used to purchase the actual units and $5 million would be devoted to installation. Pilot testing of the units is already underway at Gulfport Biloxi Airport and John F. Kennedy International Airport (JFK) and will soon be initiated at Newark Liberty International Airport (EWR). The pilot testing will allow TSA to measure the operational impact associated with use of this new unit. TSA's research and development efforts have also yielded a software upgrade that enhances the capability of the already deployed eXaminer 6000 EDS unit manufactured by L–3 Communications. This upgrade, known as the Analogic 6400, was certified by TSA in April of this year. The upgrade provides improved detection, increased throughput capacity, improved reliability, and reduced false alarm rates. TSA will pilot this technology at a number of airports to determine operational impact by the end of this year.

The Reveal CT–80 and the Analogic 6400 are concrete examples of incremental improvements in existing EDS technology to provide greater flexibility in identifying the optimal solution for a variety of airport configurations, while also lowering alarm rates, increasing throughput, and improving detection capabilities. These enhancements to our checked baggage explosives detection capability fall under what we term the "Next Generation EDS—Phoenix Project." In addition to this applied R&D, TSA is also undertaking basic R&D to explore emerging and revolutionary new technologies under the "Next Generation EDS—Manhattan II" project. The purpose of

Manhattan II is to evaluate and develop next generation EDS technology and to challenge industry and academia to apply innovation in the development of new screening systems. Under Manhattan II, TSA has issued ten multiple proof-of-concept grants, totaling approximately $10 million in FY 2004 and FY 2005, which includes the following:

Technology Area	Vendor	Project Description
TeraHertz	L3 Communications	THz Time Domain Spectroscopy
	TeraView	Applying THz to Checked Baggage Screening

Technology Area	Vendor	Project Description
Neutron	SAIC	Neutron-based system for Alarm Resolution
	HiEnergy	Stoichoimetric Explosive Detection & Confirmation
Trace Detection	CyTerra	Pressure Activated Sampling System-Luggage (PASS-L)
	Nomadics	Amplified Fluorescence Quenching
X-Ray	Smiths Detection	Coherent Scatter with CT imaging
	Analogic	Threaded Dual Axis Tomosysthesis (TDAT)
	General Electric	Stationary X-Ray Source (CT)
	Xintek	Nanotechnology Based X-Ray Imaging

Upon completion of the proof-of-concept phase, TSA will evaluate the results and award system development contract(s) to those organizations with concepts and technologies that are proven and demonstrated. It should be emphasized, however, that Manhattan II is a long-term project that is not designed to yield technologies that would be deployable in the immediate future.

CONCLUSION

Subsequent to the attacks of 9/11/01, TSA successfully undertook a massive investment and effort to not only hire, train, and deploy a Federal screener workforce but to also provide them with the necessary tools to perform their duties. Given the urgency in which TSA had to operate, the aggressive deadlines set forth by Congress, and the technology that was available at the time, deployment has been challenging. As the agency matures and as airline travel levels exceed the level that existed on 9/11/01, one of our main goals is to optimize all of our resources so that security is achieved in the most cost-effective and operationally efficient manner. Developing cutting edge technologies and successfully deploying them is a key component to this optimization and is being done in close coordination with the Department of Homeland Security's Science & Technology Directorate and in partnership with technology vendors. We are developing strategic plans for both checkpoint and checked baggage screening technologies which will allow us to effectively design our road map to the future. Our efforts will focus on increasing our technological capabilities to keep pace with potential terrorists, whom we must assume are constantly examining how they can penetrate security at our Nation's airports.

Mr. Chairman, Congresswoman Sanchez, and other Members of the Subcommittee, this concludes my prepared remarks. I would be pleased at this time to answer any questions.

Mr. LUNGREN. The chair recognizes himself for the first 5 minutes.

Thank you very much for your testimony, we appreciate that.

Let me just ask you a general overall question, and that is, is your technology development premised on the assumption that we are going to have most people who get on airplanes go through this, all the people, or do you make any calculations as to whether or not certain technologies would be changed with respect to their function if you were able to eliminate a significant number of people from that, for instance, through the Registered Traveler Program?

Mr. WILKE. I think programs such as Registered Traveler do possess and give us a tremendous opportunity to, if you will, reduce the size of the haystack of what we really need to focus on. That is travelers that we need to spend additional time screening, going through the process of perhaps using all of our screening technologies on these citizens and traveling public that we should be focusing our attention on.

I know from a policy perspective the agency is looking at this, and it is really more of a policy area than technology, but from a technology perspective, it would definitely help us in that process of raising the level of security for our traveling public.

Mr. LUNGREN. The backscatter X-ray technology, you have indicated that there are privacy concerns, and you have talked about methods by which we can address those issues, and you used some technical words. How would you explain it in plain English to someone who is concerned about going through that machine and it exposing them, so to speak? I mean, in concrete terms, what about the approach would be used to alleviate the concerns that an average person would have after they have listened to the press about submitting to such a review?

Mr. WILKE. I think we have learned and seen what the press has portrayed the technology as. However, during the past few months, we have been working very aggressively with our vendors to develop a new algorithm that, if you will, provides more of a cartoon-like image that shows any type of metallic devices, explosives carried on body, for example, or knives that are carried on person that would normally have to be checked and verified through a physical pat-down.

Mr. LUNGREN. In the old days, I would understand what you are talking about, but some of the cartoons today are rather explicit. I mean, what are you really talking about? Are they like stick figures but they would actually show the areas of concern; that is, they would show if there are any metallic objects? What is it, because that is what I have got to answer to folks back home, right? Not algorithms or anything like that, I have got to tell them what it looks like.

Mr. WILKE. It is basically an outline of the body, if you will, same as if you are silhouette would be there. And it would show any types of metallic objects or things that are non-organic that are actually carried on person at that time.

Mr. LUNGREN. It would not show other outlines of the body???

Mr. WILKE. With the privacy algorithm developed, you would not have those type of things.

Mr. LUNGREN. Last week we consistently heard from vendors that the government should set standards and benchmarks for technologies. In your opinion, what is the most effective means for TSA to standardize the benchmarks used by aviation security technology vendors?

Mr. WILKE. I think the number one key is reliability. We want to be assured that a machine that is deployed out in the field meets the need of the traveling public and provides security. The worst thing we can do is deploy a technology out there, spend the money for it and then not have it meet the needs.

Mr. LUNGREN. With your past experience in both the private and the public sector, what do you see as the appropriate relationship between technology vendors and TSA in their respective roles in development and deployment of aviation security technologies?

Mr. WILKE. I have believed always in a public-private partnership, if you will. We did it in the Treasury when I was over there in working with our vendors on that piece, and I fully support it in our job here.

In our two most recent FedBizOpps notifications looking at next-generation technology, we are basically going out and saying, "Here is the problem here is the solution, here is what we want to solve." Vendors give us solutions that meet that need. And I think by having an open dialogue with our vendors, we can get ourselves a lot better, a lot higher quality of products out there in the marketplace to raise the level of security.

A case in point, one of the technologies we are currently in very, very early development with based upon a meeting with one of our vendors is a technology that can actually sense explosives that are carried that a person has. So we can basically put a fingerprint down or put a handprint down and you can see if the person has touched or traced explosives, same as an explosive trace device but just furthering that technology out further.

Mr. LUNGREN. What would you say to those critics of TSA who have suggested that you do not have a technology road map, you do not have an overall technology development and deployment strategy? Is that true, number one? And if so, what do you have as an alternative?

Mr. WILKE. Okay. That might have been true at a period of time. When TSA was stood up, they did a Normandy-like, D–Day-like deployment of technology to all 450 airports across the country. The agency is now evolving to more of a strategic approach moving forward, putting together a strategic road map, if you will, to look at how various technologies can be used to actually meet the security traveling public's needs.

Mr. LUNGREN. My time has expired.

The gentlelady from California, Ms. Sanchez, is recognized for 5 minutes.

Ms. SANCHEZ. Thank you, Mr. Chairman.

I would like to ask a question for you with respect to the aviation issue. Your own analysis has shown that nine airports now have the in-line EDS system, which would save the federal government about $1 billion over 7 years, and that the initial investment in those systems would be recovered in a little over a year.

So my question is, why in your budget you did not request more money for us to get that to more airports?

Mr. WILKE. The first thing I will say is I challenged the number that was given for the one-year payout on it. I mean, if you look at payout of just the machine alone, it depends on really how you use the calculator. I mean, you really need to look at the overall price of the entire system, all the things that are needed to put an in-line system in place. That includes not just the machine itself but baggage handling equipment, it also includes sorters and a lot of other things for an airport to really do its piece.

So the payoff ROI piece in some of our calculations are further on down the line, maybe in the 2-to 3-, 4-, 5-year, depending on the airport, because every airport across the country is different, and it is not one type of solution that will meet that need of giving security.

Ms. SANCHEZ. Okay. Well, my information is that the one-year payout is actually coming from your agency. This is not an outside analysis, this is your analysis. So I guess what we need to find out

is who did that versus now what your numbers are. We need to take a look at both—

Mr. WILKE. We can get back to you on that.

Ms. SANCHEZ. —if you can provide those.

Mr. WILKE. Sure.

Ms. SANCHEZ. This is not an outside analysis. This is coming from your own agency. So what you are saying is whoever did it within your agency, at whatever point was just wrong or now you guys have figured out that that is wrong and you have got a new analysis.

Mr. WILKE. We are putting together a new analysis model.

Ms. SANCHEZ. Okay. Because, again, we are trying to understand, I am trying to understand if this is going to work so well, why you are not coming to the Congress and saying, "Get this done as soon as possible." We are borrowing for other things. Might as well borrow for something that really works.

Do you think that letters of intent are effective to construct the public's private partnership or do you have other methods you are thinking of in which we can get airports online quicker for this in-line media technology?

Mr. WILKE. Well, as we speak right now, 19 different airports around the country have operational in-line systems for the entire airport. Twelve other ones have them either under construction, planned or partially installed. Only nine of the airports are under the LOI program.

Other airports have had public-private partnership, outside funding, and we have worked with the airports across the country to give them expertise as far as how the system should be put together, what type of equipment could be used, in some we have helped with payment of machines. Every one is really kind of different right now, and we are working to try to find out what is the actual best model moving forward to give the taxpayer the most return on their investment.

Ms. SANCHEZ. Okay. What about the old EDS and ETD systems that larger airports have? Do you have a system by which you might get these to smaller airports who are not going to be in line or think they cannot afford an in-line EDS system?

Mr. WILKE. Yes. We have ourselves a waterfall strategy, as we call it. For example, when one airport that might have a stand-alone system gets an in-line system involved, we will take those machines and actually coordinate with another airport to redeploy them somewhere else and actually looking at new technologies too for smaller airports, such as the Reveal CT–80, the smaller footprint machine that can be used for an airport that cannot afford a $1 million machine, if you will, and wants a smaller-priced machine.

Ms. SANCHEZ. Let me ask you something that I asked last week. If you have a suicide bomber who is hanging out at the security area where quite frankly that is a bottleneck, as most of us who use the airports understand, do we have any concerns, do we have any plans of what we do if a person is detected with a blow-up bomb on themselves as they are going through that particular bottleneck?

Mr. WILKE. I think that is one of the challenges we face ahead looking at what the change in threats are based upon recent events around the world.

As we speak today, if that person went through one of our trace detection portals, obviously then they would be detected. But at that point they might do something tragic, and I think it is something we need to look at down the road.

And we are actually working with some other agencies within the federal government to look at how we can have better standoff detection down the road and using some of the things the military has learned for other venues in the public sector.

Ms. SANCHEZ. Thank you, Mr. Chairman.

I see my time is up, and, again, I would just reiterate the desire to see the new analysis you have, and we can show you where we got the other information from your own agency. Thank you.

Mr. WILKE. Be glad to.

Mr. LUNGREN. All right. The gentlelady's time has expired.

The gentleman from Georgia is recognized for 5 minutes.

Mr. LINDER. Thank you, Mr. Chairman.

Mr. Wilke, have you done an estimate in your department as to how much it would cost to give 100 percent of the travelers in the air 100 percent protection from terrorism?

Mr. WILKE. What you are asking for is almost a guarantee?

Mr. LINDER. Yes.

Mr. WILKE. I am not sure if there is any security system built today that can give 100 percent guarantee.

Mr. LINDER. I am not either. So how much are you looking for?

Mr. WILKE. We are looking to put together a layered strategic approach using the best technologies that are out there today in the most efficient manner and use them in a layering approach to provide the best security based upon the actual threat that is out there today that we feel that we see. And that is based upon intelligence, based upon where the greatest threats are, where the emplacements are happening and also where the greatest threats are moving forward.

Mr. LINDER. Do you believe the greatest threats are on airlines?

Mr. WILKE. Based upon a lot of things we have seen in our intelligence, I think airlines are still an attractive target for terrorists today.

Mr. LINDER. Are you aware that more people have been killed by terrorists in trains than in airplanes?

Mr. WILKE. The facts state themselves.

Mr. LINDER. And you are spending $200 million to $250 million a year on trains and $4 billion to $5 billion a year on airlines.

Do you ever believe another airline is going to be allowed to hit a building?

Mr. WILKE. I would expect that the traveling public would react differently than they did in the past.

Mr. LINDER. I think you are right.

Mr. WILKE. However, we still need to be aware of what might happen from the explosive detection piece if a passenger had explosives and did something catastrophic to a plane.

Mr. LINDER. To that plane. What if the passenger was not a passenger but got into a train trestle over a huge river and as the Am-

trak full of 1,000 passengers was approaching it took out the track. What are you doing about that?

Mr. WILKE. I think that rail security really has to deploy a different type of security model. By the way that rail is, it is an open system. I am not sure of a technology that could physically monitor every inch of track across the country today that we have available to us at a cost-effective price. I think we do need to look at what can be done to strengthen it.

We have worked at TSA with a lot of the railroads, intermodal agencies, et cetera, looking at best practices. We had a project we called our TRIP project. We ran, actually had a screening car, if you will, on a rail car going back and forth up in Connecticut. And we did that to test out to see how it actually works in a real-world scenario, and we learned a lot through that process. And the open nature of rail and mass transit is one that does present a challenge.

Mr. LINDER. So what you learned is that people who travel on mass transit are on their own; is that right?

Mr. WILKE. I think there are things we can put in place to raise the area of security. I think when you look at rail, I think you can have things such as sensor devices possibly that can detect explosives in the future. I think you might be able to possibly look at some things such as canine that can possibly detect an explosive presence nearby or if someone is carrying something of danger.

But I think there are technologies moving forward, and I think that we are trying to explore those and find out what are the best ones that actually work in this mode of transportation at an economical and not impede the flow of commerce.

Mr. LINDER. I mean, if you are spending $4 billion a year on screening processes, how much are you spending on the rest of the detection devices?

Mr. WILKE. I am not following you, sir. You said $4 billion?

Mr. LINDER. What is your budget for TSA?

Mr. WILKE. This year, our budget is about $917 million.

Mr. LINDER. Does that include the screeners?

Mr. WILKE. The screeners, no. I am talking about the technology piece that I am responsible for, sir.

Mr. LINDER. Okay. That is on top of the $4 billion, right?

Mr. WILKE. Okay.

Mr. LINDER. How much are you willing to spend to, as you said, raise the level of security for travelers?

Mr. WILKE. I think we need to look at what technologies can be used in other venues. For example, an explosive detection portal has been pilot tested, has been used actually in a rail environment, and the results were very nice. There is nothing out there precluding a rail authority or a rail association that is publicly funded or privately funded from engaging in installing these new types of technologies.

Mr. LINDER. I just pray that you do not take TSA for airlines and use that as a model for trains, because I do not think it is succeeding in airlines.

Mr. WILKE. We are actually looking at a new generation of technology that does use high-speed, high-capacity detection devices,

because we realize that you do not have formal checkpoints in the mass transit, rail, even buses, for example.

Mr. LINDER. How soon are you going to be able to look at the Registered Traveler Program and say, "If we have done a background check on that traveler and we have the biometric such as a fingerprint and we have made a decision that that person is not a threat to the airline," how soon are you going to be able to say once they walk through that lane or that portal and put their fingerprint on and are recognized as the person you have done the background check on, they can walk right on the plane without going through any more screening?

Mr. WILKE. That is probably a policy decision that needs to be addressed. I am really trying to focus on the technology solutions we have. So I am probably not the right person to ask for that question.

Mr. LINDER. Thank you, Mr. Chairman.

Mr. LUNGREN. I thank the gentleman.

The gentleman from Washington, Mr. Dicks, is recognized for 5 minutes.

Mr. DICKS. Mr. Wilke, in your testimony, I am pleased to see that the progress is being made with the installation of in-line explosive detection systems, which is either in progress or completed at 19 of our nation's airports. TSA and people in the industry have been telling us for some time that the installation of EDS technology will lead directly to greater efficiency in baggage screening, freeing up resources for checkpoint screening and other tasks.

It is my understanding that the Congress and the GAO are eagerly awaiting data from the first installation of in-line EDS technology to verify these claims. When will that data be available to the Congress and to the GAO?

Mr. WILKE. My department has been working on it now for a number of months working. It has gone through a number of revisions within the department. It is currently in the process of getting reviewed by senior leadership, and at that point it will probably be ready for dissemination.

Mr. DICKS. Now, the major airport in my area, Seattle–Tacoma, yesterday my staff with officials from Sea–Tac who advised that there have been significant delays with the expected reimbursement from TSA for work already completed installing their in-line systems. Now, who do we talk to about that? You are the R&D guy. You are not the guy who pays the money, right? Or are you?

Mr. WILKE. This is true. My team does when the invoices come in they do take a look and review that the invoices and things are correct, and then they send it to procurement. But if you send me information, I will be more than glad to help you out and spearhead through it.

Mr. DICKS. Okay. Well, good. That is what we need. It has been 6 months now or longer since—you know, they sent these things in last December, as I understand it. But your willingness to help is appreciated.

Mr. WILKE. You bet.

Mr. DICKS. I am very concerned by the President's budget request for in-line EDS installation. Only $264 million is included in the budget for the project, which, as your testimony notes, is only

enough funding to continue work at the 8 airports that have already entered into an agreement with TSA. That is correct, isn't it?

Mr. WILKE. There is money in there for that, but I believe there is also discretionary money that was proposed.

Mr. DICKS. Well, can you tell us about that?

Mr. WILKE. Currently, TSA is working with Congress to determine what TSA's budget is going to be, and I guess we need to wait until the DHS budget is finalized before we can make any further comment on it.

Mr. DICKS. Last week, the American Association of Airport Executives provided the committee with a list of more than 50 airports that would benefit from the installation of online EDS technology, including Dulles, Washington Reagan, O'Hare, LaGuardia and JFK.

If the benefit of installations are as great as TSA has been saying, why would we possibly take a year off from installation at other critical international airports?

Mr. WILKE. Well, I can assure you, sir, we are not taking a year off for deploying equipment. Actually, as you know, up in the airports you just mentioned a second ago we are actually deploying equipment there I believe either last month or this month. Some CTX 5500 machines are being part of that waterfall strategy I mentioned earlier.

Mr. DICKS. Yes.

Mr. WILKE. They are being actually installed up there. So I can assure you that we are not planning to slow down in 2006, and we are really looking for where we can install technology to get the—

Mr. DICKS. It sounded like in your testimony that you are hoping that some of these airports are going to do this without the 75–25 program. Is that correct?

Mr. WILKE. Many airports across the country are doing it. They are using—

Mr. DICKS. So is the idea to slow down the money hoping that they will because of the emergency have to go and do this some other way? Could some people cynically think that is the approach of this administration, which has not been really exceedingly generous on these programs.

Mr. WILKE. That is probably more of a policy question. I probably am not the right one to ask, I am sorry.

Mr. DICKS. Well, you might mention that you heard this up on the Hill, okay, when you get back to your office.

Let me ask you, almost all the R&D is being done in aviation. So here we have the London situation that has been mentioned by my colleagues here. I mean, don't we have a responsibility to on transit, on rail, on ferries, out in my area we have a ferry system. I mean, I think we need to have something where people walk through to people that are walking on the ferry or we have dogs sniffing some of the cars. But I mean, there ought to be some level of R&D in these other areas. I do not think we should just focus all the money on aviation.

Now, do you disagree with that? I know that some money is being spent but it is like 20 percent of the 100 percent.

Mr. WILKE. All the money is not being spent exclusive on R&D or in the aviation sector. In fact, most of the technology aviation uses can be relatively deployed in other sectors.

Mr. DICKS. Right.

Mr. WILKE. As you know, up in Seattle we are doing the test using a form of backscatter technology for cars going on the ferry system. That is part of an R&D initiative going on working with other agencies in the government today.

I think, for example, backscatter technology that can be used for other modes of transportation moving forward. We actually have something we posted in FedBizOpps for our next generation, looking longer term. I thought we would use technology for a mass transit type of scenario, basically a turnstile, if you will, that has sensing capability for large groups of people going through on a mass transit. So it is an area that we are spending requirements for moving forward in that area, sir.

Mr. DICKS. So we are making an effort. I mean, if you would like in the record to talk about what we are doing and how some of these technologies are applicable to other forms or modes of transportation, have at it.

Mr. WILKE. We have a tremendous amount of projects going forth right now. I think we have, at last count, about 200 and something different R&D projects that we are doing that apply to all different areas of technology. It can be used for all different types of transit systems other than just aviation. Because aviation has been a primary focus of TSA coming out of the gate, a lot of the resources and things were applied for that area.

However, even later on this week I am going out to Sandia National Labs to meet with the folks out there to find out technologies they are using for other ways that might be applicable to other modes of transportation. So it is part of our quest as an agency looking at all modes of transportation to keep things safe from a technology perspective.

Mr. DICKS. Thank you, Mr. Chairman. My time has expired.

Mr. LUNGREN. I thank the gentleman.

The chair recognizes the chairman of the full committee, Mr. Cox, for 5 minutes.

Mr. COX. Thank you, Mr. Chairman.

Welcome again, Mr. Wilke.

Just to lay the foundation for a few brief questions I want to ask, could you put on the record for the committee and for the media and the public that are following this hearing the differences and the relevant acronyms between technologies that detect some explosives and technologies that detect essentially all explosives?

Mr. WILKE. Okay. ETD, which is explosive trace detection, uses the swabbing mechanism, if you will. That goes in and basically the machine can be set to look at any number of chemicals that are out there that has a widest sloth, if you will.

However, the downside is it is very manpower intensive to really look at an entire suitcase. It can take as long as 5 to 6 minutes to really do a good sample of that entire suitcase.

EDS, explosive detection system, that is basically what we have in our in-line baggage system, stand-alone baggage system, and that is where the machines are actually set to look for the explosive

types that we are aware of and moving forward that might be threats to the aviation piece.

Another acronym we use is EMTD, which is enhanced walk-through metal detectors, and those are basically magnetometers that people do walk through.

Mr. COX. And so just to put a fine point on this, it matters where I am using EDT or EDS if I am looking for SEMTEX.

Mr. WILKE. Well, for example, in that particular case, both types would be applicable.

Mr. COX. So it does not matter.

Mr. WILKE. For certain categories of explosives, it would not matter.

Mr. COX. But for plastic explosives, such as SEMTEX, either the trace system or EDS would suffice.

Mr. WILKE. Also, too, to be very candid with you, an X-ray would also do the trick, because when you think about it, if an X-ray goes through it, you are going to see a block that is an abnormality versus what is actually out there in the rest of the bag.

Mr. COX. But a magnetometer obviously would not work, so if someone were seeking to bring plastic explosives onto the airplane, they could just wear it under their clothing and walk around the airplane.

Mr. WILKE. That is why we are enthusiastically looking at technology such as the electronic trace portals and also backscatter technology that gives us the ability to check for explosives that are carried on person.

Mr. COX. I am very interested in your Manhattan II Project, particularly in as much as you are looking at the form factors as well as the basic technology. To the extent that technology is racing forward, if I may analogize for people that are putting home theater in their house, they may regret if they hire a carpenter and design their whole bookshelf and so on around today's coolest television because 7 years from now they are going to be embarrassed to be so retro. There will be some much better technology out there and they will have built the whole permanent setting for this.

Well, we have to redesign airports in order to put these million dollar machines in place. I hope that in Manhattan II you are looking at not only the latest technology for, for example, explosive detection, but also ways to minimize the overhead costs of installing this equipment.

Mr. WILKE. And that is one of the areas we are looking at. Actually, this year, we certified the Analogic 6400, which is basically taking an existing eXaminer 6000 machine, putting in new technology, putting in new types of sensing devices in, and basically you go from a 2–D type of image to a 3-dimensional type of image, which gives you better sensing, better ability to detect and also look what is actually in there.

And part of our strategy is looking at machines that have good upward spiral development. For example, the Reveal CT–80 has a promising development for further upgrades of that machine.

Mr. COX. And it is a much smaller footprint.

Mr. WILKE. It is a much smaller footprint. However, for a larger airport, it would not meet the speed that is needed to get enough bags through. But for a smaller airport it is a great solution.

It is the same for the trace portals. Those particular machines have an upward spiral development that, quite candidly, will probably mirror Moore's Law with how fast the processor speed is, because as that processor can sense and process faster, as the technology gets better, you are going to have faster processing times.

Mr. COX. Mr. Wilke, I want to thank you for that. My time has expired.

Just a closing comment, if I may, Mr. Chairman.

The question that Mr. Linder put I think is exactly the right question, and I recognize, Mr. Wilke, that you are here as a technology guy and not necessarily as a policy guy. I also observe that in your background of 17 years at Mobil before you came to the federal government that you have a lot of experience designing smart cards.

And one of the things we need to look at is whether or not we are designing a system that is so big that it is not taking into account that we might get the population of folks that we have to run through these machines down to a much lower level than is presently the case.

Mr. Chairman, is there an opportunity perhaps for a second round of questioning?

Mr. LUNGREN. If the gentleman will stick around, I think that might happen.

Mr. COX. All right. If I am here and you are here, maybe we can take this up later. Thank you very much. I yield back.

Mr. LUNGREN. Thank you.

The chair recognizes the ranking member of the full committee, Mr. Thompson, from Mississippi for 5 minutes.

Mr. THOMPSON. Thank you very much, Mr. Chairman.

And I appreciate the witness.

I would like to get some things on the records too, like our chairman talked.

Congressman Dicks talked about the difficulty in getting airports reimbursed for expenditures. Can you provide this committee with a chronology of where that reimbursement for technology acquisitions stand at this point?

Mr. WILKE. I can get that for you from our folks in the administrative area.

Mr. THOMPSON. Okay. Fine. And I guess since you are here, let me ask you for a couple other things.

You said that you have a strategic road map. You have made a couple references to that relative to technology and development. Well, GAO has indicated to us that they have been trying to get it for quite a while and been unsuccessful. Do you have it?

Mr. WILKE. Yes, sir, we do. I have been with the agency now for about 4 months.

Mr. THOMPSON. Good.

Mr. WILKE. It was a process that started before I came on board; however, with my business background I think we need to have a good strategic plan moving forward. I have reviewed it, it has gone up to a number of folks to be reviewed, and we are still actually tweaking some parts of it to have concurrence among all the stakeholders that are vital to have full support for a model of this type.

Mr. THOMPSON. So you do see the value of having a strategic plan, and I hope you can understand the committee's interest in making sure that the Department possesses such a plan, because we are asked to do certain things. Any idea when we will get it?

Mr. WILKE. As soon as the approvals are given by our senior leadership, I would be more than glad to share it.

Mr. THOMPSON. Well, Mr. Chairman, let me suggest that we write the secretary and ask him since it is already—the GAO report was 2004 December, and here we are 6 months later and we do not have it, and I think we need the strategic plan.

Mr. WILKE. If you would like, sir, I can actually give you a verbal of what it kind of looks like and what we are wanting to do if you would like me to go and provide that for you.

Mr. THOMPSON. Well, things change around here, and I would love to have it in writing so we could take a look at it.

The other situation is, are you aware that we do not have a transit security plan for the agency also? You are not.

Mr. WILKE. I am not.

Mr. THOMPSON. Well, I guess then how can we provide and plan for technology in securing the transit system when we do not have a transit security plan for the agency?

Mr. WILKE. I think the nature of rail and mass transit because the openness is part of a public-private partnership with the different people that are involved in it. For example, I know that for a fact when we had a symposium, I guess, back in April, over 35 to 40 different transit authorities, train authorities were there, and we were sharing ideas about what best practices were, what we are doing in this area and how we can work together.

Some actually stood up and said that they are taking the technology we have used in airport technology and considering using it for their own use. So I think the TSA has tried to engage the industry, if you will, in these particular areas.

Mr. THOMPSON. So you think transit systems can just go buy whatever they want off the shelf? I am trying to move us toward a transit security plan so that we can, as Members of Congress, evaluate our agency. But if we have no plan and we are going out buying all kinds of technologies, there is nothing to be in judgment.

And I am trying to impress upon you that I find it very difficult to purchase equipment for transit security when we have no transit security plan from the agency, and I want you to hopefully go back to the secretary and tell him we really need that transit security plan if we are to do what we need to do here.

Thank you, Mr. Chairman.

Mr. LUNGREN. I thank the gentleman.

Mr. Pearce is recognized for 5 minutes.

Mr. PEARCE. Thank you, Mr. Wilke. I am not always complimentary of many of the agencies and their presentations and TSA especially, but I think your presentation today has been pretty thorough and pretty informative, and many of the questions that generate an answer themselves in your presentation.

I do have a couple of questions.

There are reports that about a billion dollars in AIP funds have been used to scoot over into these new systems for protection. Do you know if that is true?

Mr. WILKE. I am not sure of the exact numbers, sir, but I can get back to you on that.

Mr. PEARCE. But money has been taken from AIP funding, Airport Improvement Program?

Mr. WILKE. I am not positive, but I can find out for you.

Mr. PEARCE. If you can find that out. And then if you find that out, find out if that was airports donating their own AIP money or if we are taking the money from other airports. And if that is the case, I would understand, but is there a plan to then level that funding out later to the airports that will never get any of this screening money? Do any of your systems work against plastic explosives protection?

Mr. WILKE. A number of the systems do, and I would probably prefer to discuss that in a closed session with you if that would be possible.

Mr. PEARCE. Okay. That would be fine. Are you doing anything for the trigger mechanisms? Do you anticipate anything where you being to pressurize baggage on the ground and then bring it back down, because the trigger mechanisms sometimes work off of a barometric presser. Are you doing anything on that?

Mr. WILKE. Once again, I would be more than glad to discuss some—

Mr. PEARCE. Be happy to do that.

Mr. WILKE. —more privately if that could be possible.

Mr. PEARCE. When you are getting the information for the ranking member about transit security, could you also get the information about what France and England and some of the European countries are doing, because I think that looking at transit security we are going to have to accept some risk, and I think that we should be aware as a committee what other nations are doing for transit security when we are wanting to look at a plan from here. And if you could find that out, what the European nations are doing.

I am looking at the chart on page 7. Do all of these firms that have been taking some of these proof of concept grants, do they all have a background in providing this kind of technology?

Mr. WILKE. Before we will go through a process of giving a grant, we will be sure that the company has experience in that particular area or has been doing work for other parts of the government in that particular area.

Mr. PEARCE. Okay. This is money that has already been given out in 2004 and 2005.

Mr. WILKE. Yes, sir. For the ones we—

Mr. PEARCE. You say that you have gone through and proved them up.

Mr. WILKE. Our folks in the lab, as part of the R&D process, they will validate that the vendor does have proof of concept, they have the technology capability to do it or have actually used this technology in other parts of the public sector or for government to be sure it is a technology that might work moving forward.

Mr. PEARCE. The controls in the process then, you do not just give them the money. You make them reach certain points of completion before—

Mr. WILKE. Different grants have different timelines and deliverables based upon the actual grant itself. For example, some of the ones we spoke of earlier were actually asking for proof of concept that actually works before we will fund the grant money. Other ones that are for a longer term, science type of research, if you will, those type are basically taken from paper and then taking it to concept what actually works. So it is not a firm model what we use. It changes based upon the technology and the application.

Mr. PEARCE. I appreciate that. I guess my concern, I do not know if you had a chance to read it, the June 30 article about the high cost of risk to security where the TSA starts out with $104 million concept to provide labor and it ends up costing $700 million. And the contractor, let's see, they had $1,180 for 20 gallons of Starbucks coffee, rented 14 extension cords for $1,540, those kinds of things.

Are your grant programs going to see that we do not have these kind of headlines and kind of articles as we try to really convert money into good security systems?

Mr. WILKE. I think the concern that the other congressman mentioned a second ago regarding the scrutiny of invoices really underlines that my team does look at invoices before they pay them. It does take a little time to get them processed, but in this particular case, I think it was a little too long and we need to do a better job.

Mr. PEARCE. There is good cause for concern. There was $239 million for on-the-border detection devices that many did not get put in, many did not work when they got put in. So I mean it is just the history of a department that has been inept at best, maybe even worse, but my time has expired, and I will let you address in any way that you would those comments.

Thank you, Mr. Chairman.

Mr. WILKE. I can share with you in the area of the EDS equipment installed, checkpoint equipment installed, baggage handling equipment installed. We can go through and provide where the equipment is actually at, where it has been paid for, what has been done, because we do feel a sense of fiscal responsibility in being sure what we are doing is moving forward.

And as the agency moves from the deployment that it was in the early years of TSA being formed to where it is now, I think we will get continued scrutiny, so we need to do a better job of looking at it and being sure.

Mr. PEARCE. Just to come full circle, I do have that confidence when I listen to your report and when I listen to you. So, I mean, that is a rare personal presentation and knowledge. Your information is reassuring, but you are carrying a little bit of baggage around from previous people. I understand that. Thanks.

Mr. LUNGREN. And just for the record, Mr. Wilke, you have been on the job how long?

Mr. WILKE. Four months now.

Mr. LUNGREN. Okay. So we cannot hold you responsible for all of that.

The gentleman from Oregon is recognized for 5 minutes.

Mr. DEFAZIO. Thank you, Mr. Chairman.

However, we have had one administration during that timeline who we can hold responsible, and hopefully they are making better choices in their personnel and their procurement practices.

Screener performance, I assume even though you have been there a short time you are aware of the evaluation of screener performance, the most recent evaluations. One of the comments made by I think it was the GAO report, and it was mirrored in I think the IG's also, "Significant improvements in performance may not be possible without greater use of new technology."

When you walked in the building here today, did you have a briefcase with you?

Mr. WILKE. No, just my notebook.

Mr. DEFAZIO. Did you put it through the machine?

Mr. WILKE. Sure did.

Mr. DEFAZIO. Did you notice the machine?

Mr. WILKE. Yes.

Mr. DEFAZIO. Okay. Did you notice that it is not what our screeners are equipped with at the airport? Even though it may look similar, it has the capabilities of seeing things in multidimensions without asking you if they can put your notebook back through and turn it on its side or stand it out for that.

I am concerned that some of the simplest technology we have equipped our screeners with is very outdated and that we are being very pennywise, pound-foolish by not replacing that equipment.

That is off-the-shelf technology we have downstairs. The machines that the screeners are working with in the airports were thrown out nearly a decade ago as inadequate for the mission of the U.S. Capitol, United States White House, United States Treasury, United States Supreme Court, all federal facilities who have not been attacked and who have not been subject of this focus.

I think certainly there is a threat, but the point is we have a known attack on aviation, an ongoing threat assessment, and yet I am in there, "Can I take your bag?" Can I interrupt the line, slow everybody down, slow down the throughput, require that the person who might have been doing trace is not doing trace because they are walking my bag back to the beginning of the line and turning it in a different dimension because they could not figure out of all the electronic junk I have got in there what it is.

And if we just equipped our screeners with machines like we have downstairs here, they would not have to interrupt. They could have a throughput, they do not have to walk the bags back around. You could then have an extra screener to use the trace all the time.

What I observe is we do not use trace very much except on selectees, because the trace machines sits there because that person is busy carrying bags back and forth the length of that conveyor belt.

So I would hope you would look at what the savings might be, what the improvements in security might be if we asked for those well-proven machines.

Again, you have not been there too long, and I am not certain of your historical interest in this. Are you familiar with Project Bojinka?

Mr. WILKE. No.

Mr. DEFAZIO. Okay. This is a particular concern.

There is a guy named Ramzi Yusef who had a well-developed plan to take down simultaneously, I cannot remember if it was 8 or 12, 747s over the Pacific. He developed a bomb, he tested the

bomb, the bomb went off, blew a big hole in the side of a 747, killed a number of people, but it was not placed quite right, did not take the plane down, just killed some people. But it worked, and then he was discovered by accident. He had a sloppy bomb maker, had a fire, fire department showed up, suspicious, Filipina policewoman said, "This is not right," and the threat unraveled.

But the point is we have not again equipped our people at the checkpoint to detect the bomb that he used, which was a liquid-based contact lense cleaning solution, nitroglycerin type explosive, digital watch, a few little wires, and I am concerned that there are patterns out there. They came back after the World Trade Center. I am worried that someone's going to come back.

Mr. Linder would say you can kill a lot more people in a stadium or something else, but you cannot kill a whole industry that way and cause a collapse of about 12 percent of the U.S. domestic economy and the world economy, and that is what aviation represents.

And if someone were to have a simultaneous attack on a number of planes, just mirroring his plan, which was only discovered by accident, it would be absolutely economically catastrophic in addition to the horrific loss of life with large planes like that, 600 people or more in each plane.

I noticed that you are modeling and looking at the liquid analysis devices. That is good. As far as I know, there is actually off-the-shelf stuff available that the Japanese have developed and others.

So I would just really encourage you to focus on carry-on explosives, continue the work on the checked explosives, move ahead with the portals, because we are doing nothing to detect the suicide belts that do not have metal embedded in them, and they are not going to put metal in it because they are not trying to wound people. They are just trying to take the plane down.

There are many threats out there in all areas of transportation and everything else, but these are I think some that are particularly relevant in your area. I realize that was not a lot of questions, but I have been working on this since we created the TSA. I was a principal in that, and these are just enduring concerns that none of your predecessors have effectively addressed.

Thank you.

Mr. WILKE. Well, I think in the area of aviation security, both security and efficiency can be strengthened by a better use of technology and also using current technology and next-generation technologies together in a layered approach. And I think Secretary Chertoff is talking about that moving forward. So that is something we embrace and we will move on.

Mr. DEFAZIO. Yes. I was impressed by our meeting with him and some of the ideas he has to do things differently, and I am willing to try and help him with that, give him some slack and expect things are going to be different, and that would be great. Thank you.

Mr. LUNGREN. I think we will go through a second round here for those of us who waited.

Mr. Wilke, let me start off. You have talked about the backscatter X-ray technology, you talk about the issues involved with privacy and the work that is being done there. I am no expert on this and you are the expert, but at least it has come to my at-

tention that there is a technology that is currently available that is being used at the Moscow airport that has been used in the Netherlands at one time in their effort against, believe it or not, drugs. It is hard to believe with the Netherlands. It is also used for making sure that miners are not taking diamonds out of African mines. I think it is called SecureScan or something like that.

Mr. WILKE. Using millimeter wave technology?

Mr. LUNGREN. I am not sure if it uses millimeter wave—I have heard it is X-ray technology of some sort. Is there a reason we have not looked at that or are we looking at that?

Mr. WILKE. We have looked at a number of technologies in that area; however, we are looking at ones that gives us the best image resolution that we can deploy on a short-term basis that also meet the privacy concerns. So it is almost like combining all the different requirements together to get something out there that is deployable and also deployable at a reasonable price.

Mr. LUNGREN. Again, I am not an expert on this. It was at least presented to me that this would allow you not only to look at those metal features that you would find on someone but also if someone insisted something, and it also would show the shoes. And I just wondered if it had to be question of the amount of X-ray dosage exposure that one would be obviously exposed to if that were a concern?

Mr. WILKE. Well, for backscatter, for example, we spend a lot of time with looking at right now, the actual dosage is about one-six-thousandth of what a normal X-ray would be. So, basically, it is the same as being on a plane for about 2 minutes. That is how much radiation you would be getting or if you were outside for about 10 minutes. So it is within a very safe zone.

Some of the other areas we will take a look at, and our lab has an open invitation for these companies to show their technologies to us, and if it passes certification, we would consider putting them out.

Mr. LUNGREN. I guess that is the question I have. How do we know that once you start down the line with backscatter or any other technology that you do not become so tunnel visioned on proving that that you might not be taking a solid look at something else?

Mr. WILKE. We are taking a look at all technology that come to us right now. That is why we have a number of projects ongoing within our R&D efforts, and right now we were looking what the actual deliverable is and what actually meets the requirement for detecting the threat in the best way. Also taking in mind too what the image looks like and what a screener would have to look at in order to detect that image is one of the criteria.

Mr. LUNGREN. Again, I do not hold a belief for any particular product. It is just when people bring questions up like this to me I figure you are the guy that has got the answer on that.

Mr. WILKE. We are looking at a number of technologies that will provide the solution.

Mr. LUNGREN. I thank you.

The gentlelady from California is recognized for 5 minutes.

Ms. SANCHEZ. Thank you, Mr. Chairman.

I have so many questions to ask you and never enough time. I want to go back to the original issue that I brought up with respect to the fact that you are going to give us some new analysis about the in-line EDS system.

In looking at our GAO report, the information that I gave you about it being paid, the return coming back within a little bit over a year on those systems comes from your own agency, and this report was just finished on the 13th of July, so that was last week.

Mr. WILKE. We will have to check on that.

Ms. SANCHEZ. So we need to coordinate. But I still want from you whatever analysis you have done as to what the payoff is. Because when we read something like this, we sit there and we say, "Why aren't we getting this done?"

You can probably note, and if you feel any hostility, this is not really about being hostile. We have been at this for 3 years, most of us on this committee, and in a normal situation, we would take a look at what the risks are and we would prioritize what we need to do and we would take the scarce resources we have and we would try to do the right thing with them. But in 3 years we do not have strategic plans out of this agency.

Initially, it was just get anything up that would be safe first so that people will begin to fly again. Well, you know, now we are at the point where are we going to really spend the money and what is it that we need to do, and that is why we are looking to you, as well as if you can imagine the pressures that we have when every company comes knocking on our door wanting to sell us their off-the-shelf technology or their latest and greatest and why aren't we buying this because this would make everything so much safer.

And then we all are frequent travelers and we get subjected to everything that people see at the airport we actually feel. So this is about trying to find, hopefully, my colleague mentioned, an administration that really has fallen flat on these issues, in my opinion, and his, as he put it.

So we are looking for people who we can trust, who want to stay there a while, who are going to help us figure it all out. And it seems to me, as Mr. Pearce said over there, that you may be one of those people we can hopefully see around for a while and we can get this straight. The first thing was that issue.

Did you tell Mr. Thompson that you have a strategic plan for mass rail and rail travel? Is that what—

Mr. WILKE. Not one that we have developed in the technology area right now. It is one we are looking at, and it is probably more informal than formal, because we are still in the pilot stages of many of our rail pilots.

We did one last year that was three-phased, and one was actually up here at New Carrollton where we had puffer machines in place. We used some detection capability. The second phase of it was using Union Station, for example. We had some things at Union Station here in D.C. And the third part was actually being a screening capability on a rail car up in Connecticut to see if it was possible to use it in a rail scenario to screen passengers in the rail environment.

Ms. SANCHEZ. Why don't we have yet a strategic plan of what we are going to do with rail and mass transit, given that all sorts of

attacks have happened on other rail systems outside of our country, and that as an industry and as a government we are hopefully talking to our counterparts. Why hasn't TSA, which is assigned to transportation passenger safety, not just in aviation, why don't we have a strategic plan after 3 years of what we are going to do?

And the reason that is a concern is because I heard you earlier say we had a forum where we had mass transit people in and we were talking about best practices, but it seemed to me like it is still all up in the air.

Mr. WILKE. I think the real challenge in the area of rail is it is a different security model that needs to be employed based upon the openness of the entire system itself.

Ms. SANCHEZ. I understand that, but the openness exists in England, it exists in Madrid, it exists in India. I mean, this openness is everywhere.

Mr. WILKE. We have learned a lot from the pilot test we have done now, and we are still trying to formulate what would be a good strategy that works in partnership with the goal of mass transit, to get a lot of people moved in short order while still having a security piece. And it is one that we are looking at, but it is one that is going to be more challenging than our traditional checkpoint airport type of thing that we have had that we are quite familiar with. However, we are going to continue to look at it.

Ms. SANCHEZ. And why do you think the TSA has spent so little in the area of mass transit and rail versus aviation? Do you think it was just a bias because we were reacting to 9/11? Do you think it is because everybody that went into TSA came out of aviation, so it is a bias that way? Why isn't there a strategic plan after 3 years, and why is there such a bias, in your opinion?

Mr. WILKE. That is a very controversial question. I really do not know. So I hate to even give a premise of what an answer to that might be, but it is one that based upon current events in Madrid and in London we are spending a lot more focus on. I mean, I can share firsthand that I have had a number of meetings in the rail area, and as I mentioned before, the rail conference forum we had up at our TSL lab back in April was before the events in London, because it is an area I think that we realize inside the agency we do need to focus more attention on moving forward and we want to do that.

Ms. SANCHEZ. Thank you, Mr. Chairman. I see my time has expired.

Mr. PEARCE. [Presiding.] Chairman Cox?

Mr. COX. Thank you very much, Mr. Chairman.

Mr. Wilke, I want to return to this question that was raised by Chairman Lungren, by Chairman Linder, and I mentioned it briefly at the conclusion of our last 5 minutes. That is whether or not, as we design the security systems for airports, we are looking at the right population of people that we want to run through these machines.

If we can conceive of this project that we are building with new explosive detection technology as a house, and we are in the process of laying the foundation right now, I am questioning whether or not we have the right blueprint. I want to make sure we are building the right house, and it looks to me as if the house is too

big. It looks to me as if we are working from a model that requires every single passenger to go through the same EDS machine and that we are budgeting accordingly.

The letters of intent, according to your testimony, that we have already signed in just the federal share total $1 billion and that is just eight airports, and that does not count even such major hubs as Houston, Minneapolis–St. Paul and so on. This is a lot of money. It is fantastically expensive, and as other members have mentioned in connection with transit or other homeland security priorities, it is crowding out other forms of transportation security.

So I want to ask you in your capacity as the Chief Technology Officer some questions about another project that Homeland Security has underway and that is Registered Traveler, because the point of Registered Traveler is to reduce the number of people who have to go through this. If we could cut down by, say, 50 percent the number of people who are going through these machines, obviously we would not need as many of them. That $1 billion could be a half billion dollars. We could get a lot more security for our money.

And I think I am correct in saying that in evaluating technologies for Registered Traveler, you are also the main man; is that right?

Mr. WILKE. No, sir.

Mr. COX. You are not. Even though you are the Chief Technology Officer, you are not in charge of that?

Mr. WILKE. The Registered Traveler Program is actually a program that has been fast-tracked within our agency. We have actually a dedicated team that is working on that particular area. I have gone through briefings on it, if you will, and personally I fully support it. I think it is a great program.

Mr. COX. Well, since you are obviously technologically literate and very familiar with it, let me just run through—I only have 3 minutes or so here anyway, we will not get too deep into this, but let me just ask a few questions.

A well-known software company that makes the operating systems for most of our computers has for the last year or so made it possible for us if we are willing to spend—$49.95 to have a fingerprint reader as the way not only that we log on to our system or have access to our computer but also the way we interface with Web sites. All those passwords that we have to remember at every Web site and so on now, you just use your finger and it automatically recognizes you—$49.95 for that.

I understand that IBM laptops are coming equipped with this. I understand that the next version of Windows, so-called Longhorn, is going to have it built in. So this idea that this is not accepted in the West or it is not accepted in America or that there would be some consumer resistance it seems to me is given a lie by what is really going on in the marketplace, and this is something that you are very familiar with because of you are 17 years at Mobil include development of smart card technology that is now very much in use. This is simply the next step, and it is a very useful one.

But just imagine if it is true that 8 to 10 percent of passengers in airports are responsible for 50 percent of the airport trips, and staff advises me that that is a relevant number, that we can get

those 8 to 10 percent of the people in a Registered Traveler Program and they are just walking through and they are touching their finger and they are good to go onto the airplane. And we could cut in half the population of people that have to go through these machines.

Wouldn't that make sense, and wouldn't that save us a whole heck of a lot of money?

Mr. WILKE. I think, as you know, the agency supports that program, and I think we do see the benefits, and I think it does help us in our goals long term of who we need to focus our screening on.

Mr. COX. All right. Now, let me ask you the next question. This is a technology question. Registered Traveler in the pilot that I am enrolled in as a Member of Congress, uses an iris scan, it uses fingerprint images, it uses all sorts of things that go well beyond and take a lot more time and are more elaborate than what I just described, which is I touch something and I go through. Now, maybe we need two-factor identification. Maybe I need a card. You are awfully familiar with that. Maybe I slide a card that has the same biometric on it that matches my fingerprint.

But we do not need human beings involved in this, do we, if this is working? Why shouldn't we just be able to touch something as we go through, and why does this have to be hundreds of millions of dollars or billions expensive when Microsoft is making it available for $49.95?

Mr. WILKE. I think there are some technological solutions we should be looking at moving forward, and I think that the agency is looking at solutions of what does provide the best return.

Mr. COX. All right.

Mr. Chairman, my time has expired.

Mr. PEARCE. Thank you.

Mr. Dicks?

Mr. DICKS. Going back to this, the GAO summarized some of these things. Let me just go through a little of this just to summarize. Given the resources being provided for aviation security R&D, we would hope to see the stealthy deployment of various technologies under development. However, this has not been the case. Even though contrary to usual R&D standards, TSA has been almost solely focused on short-term development and deployment.

It has been reported by the GAO that TSA has not estimated deployment dates for 133 of the 146 projects reported to be under development. There are various reasons for this failure to quickly deploy the optimal technology for aviation security. What is the reason for that?

Mr. WILKE. Many of the technologies still are under development and they are not ready for deployment either because, number one, they—

Mr. DICKS. Well, the military does this. I have been on the Defense Appropriations for 27 years. They do a lot more R&D projects and basic research than ever gets deployed, but, again, do you want to elaborate for the record here why it is that so few of these have actually moved from R&D into deployment?

Mr. WILKE. Many of the technologies are longer-term deployments. They need to be sure that they meet the needs of, one, de-

tecting the threat. It would be catastrophic, if you will, if we deployed a technology that people thought provided a level of security and in fact it did not.

The second piece is, is it reliable? How does it hold up in a commercial environment? I have seen things submitted to our lab for evaluation and testing that were great for maybe 50 people, 100 people, even 1,000 people, but when you look at what is needed for an airport checkpoint, if you will, the particular technology did not hold up under the rigors of a commercial environment where it will be getting a lot of use and a lot of abuse, if you will.

Mr. DICKS. And one other thing on this strategic plan, the GAO again says one of your problems is because you do not have a strategic plan to ensure that the R&D funds are being used to address the highest priority transportation security risk. So in other words, without a strategic plan to say which ones of these are the most important, what should we do first, you have got all these hundreds of these R&D projects without much focus. Do you think that is a fair criticism or not?

Mr. WILKE. It might have been at that time. I can share with you now that we have a strategic plan and based upon?

Mr. DICKS. But it still has not been approved.

Mr. WILKE. It is still going through the approval process. I am pretty confident it will.

Mr. DICKS. It takes a long time to approve anything down there, we found out. Do you think it will ever be approved?

Mr. WILKE. I am very hopeful it will, sir.

Mr. DICKS. What is the timeframe? What do you think? Give us your best guess. A month? Two months? Three months?

Mr. WILKE. From CTO perspective, as soon as possible.

Mr. DICKS. From right now, when do you think the thing will be approved by your superiors?

Mr. WILKE. I cannot speak for them, I am sorry.

Mr. DICKS. Well, I know that, but what is your estimate? You have to give a—you are up here, you have got to testify. Tell us, give your best estimate of when you think they can approve this. Have you been talking to them about it?

Mr. WILKE. It has been going back and forth through the administration as well as senior leadership in TSA, and—

Mr. DICKS. You have no idea when it is going to be approved.

Mr. WILKE. I would hate to give you a commitment, sir, sitting here.

Mr. DICKS. I am not saying asking for a commitment.

Mr. WILKE. Well, but when I tell you something it is a commitment, and I appreciate that.

Mr. DICKS. No. I am asking you to give me your best personal judgment.

Mr. WILKE. I would say in the next few months.

Mr. DICKS. Okay. Good. Well, that is hopeful.

You also do not have a database for all your R&D projects. Why is that?

Mr. WILKE. Well, I believe we do, sir.

Mr. DICKS. You do?

Mr. WILKE. I have seen an extract of it that I used for preparing for our testimony here.

Mr. DICKS. Well, that is good. It says TSA and DHS do not have adequate databases to monitor and manage their spending of the hundreds of millions of dollars that Congress appropriated for R&D. What this means is that neither organization is correctly monitoring the cost, progress and status of many, if not most, of these R&D projects. This results in a lack of coordination then between the development and deployment of programs. So you are saying you do have databases with all these projects in them that you can call up.

Mr. WILKE. Very much so. In addition, sir, I go—

Mr. DICKS. So if we send our bright staff down to see these databases, you can show it to them?

Mr. WILKE. I would not see a problem with that. In addition, sir, I go through a personal quarterly review on the projects to ensure and find out the status on how they are moving forward.

Mr. DICKS. You are looking at this, you have been here 4 months. Are you doing the best programs now, and do you have a sense of priorities of what is important, what should be developed and deployed first, kind of a list of the top 10 of things that we ought to do?

Mr. WILKE. Yes, sir.

Mr. DICKS. So you are doing that? I mean, that is one of the other criticisms GAO had was that a lot of things are happening but there is not a sense of priority. You disagree with that. You think there is. You think you have got a sense of priority.

Mr. WILKE. As you are aware, a GAO audit is like any audit, it is a picture in time.

Mr. DICKS. Yes.

Mr. WILKE. I am not sure when that time was. I can share with you, as I sit now, and what I am asking my staff to work on and focus on is more results oriented, is more priority focused on what we are doing moving forward.

Mr. DICKS. Okay.

Thank you, Mr. Chairman.

Mr. PEARCE. Thank you.

Mr. Wilke, when you in your report list that we have got 1,910 enhanced walk-through devices, 1,904 threat image detection devices, 1,273 explosive trace detection devices, how many of those do you suspect might be replaced in the next 2 years with better technology?

Mr. WILKE. In fiscal year 2006, we put a proposal in to have 100 of the WTMDs replaced, 149 of the handheld metal detectors that we proposed. However, the challenge you get into and one of the things that in working with the vendors is some of the machines can be almost retrofitted and built down to zero and then built back up again almost like a new machine.

We met with some of our EDS manufacturers and asking them what is a good life cycle, and they say with proper maintenance, proper build-down, it is like taking care of a good antique automobile. It can work just the same, the same caliber, and if it meets our certification requirements, it does have an ability to have a longer life, but you need to have good maintenance on it.

Mr. PEARCE. You would guess that the backbone then of our imaging fleet or our technology fleet is essentially finished and that

we just have increments of technology to build on top of that. That is what it sounds like to me.

Mr. WILKE. In some respects; however, there is an opportunity for upgrading. For example, airports that right now have all ETD, I think it is prudent to give them a higher level of explosive detection systems. That is why the Reveal CT–80 machine does fit that niche. There are also some other machines that are on the horizon that other manufacturers are making that might also make that same niche. So if their machines come through and they do meet the certification, we would be very enthusiastic to take a look at those.

Mr. PEARCE. When do you think that we will actually hit another plateau of integrating a lot of the components of that new technology that is being explored right now? Would you have a guess about that?

Mr. WILKE. Actually, I would probably say probably in the 5-to 7-to 10-year mark of trying to get machines actually integrated. Through our partnership and working with different vendors, one of the challenges I face with them is the actual amount of floor space we have in the checkpoints.

I would like to see a machine that has integrated, whether it be walk-through metal detecting capability, electronic detection of explosive capability, perhaps shoe detecting capability in the one footprint as opposed to three different footprints that we have today. However, we need to get the manufacturer to begin working closer together to develop these types of technologies in combination.

Mr. PEARCE. Are you seeing any other nations that are investing anything in technology like we are for security purposes?

Mr. WILKE. That is a hard question because of the scale of our airport system, having 450 airports that we support. Other countries are expending funds to raise their security also.

Mr. PEARCE. But you do not see any advances in technology in other countries that we could simply piggyback off of?

Mr. WILKE. My team has opened dialogue, through the lab and also through my scientific advisor, with a lot of our partners around the world to find out what the best technologies that they are looking at and how we can deploy them within TSA.

Mr. PEARCE. Are all of the nations that fly into the U.S. going to eventually—let's say that we had a new technology right now that we could test all passengers with. Do we have agreements with other nations with passengers coming into here so that they would screen people boarding flights for the United States?

Mr. WILKE. That is probably more of a policy question.

Mr. PEARCE. I understand, but if you could—

Mr. WILKE. From a technology perspective, the equipment will be available in the market and when we go through our certification process to show the machine meets our standard, other countries ask us informally as well formally which machines are certified, which ones we are using, and I am sure possibly some of them use those in their buying decisions. I cannot speak for those countries, obviously, but I am sure they look at it.

Mr. PEARCE. Do you have any information, do they ever share information about the length of wait that passengers are finding right now, the length of wait to get through screening processes?

Mr. WILKE. I have not personally seen anything; however, our folks in Aviation Operations who work with the actual line piece in screening folks, they might—

Mr. PEARCE. If you could track that information down and send it back with some of the other things, I would appreciate that.

Mr. WILKE. Great.

Mr. PEARCE. Well, I think that we have diligently questioned you today. We appreciate your presentation. I appreciate your service to the country and service in an industry that needs a tremendous amount of technology and frankly expertise. So thank you for bringing that.

The members may have some additional questions, and we will ask you to respond these in writing. The hearing record will be held open for 10 days.

Without objection, the committee stands adjourned.

[Whereupon, at 3:35 p.m., the subcommittee was adjourned.]

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