NUCLEAR SMUGGLING DETECTION: RECENT TESTS OF ADVANCED SPECTROSCOPIC PORTAL MONITORS

HEARING

BEFORE THE

SUBCOMMITTEE ON EMERGING THREATS, CYBERSECURITY, AND SCIENCE AND TECHNOLOGY

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NUCLEAR SMUGGLING DETECTION: RECENT TESTS OF ADVANCED SPECTROSCOPIC PORTAL MONITORS

Wednesday, March 5, 2008

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON HOMELAND SECURITY,
SUBCOMMITTEE ON EMERGING THREATS, CYBERSECURITY, AND SCIENCE AND TECHNOLOGY,
Washington, DC.

The subcommittee met, pursuant to call, at 2:10 p.m., in Room 311, Longworth House Office Building, Hon. James R. Langevin [chairman of the subcommittee] presiding.

Present: Representatives Langevin, Christensen, Green, Pascrell, and McCaul.

Mr. LANGEVIN. The subcommittee will come to order.

The subcommittee is meeting today to receive testimony on two recent reports: The Independent Review Panel Report and DNDO's Phase III Test Report which details a test of advanced spectroscopic portal monitors.

Before I go into the hearing itself and start with my opening statement, we are expecting votes around 2:15, unfortunately. It is my intention to try to get as far through the opening statements as possible; then we will recess for what is I understand one vote. Then we will come back and continue with statements if necessary, and then go into questions.

Good afternoon. I want to thank the witnesses for being here at this very important hearing.

Today we are discussing a very important project for the Domestic Nuclear Detection Office, and that is the advanced spectroscopic portal monitor program.

This subcommittee held its first hearing on this topic 1 year ago. We will continue to provide robust oversight on this project until we are assured that we are deploying the best technology possible to detect radiological and nuclear materials coming across our borders.

Given that we are holding a public hearing on this topic, I think it is fair to say that we are not quite there yet, though I do commend DNDO for improving our screening capabilities, along with both our southern and northern borders as well as our seaports.

We are currently scanning 100 percent of all incoming cargo on the southern border, 98 percent at the Nation's seaports, 98 percent at the northern border. Mr. Oxford assures me that we will be at 100 percent on the northern border by next year. I think

these are important points of progress, and I want to acknowledge that we are making progress in these areas.

While I applaud DNDO for its aggressive pursuit of new detection technologies, I still remain deeply concerned that the advanced spectroscopic portal monitors have not been properly tested and evaluated. In one of the reports that we will discuss today, the independent review team reiterates a recommendation made by GAO over a year ago: Deployment and testing should not be done by the same organization. This lack of rigorous and independent testing program can easily lead to the development and even the deployment of ineffective equipment.

The two reports under consideration today both raise as many questions and concerns as they answer. It is my hope that the advanced spectroscopic portal monitors will ultimately function as intended, but at this point I expect Secretary Chertoff will require many more unequivocal test results before certifying to Congress that the ASP represents a significant increase in operational effectiveness over the currently deployed systems.

Perhaps the field test underway by CBP will add to this needed level of clarity and if not, all the steps, I know, will.

Not all the news presented in these reports is bad. There are several results that point to progress of the ASP program. However, both reports are extremely nuanced and do not seem to give clear, strong indications of whether this project is achieving its stated goals. In fact, there are several statements included in these reports that, if taken at face value and on their own, would cause most people to say that ASP has failed or, at the very least, is in serious jeopardy of doing so.

For example, Phase III report states that when it comes to identifying mass sources, the polyvinyl toluene performed—PVT systems perform better than ASP. However, upon a more extensive review of the entire report, it becomes evident that this statement does not mean exactly what it seems to say, and I will explore this issue further in my questions.

I don't want to see this program fail; none of us do. Let me say this again: I don't want to see the program fail; it is far too important. The advantages of an effective spectroscopic portal program along the current binary alarm/no alarm option under the current PVT monitors would represent a major increase in Homeland Security, but only if they work as intended.

Current tests will still have not unequivocally demonstrated in an operational setting that the ASP represents a significant improvement over current technologies.

This is an important point. While it may be easy to only focus on the simplistic big-picture items, this is a subtle and nuanced issue that we cannot afford to overlook. I hope that this hearing will allow us to delve into the details of these two reports and to make clear exactly what was said and what was not and where we go from here.

I should note that the GAO has been a great help and a trusted source on this issue for Congress for various reasons. No GAO representatives were able to attend today's hearing for legitimate reasons, but we will continue to rely on their counsel in the future and

implore those witnesses here today to cooperate with GAO and to fulfill their role as Congress' trusted auditor.

With that, I just want to again thank the witnesses for being here today and look forward to your testimony.

The Chair now recognizes the Ranking Member of the subcommittee, the gentleman from Texas, Mr. McCaul, for an opening statement.

Mr. MCCAUL. I thank the Chairman. I agree with your assessment that we do not want to see this fail. The American people can't afford to see it fail. It is too important.

I want to begin by thanking the witnesses for being here. Mr. Oxford, you are certainly no stranger to this committee. At this time last year you were here to describe DNDO's deployment strategy for radiation portal monitors. As we saw in your written testimony, you have assisted Customs and Border Protection, I should say, in deploying monitors that are now scanning incoming cargo for radiological and nuclear materials at a volume of 91 percent on our northern border and 98 percent at our Nation's seaports. Coming from a border State myself, I was very pleased to see the 100 percent screening on our southern, southwest border.

I commend you and your staff for your hard work and service to the Nation. I am sure the Department will agree that while progress has been made in scanning incoming cargo, the current generation of radiation portal monitors is far from perfect. Frequent nuisance alarms due to radioactive, but legitimate material such as cat litter or medical therapeutics require manpower-intensive secondary screening by Customs officers. It is very time-consuming but not as efficient as new technology hopefully will provide.

To improve the efficiency of scanning people and cargo at our ports of entry, DNDO has led a development program to provide the next generation of radiation portal monitors, detectors that can discriminate between threat materials that can be used in a nuclear weapon or dirty bomb and other materials that pose no threat to the Nation at all. The advanced spectroscopic portal monitor also known as ASP could provide this capability.

I commend the Chairman on holding this hearing today as part of our continued oversight of the ASP program, a program that resides solely within the jurisdiction of this committee.

It has been said that we have to get it right all the time, while the terrorists only have to get it right once. However, if we can establish a system of layered defenses, that would turn that argument on its head; now the terrorist has to get it right at each layer in the system, and we only have to get it right once.

I see the ASP program as a critical layer in our system of defense against the transport of radiological and nuclear threat material. The delays in the certification and deployment of the ASP system, a technology that could accurately identify threat materials without impeding commerce, are of grave concern to this committee.

That is why today Ranking Member King of the full committee and I have introduced legislation that will assist the Department in certifying this technology by clarifying congressional intent on the requirements for certification and the metrics to be considered in evaluating ASP's system performance. This legislation should

help the Department keep their intended goal of making a decision on ASP certification by the end of this fiscal year.

I hope we can achieve that goal within the end of this fiscal year, and I thank the witnesses for being here.

Thank you, Mr. Chairman.

Mr. LANGEVIN. I thank the Ranking Member. Given the fact that the vote has just been called, we will recess right now for about 10 minutes for what I believe is just one vote and then return for the witnesses' statements.

The committee stands in recess.

[Recess.]

Mr. LANGEVIN. The committee will come to order. The Ranking Member has been detained, but he has given his indication to go ahead without him, and he will return momentarily.

I want to welcome, again, our first panel of witnesses. Our first witness is Mr. Vayl Oxford, Director of the Domestic Nuclear Detection Office at the Department of Homeland Security. He has appeared before this panel many, many times to discuss this and other topics. We welcome him back here today.

The next witness is Dr. George Thompson, who is the Deputy Director of Programs at the Homeland Security Institute. After several other individuals stepped down from the position of Chair of the Independent Review Panel, Dr. Thompson took up the position, which allowed the independent review team to complete its work. Welcome.

Our third witness is Ms. Elaine Duke, the Deputy Under Secretary for Management at the Department of Homeland Security. Her office originally called for an independent review panel to be done, and her office will be a key part of incorporating the findings of the panel's report into its recommendations to the Secretary on whether to ultimately certify the ASP program for full procurement.

So I want to thank the witnesses for being here. Without objection, the witnesses' full statements will be inserted into the record.

I now ask each witness to summarize his or her statement for 5 minutes, beginning with Secretary Duke.

STATEMENT OF ELAINE C. DUKE, DEPUTY UNDER SECRETARY FOR MANAGEMENT, DEPARTMENT OF HOMELAND SECURITY

Ms. DUKE. Good afternoon. Thank you, Mr. Chairman, Ranking Member McCaul, and members of the committee. It is a pleasure to appear before you today to talk about the advanced spectroscopic portal system. Today is my first time before you as the Deputy Under Secretary for Management. I have been in this position for about 5 months but have spent most of my 25 years of public service in the procurement profession, most recently as the Department's chief procurement officer.

The Deputy Under Secretary of Management position was created as a part of the Department's transition planning efforts to ensure operational continuity during the change of administration in January 2009. My position currently holds the authority of the Under Secretary for Management, as the current Under Secretary, Mr. Paul Schneider, is serving as the Acting Deputy Secretary.

To start I would like to convey my top priorities which are essential elements to achieving the DHS mission and practicing sound stewardship of the taxpayers' money.

First is preparing the Department for the first administration transition; second, improving acquisition and procurement; and third, strengthening the requirements process and integrating it into the planning, programming, budgeting and execution process in the Department.

My goal as the Deputy Under Secretary for Management as it relates to transition is to focus on three areas: internal processes, knowledge management and relationship building.

In addition to transition planning and focusing on transforming the procurement office into a full-fledged acquisition office, often procurement and acquisition are incorrectly used interchangeably. Procurement is just one element of the acquisition management. Today we are talking about another one, test and evaluation.

Acquisition includes the full operation life cycle requirements process using sound business strategies, financial management and managing program risks. We are making progress toward this goal. In August 2007 we established the Acquisition Program Management Division to provide oversight and support the acquisition programs.

Today we have performed assessments of 37 of our largest level one programs and have provided advice and guidance, particularly in the area of cost/benefit analysis. To that end, I am here today to discuss one of our major acquisition programs, the ASP program.

The acquisition of ASP systems is of national importance and vital priority for the Department to continue toward this mission of protecting the country from dangerous goods. The acquisition develops the next-generation radiation portal monitor and has the ability to rapidly identify the presence and type of radioactive materials present in the cargo entering the United States. It will allow us to distinguish from harmless sources, thereby decreasing the rate of false alarms resulting in unhindered flow of commerce.

Before DHS uses its appropriated funds to deploy this new technology, Congress has directed Secretary Chertoff to certify that a significant increase in operational effectiveness will be achieved. In July 2007, the Secretary announced his intent to perform an independent review of the ASP test procedures, test results and associated technology assessments.

My role as the Deputy Under Secretary in this process is to understand the outcome of this independent review and be in a position to advise the Secretary in making his certification decision. In my opinion, as DHS considers the best way forward, this independent review provides valuable assistance to the Secretary and me in moving toward conclusion of this program.

The independent review is not an unusual exercise as it is in line with reviews we have conducted in other major programs. It is a standard practice we are developing, modeled after the Department of Defense, and will help us in our decisionmaking process and our acquisition programs.

There are several things we have already learned from the independent review. First, to define up-front increased operational ef-

fectiveness so we can appropriately test ASP's capabilities, which is critical to our ability to certify the system.

Second, to develop a new test and evaluation master plan that will clearly demonstrate the test results and whether ASP does indeed provide the increased operational effectiveness.

Third, to include all the ownership costs in updating the cost/benefit analysis for this new phase of the program.

I have asked Mr. John Higbee to lead this effort from an acquisition perspective. He is the director of our Acquisition Program Manager Provision; and Mr. George Ryan, from our Under Secretary of Science of Technology, who is our director of Test and Evaluation Standards. They provide valuable insight as we move forward in the next test phase of this program.

Mr. Chairman, I thank you for the opportunity to testify before you and am happy to answer any of yours and the committee's questions. Thank you.

Mr. LANGEVIN. Thank you, Ms. Duke, I appreciate your testimony.

[The statement of Ms. Duke follows:]

PREPARED STATEMENT OF ELAINE C. DUKE

MARCH 5, 2008

Thank you Mr. Chairman, Representative McCaul and Members of the committee. It is a pleasure to appear before you today to talk about the Advanced Spectroscopic Portal (ASP).

This is my first time before you as the Deputy Under Secretary for Management (DUSM). I have been in this position for over 5 months but have spent most of my 25 years of public service in the procurement profession, most recently as the Department's Chief Procurement Officer.

The Deputy Under Secretary for Management position was created as part of the Department's 2009 Administration Transition Planning efforts. By having a senior career civil servant in this capacity, rather than a political appointee, the Department can ensure operational continuity during the change in administration. As the current Under Secretary for Management, Mr. Paul Schneider is serving as the Acting Deputy Secretary, my position holds the authorities of the Under Secretary for Management.

At present, the most significant management challenge the Department has is continuing the effort that was mandated at the Department's creation: merging 22 agencies with approximately 208,000 people and turning it into the most effective force to protect our country. This effort requires effective and efficient use of financial and human resources; enabling technology, strong processes and superb management. It is toward this effort that I devote my time, energy, and contributions.

As the Deputy Under Secretary for Management, it is my duty to lead the Management Directorate's efforts in the development of the Department, with a focused, well-thought strategy.

The major elements of our strategy are:

- Improving acquisition and procurement throughout the Department.
- Strengthening the requirements and investment review processes.
- Acquiring and maintaining human capital.
- Seeking efficiencies across the enterprise in operations and the use of resources.
- Making the key management systems, such as financial and information technology, world class.
- Acquire funding for DHS' consolidation at St. Elizabeths West Campus and the efficient realignment of all Department of Homeland Security (DHS) off-campus locations

To start, I would like to convey my top priorities, which are essential elements to achieving the DHS mission and practicing sound stewardship of taxpayers' money:

- First: Preparing for the Department's first ever administration transition;
- Second: Improving acquisition and procurement;

- Third: Strengthening the requirements process and integrating it into the Planning, Programming, Budgeting, and Execution (PPBE).

My goal as the DUSM as it relates to Transition is to focus on three areas: Internal Processes, Knowledge Management, and Relationship Building. The Internal Processes initiative will review our Directives, strengthen records management and our processes for incoming and exiting employees. The Knowledge Management initiative will produce briefing materials, but more importantly, convey to career executives and incoming appointees the requisite knowledge to keep the Department running. The Relationship Building initiative will facilitate direct interactions among Federal, State, local and tribal officials with homeland security responsibility.

In addition to transition planning, my focus is to transform the Office of Chief Procurement Officer (CPO) into an Acquisition Office. Often, Procurement and Acquisition are incorrectly used interchangeably. Procurement, however, is only one element of acquisition management. Acquisition also includes understanding operational and life-cycle requirements, such as formulating concepts of operations, developing sound business strategies, exercising prudent financial management, assessing tradeoffs, and managing program risks. Best practice acquisition management is executed by teams of professionals who understand and are able to manage the entire life-cycle of a major program effort. We are making progress toward this goal.

The Acquisition Program Management Division (APMD) of CPO began operations in August 2007. The division was established to provide oversight and support for acquisition programs. To date APMD has performed Quick Look assessments of 37 level 1 programs and has overseen Deep Dive reviews of the SBInet and ASP programs. APMD has provided advice and guidance to a number of programs, particularly in the area of cost benefit analysis. Currently the APMD team is focused on an aggressive Investment & Acquisition process re-engineering effort. The effort includes replacing Directive 1400, establishing revised investment and acquisition decision procedures, as well as processes for, acquisition program baselining, periodic reporting, acquisition of services, and other initiatives.

DHS' $17 billion procurement spend plan provides for the development, fielding and support of significant homeland security capabilities. For example, U.S. Coast Guard contracts are providing aircraft and ships from the Integrated Deepwater System (IDS) and search and rescue capability from the Rescue 21 program. Transportation Security Administration (TSA) contracts are providing additional capabilities via the Electronic Baggage Screening Program (EBSP). Consistent with the SBI Strategy, U.S. Customs and Border Protection (CBP) is developing and fielding the capabilities at and between our Nation's ports of entry to gain effective control of our borders. The Domestic Nuclear Detection Office is developing and testing a new type of radiation portal monitor known as the Advanced Spectroscopic Portal (ASP) to improve the Nation's defense against the threat of nuclear smuggling.

I am here today to discuss the Advanced Spectroscopic Portal (ASP). The acquisition of ASP systems is of national importance and vital priority for the Department to continue toward its mission of protecting the country from dangerous goods. This acquisition develops the next generation Radiation Portal Monitor (RPM) and has the ability to not only detect the presence of radiation in cargo entering the United States, but also to rapidly identify the type of radioactive material(s) present.

In 2005, the Domestic Nuclear Detection Office (DNDO) took on the responsibility to develop a second generation RPM prototype, now known as ASP. The intent of this initiative was to decrease the rate of false alarms and close the gaps in coverage. Or in other words, increase operational effectiveness and rapidly detect the presence and the type of radioactive material present. This system would allow us to distinguish harmless sources, such as kitty litter from those that might pose a threat. As a result of these improved detection capabilities, the flow of commerce would proceed unhindered.

Before Congress would appropriate the funds to deploy this new technology, it included restrictive language in the Homeland Security Appropriations Act for Fiscal Year 2007 requiring the Secretary to certify that a significant increase in operational effectiveness will be achieved before funds will be appropriated. In July 2007, Secretary Chertoff announced his intent to "assemble a highly experienced team" to perform "an independent review of the [ASP] test procedures, test results, [and] associated technology assessments".

My role as the DUSM in this process is to understand the outcome of this independent review and be in a position to advise the Secretary in determining whether he should certify that there will be a significant increase in operational effectiveness with the procurement of ASP systems. In my opinion, this independent review provides valuable assistance to the Secretary, to the Department Acquisition Executive,

Chair of the DHS Investment Review Board and me, as DHS considers the best way forward.

This is not an unusual exercise as it is in line with the reviews we conduct for our all our major programs within the Department. Furthermore, this is a standard practice of other Departments within the U.S. Government, such as Defense, to improve their decisionmaking processes regarding major programs.

The Department appreciates the need for rigorous review to ensure that the Department acquires the crucial capability to preventing the smuggling of nuclear materials across our borders. It is entirely appropriate for DHS to leverage the resources of the executive branch to gather information to make an informed decision on a critical program. We consider the independent review of this system to be complementary to GAO's investigation of ASP. As an agent of Congress, GAO provides information to Congress in support of its oversight function. We intend to review and consider these reports from both sources in determining a way forward.

There are several things we have already learned from the Independent Review. First, ASP operational testing is critical to our ability to certify the system. I have asked Mr. John Higbee, Director, Acquisition Program Management to oversee ASP operational testing, working with independent Operational Test and Evaluation experts both internal and external to the Department. By conducting ASP operational testing, we will improve our ability to make an informed decision on this program. Testing of this type will also allow us to continue to exercise more oversight over the Department's acquisition programs as well as strengthen our requirements and investment review process.

Second: We are mindful of the need for the ASP program to demonstrate "increased operational effectiveness", and the interest Congress has in this criterion. We are working with DNDO and CBP to ensure that the ASP testing program is structured to conclusively determine this critical point.

Third: We learned the "cost" portion of the Cost Benefit Analysis (CBA) should include all ownership costs, including maintenance and support; and the "benefits" portion of the CBA should be consistent with the logic used to define "operational effectiveness." Therefore, we will carefully review the CBA to ensure that the alternatives are well-defined and that the assumptions, data inputs, and calculations are sound.

Finally: After reviewing and addressing the Independent Review Team's, and GAO's findings; and after considering the test results and all information provided within this process, the Secretary will be prepared to make a decision on whether he should certify that there will be a significant increase in operational effectiveness with the procurement of ASP systems.

Mr. Chairman, thank you for the opportunity to testify before the committee on this very important topic. I would be glad to answer any questions you or the Members of the committee may have for me.

Mr. LANGEVIN. The Chair now recognizes Mr. Oxford for 5 minutes. Welcome.

STATEMENT OF VAYL S. OXFORD, DIRECTOR, DOMESTIC NUCLEAR DETECTION OFFICE, DEPARTMENT OF HOMELAND SECURITY

Mr. OXFORD. Good afternoon, Mr. Chairman, Ranking Member McCaul and other Members of the subcommittee. I would like to thank the subcommittee for the opportunity to discuss recent progress in ASP development and the recently released Phase III test report and the final report of the ASP independent review team.

Before addressing these reports, I would like to update the committee on progress since I last appeared before you. Since that time as has been previously mentioned, we have reached several milestones.

First of all, in December we met the congressionally mandated goal of scanning 98 percent of the cargo coming in through our seaports. This is significant improvement over where we were 3 years ago when we were only scanning 22 percent of that cargo. When we couple that with 100 percent of the cargo we are scanning

across the southern border, we are now scanning 96 percent of all cargo entering the United States on a daily basis. This is real and measurable progress. In working with CBP, we have a plan to complete the northern border in 2009.

Also in December we completed delivery of radiation detection equipment for all U.S. Coast Guard boarding teams. To address other threat pathways, we also delivered additional hand-held detection equipment to Customs and Border Protection; and as of December, Customs and Border Protection is now scanning all international general aviation airplanes arriving in the United States.

Finally, DNDO has developed plans and is in the early stages of implementing a program of interest to this subcommittee to enhance physical security of high-risk radioactive sources in U.S. medical facilities.

With respect to the IRT report I would like to highlight several key points:

First it is important to recognize that DNDO is developing and evaluating detection systems in response to established threat guidance originally established by the Department of Energy for Customs and Border Protection. This approach establishes requirements to detect and identify quantities of plutonium or uranium that are actually a fraction of the likely amount or the amount likely required by a terrorist to construct nuclear weapons.

Second and most importantly, the IRT reports that it could not find any signs of biased testing or manipulation of data. We thank the IRT for its efforts and intend to adopt several aspects of the recommendations. However, we find some shortfalls in the report.

DNDO and CBP believe that ASP's systems provide significant advantages in both primary and secondary scanning roles, and there is a possibility that the greatest benefit will actually be realized in primary applications.

The IRT report focused on secondary applications and as a result, did not include data showing that current rpms may miss some critical threats resulting in threats never being referred to secondary applications.

By not conducting a full system, the system comparison, the ASP benefit of reducing the number of secondary referrals, was also ignored. Based on current data, ASP systems have the potential to reduce secondary referral rates by a factor of 5 to 10 resulting in up to 150,000 less secondary inspections a year.

For secondary applications, ASP systems provide a more consistent scan, as acknowledged by the IRT, and avoid the localization issues associated with using a hand-held detector in secondary scanning applications. As a result of being able to quickly scan the entire container and using time slicing to sample regions of interest and reduce background, ASP systems will be significantly more efficient and effective than the current hand-held device.

Regarding the Phase III report, Phase III testing served many purposes, which provided an initial assessment of the range of ASP capabilities. As such, the tests subjected ASP systems to a variety of sources, masking cases and shielding configurations, and included scenarios more challenging than threat guidance that I previously mentioned.

For example, we tested five shielding thicknesses that varied in difficulty, and above and below threat guidance level. We tested six types of masking materials of a representative cargo entering the United States, as well as challenging combinations involving industrial and medical sources that may potentially mask the presence of a threat.

The bottom line is that we have explored ASP performance around the threat guidance to determine the extent of current ASP performance and enable algorithm improvement. We are using this data in the current system upgrades.

Going forward, DNDO and CBP are planning additional tests to verify these capabilities leading to secretarial certification later this fiscal year.

In the interest of time, Mr. Chairman, I will use a chart showing the upcoming test series that are available to you on the screens during the question-and-answer period if that is okay.

With that, I will conclude my testimony and be glad to answer any questions.

Mr. LANGEVIN. Thank you, Director Oxford.

[The statement of Mr. Oxford follows:]

PREPARED STATEMENT OF VAYL S. OXFORD

MARCH 5, 2008

INTRODUCTION

Good morning, Chairman Langevin, Ranking Member McCaul, and distinguished members of the subcommittee. As Director of the Domestic Nuclear Detection Office (DNDO), my office is responsible for developing new technologies and also ensuring that we deploy detection systems properly across the domestic nuclear detection architecture. I would like to thank the committee for the opportunity to discuss recent progress in the development of the next generation of radiation portal monitors (RPMs), or Advanced Spectroscopic Portal (ASP) systems. My testimony today will focus principally on the recently released Phase III Test Report, the Final Report of the ASP Independent Review Team (ASP–IRT), and the steps we will take to make a certification and production recommendation to the Secretary.

HISTORIC CONTEXT

Countering the threat of nuclear terrorism is one of the top priorities for the Department of Homeland Security (DHS). DNDO is the lead agency responsible for the development, acquisition, and deployment of radiation detection equipment to support this mission within the Department. The ASP program is one of the programs DNDO has begun to improve radiation detection tools for operators, in this case Customs and Border Protection (CBP) Officers.

Considerable progress has already been made using currently available technology. At ports of entry (POEs), RPMs are typically installed in a primary scanning location to detect the presence of radiation in cargo and vehicles. CBP operates additional RPMs and handheld radioisotopic identification devices (RIIDs) in secondary scanning locations to further investigate alarms originating in primary and identify the specific source of the radiation detected. As of February 8, 2008, 100 percent of all incoming cargo on the southern border is being scanned for the presence of radiological or nuclear material, as well as 98 percent at the Nation's seaports, and 91 percent on the northern border. However, much work remains to close enduring gaps at many small border crossings along the northern border, as well as at small seaports. In addition, limits in the capabilities of current systems continue to present technical and operational challenges to those using the equipment.

Unlike current systems which detect and identify radiation sources in a two-step process, ASP technology uses the radiation spectrum from the inspected material to make a single detection and identification decision. DNDO has maintained that this ability to differentiate between threat material and naturally occurring radioactive material (NORM) will reduce the number of alarms due to non-threat sources, reduce the number of containers and vehicles sent to secondary inspection, and dra-

matically improve the probability of correctly identifying and interdicting smuggled nuclear material during secondary inspections.

In 2006, the Congress requested that DNDO complete a cost-benefit analysis of ASP systems, which DNDO subsequently issued in June 2006. In a later report (GAO 07–133R), the Government Accountability Office (GAO) raised concerns about performance and cost assumptions included in the DNDO cost-benefit analysis, and the Congress included further restrictions in the fiscal year 2007 Appropriations Act (Pub. L. 109–295), directing that, "none of the funds appropriated under this heading shall be obligated for full scale procurement of [ASP] monitors until the Secretary of Homeland Security has certified . . . that a significant increase in operational effectiveness will be achieved."

In order to provide the Secretary with all necessary information prior to a certification decision, DNDO launched a substantial test campaign from February 2007 through September 2007. This included three separate test series conducted at the Nevada Test Site (NTS), including the Phase III testing captured in the report that we are discussing today, as well as contractor verification testing, stream of commerce testing at the New York Container Terminal (NYCT), integration testing at the Pacific Northwest National Laboratory (PNNL), and field validation at eight operational sites. In addition, in late July 2007, Secretary Chertoff notified the Congress of his intent to "assemble a highly experienced team" to perform "an independent review of the [ASP] test procedures, test results, [and] associated technology assessments." This group, known as the ASP–IRT, delivered a report to Elaine Duke, the DHS Deputy Under Secretary for Management, on February 20, 2008. The ASP–IRT Report is the second document under discussion today.

PHASE III TEST REPORT—INTRODUCTION

The Phase III Test Campaign, conducted at NTS in March 2007, was part of a larger series of tests conducted throughout 2007, designed to evaluate ASP performance. Specifically, Phase III testing was intended to collect data from challenging detection or identification cases, beyond those included in Phase I testing at NTS earlier in the year. In addition, Phase III testing was to support the development of concepts of operations, and provide an additional data collection opportunity for continued vendor development of improved detection and identification algorithms. Phase III testing was conducted in accordance with test plans developed by DNDO, in partnership with the National Institute of Standards and Technology (NIST), CBP and, to a limited extent, the Department of Energy (DOE) and its labs. The test plan included the incorporation of a variety of source and shielding configurations, and, in particular, configurations that were often more difficult than "guidance" detection goals. This point is particularly important when analyzing the results of the test.

PHASE III TEST REPORT—OBJECTIVES AND RESULTS

The Phase III Test Campaign was designed to evaluate several aspects of ASP system performance, with five primary objectives. Before discussing the objectives and results, it is necessary to provide several caveats that relate to the way the tests were designed, and how the specific objectives of the test affected the interpretation of the results obtained. First, it is important to reiterate that results indicating that ASP systems did not detect or identify some specific cases do not indicate that ASP systems did not work as designed. ASP systems are designed to operate to certain design thresholds. In some instances, Phase III test sources intentionally exceeded those thresholds to evaluate how far ASP performance continues. For instance, a number of test sources were selected that were shielded beyond amounts identified in government requirements, for the express purpose of understanding where ASP capabilities begin to "fall off." The fact that ASP systems functioned beyond specified requirements should be considered a positive sign, rather than a sign of inherent flaws.

Second, Phase III tests were intended to help DNDO and CBP better understand the full range of ASP system performance, and results will continue to guide further development efforts. Since testing in early 2007, DNDO has provided results as feedback to the ASP vendors, and they have incorporated this data into subsequent design improvements. These improvements will be evaluated through additional test campaigns scheduled for this year.

Finally, detailed Phase III results are classified at the SECRET level. Because individual results reveal vulnerabilities to both systems that are and will be deployed, performance of systems against specific sources cannot be discussed in an open setting. The results that follow have been intentionally generalized to avoid discussion of specific performance capabilities for systems. DNDO has previously provided clas-

sified test results to the committee staff. DNDO would be happy to provide the same information to committee Members in an appropriate environment.

Detection sensitivity for plutonium surrogate.—The detection sensitivity of ASP systems was measured against a plutonium "surrogate," or a source that was designed to mimic the detectable signature of plutonium. This objective was specifically focused on ensuring that ASP systems met the CBP requirement that they be at least as sensitive as current-generation polyvinyl toluene (PVT)-based systems. ASP detection sensitivities were measured against PVT-based systems set at existing operational thresholds.

For this representative source, ASP systems were more sensitive than PVT-based systems when operating at existing operational thresholds. As such, testing met the objective of assessing that ASP systems did not degrade detection performance, as compared to current systems.

Relative performance as a function of source categories.—Phase III testing sought to compare relative performance of various ASP systems as a function of source categories. Source categories included bare, shielded, and "masked" special nuclear materials, bare, shielded and "masked" industrial sources, and medical isotopes. In particular, this objective sought to identify any significant variation in performance between each ASP vendor design. Additionally, detection performance was also compared to PVT-based systems, and identification performance was compared to current-generation sodium iodide (NaI)-based handheld detectors that are currently used to conduct secondary inspections.

Due to the number of source categories evaluated as part of this objective, results are more complicated than those associated with other objectives. While on average no ASP system significantly outperformed the others with regard to detecting sources passing through portals at either 5 or 2 miles per hour, there were differences in system performance when evaluated against each source.

With regard to comparisons between PVT-based and ASP systems, ASP systems outperformed PVT-based systems in detecting bare special nuclear materials, and both types of systems performed similarly against shielded special nuclear materials. "Masked" special nuclear materials resulted in higher alarm rates for PVT-based systems than ASP systems. Similarly, PVT-based systems demonstrated higher alarm rates for medical isotopes and industrial sources, though this was due to ASP decision software that categorized smaller sources as "non-threats." Based on requests from CBP, revisions have since been made to ASP algorithms so that industrial sources will be referred for secondary scanning. Finally, and significantly, ASP systems outperformed handheld RIIDs in identifying all source categories, with the exception of bare industrial sources. Due to the extremely high signal strengths associated with industrial sources, performance between ASP systems and RIIDs was comparable in that instance.

Effects of shielding on system performance.—This test campaign sought to provide preliminary measurements of the effects of shielding materials on system performance. In particular, tests evaluated the difference in ASP system response when different types of sources, including special nuclear materials, were placed inside varying amounts of shielding. For the purposes of this objective, system "response" included both detection and identification performance.

As expected, all systems experienced difficulty in detecting and identifying certain heavily shielded materials, which results in signal strengths significantly below current "guidance" levels and requirements. This is consistent with performance of all passive detection systems. However, ASP systems were able to identify sources when placed inside almost all but the thickest shielding configuration tested.

Relative performance for combined sources.—Phase III testing evaluated the relative performance of ASP systems against "combined sources," where more than one emitting isotope was present. This portion of Phase III testing was designed to provide additional data collection opportunities for ASP vendors, in support of algorithm improvements. This testing was not designed to provide conclusive data as to the performance of ASP systems against "masked" sources.

Phase III testing highlighted several areas where further study and algorithm development are required to reduce vulnerabilities. This data was provided to the ASP vendors, and software improvements are being incorporated into ASP revisions. In addition, the use of high-purity germanium-based systems, when operated in a "wait-in mode," showed slightly better performance than other systems. However, these initial results are an indicator of potential capabilities, rather than proof of superior performance.

Secondary screening for concepts of operations development.—Additional evaluations were completed to assess varying concepts of operations for secondary scanning. ASP system performance was evaluated as a function of varying speeds and "dwell times," or the amount of time that a source was present within the portal.

Specifically, measurements were conducted as sources moved at several pre-set speeds through the portals, as well as instances where sources were stopped within the portal for a defined amount of time.

The evaluations of concepts of operations demonstrated that scanning at 2 miles per hour, the current concept of operations for secondary scanning, could be sufficient for many source configurations. Results also indicated that longer dwell times for measurements may add value for the more challenging cases. However, it was not obvious that "wait-in mode" concepts of operations provide advantages for certain threats.

PHASE III TEST REPORT—CONCLUSION

The Phase III Test Campaign was a critical piece of a larger effort to evaluate the performance of ASP systems. Phase III testing was focused on testing the ASP systems with a significantly expanded variety of sources, shielding and "masking" configurations, and concepts of operations. The results have provided an additional data set in the on-going comparison of ASP performance to current systems. At the same time, the data gained from Phase III testing has limits, and it is critical that results are interpreted in the context of the original test objectives.

ASP–IRT REPORT—INTRODUCTION

The ASP–IRT was tasked with providing two elements of assessment: (1) "the testing approach, from contractor testing through operational testing, processes employed, specifications, test procedures, and analysis methods;" and (2) "the probability of success to detect and identify radiation and nuclear threats and assess the performance of the ASP [systems] compared to the first generation systems." The ASP–IRT Report was a culmination of analyses aimed at assessing these two elements, conducted from August 2007 through February 2008. These analyses were based on information provided by DNDO and CBP, as well as other outside sources. This information included DNDO test plans, test reports from several ASP evaluations, and numerous discussions with officials from both DNDO and CBP. However, the analysis and conclusions reached were completely independent of either DNDO or CBP, and the resulting conclusions reflected the assessment of the ASP–IRT members.

ASP–IRT REPORT—INITIAL FINDINGS

The ASP–IRT Report includes an Executive Summary which highlights conclusions of the document.

While the ASP–IRT did not concur with assertions that the GAO made in September 2007 (GAO–07–1247T) that ASP testing in February through September 2007 "used biased test methods that enhanced the performance of the ASPs," it did agree with other claims, including the fact that tests were "not designed to measure the range of ASP system performance." In addition, the ASP–IRT indicated concern that test results and measures of effectiveness were not properly linked to operational outcomes, which led to difficulties in developing conclusions from the results. Fundamentally, the ASP–IRT asserted that testing to date was "properly characterized as Developmental Test and Evaluation. Independent Operational Testing has not been conducted."

In evaluating the performance of ASP systems directly, as compared to first generation systems, the ASP–IRT focused solely on ASP secondary scanning operations. Based on initial independent analysis, the ASP–IRT concluded that for the 13 objects used in Phase I testing, using ASP systems "did not affect the probability of a missed threat," when compared to current generation RIIDs. The ASP–IRT stated that this conclusion was based on the assumption that all RIID results of "unknown" where resolved by CBP Laboratory and Scientific Services (LSS), which provides technical support to CBP Officers at POEs. Yet, the ASP–IRT did allow that, based on an alternate assumption in which many RIID "unknown" alarms were resolved in the field, "it appears that ASP could substantially reduce the probability of entry for nine of the 13 test objects—for most, by at least 20 to 30 percent and possibly by 30 to 50 percent." The ASPIRT was not able to draw any conclusion regarding the affect of ASP for the remaining four test objects.

In addition, based on first principles calculations, the ASP–IRT asserted that "the relative performance of the ASP [systems] and the RIID depends on several factors." The ASP–IRT argued that sample spectra from both systems would indicate comparable performance if a RIID is optimally placed. However, the ASP–IRT also acknowledged challenges associated with localizing radiation sources within a container, and the likelihood that operators may target the wrong "hot spot" for secondary inspection. The ASP–IRT also stated that "ASP performance could be im-

proved in all cases by slowing the passage of the truck through the portal, though there would be increased costs." The ASP–IRT noted the benefit of improved consistency in scanning provided by ASP systems, as compared to RIIDS, especially by "reducing the impacts of operator inattention, fatigue, and variability of the placement of the RIID." Finally, the ASP–IRT also noted that "substituting the ASP for RIID in secondary screening would reduce the number of cases that qualify for referral to LSS under the current CBP CONOPS."

Additionally, the ASP–IRT made several additional observations based on their evaluation of the ASP program. These included a potential need for a more disciplined acquisition process to guide large DHS programs, an independent operational test and evaluation process, and a more well-defined requirements process to ensure that mission needs are properly accounted for in operational requirements.

ASP–IRT REPORT—DNDO AND CBP RESPONSE TO INITIAL FINDINGS

DNDO recognizes the thoughtful evaluation that the ASP–IRT provided to the Department, and values the critiques that were included in the Final Report. Several of the concerns that were raised are valid and the Department is taking steps to address these issues.

Unfortunately, in some instances, analysis was limited to information immediately available, which was not in all cases a complete and accurate representation of events. In addition, due to the short time in which the ASP–IRT was tasked to produce a final report, subsequent iterations of information exchange that may have normally been performed were not feasible. Subsequently, staff from DNDO has met with ASP–IRT members, and many of the concerns that are outlined below were discussed. In many instances, it was acknowledged that as additional information that was provided to the ASP–IRT during their analysis, alternate conclusions emerged. In other instances, it appears that the ASP–IRT stands by its initial conclusions.

Limitation of analysis to secondary scanning operations.—In Section I.C of the Report the ASP–IRT states that they "sought to determine the extent to which the use of the ASP would impact the frequency of nuisance alarms and the probability of illicit radioactive materials passing through [POEs]—taking into account other equipment with which it might be used, as well as other means of detecting the illicit materials." However, in the same section, the ASP–IRT explained that they solely "focused its analysis on the use of the ASP in the Secondary screening role." This approach to the analysis discounted the economic and time impacts of scanning delays due to high nuisance alarm rates in primary scanning. In addition, it also discounted the possibility that certain threats may never be referred to secondary screening. In the long term, DNDO and CBP expect that the greatest benefits of ASP technologies will be in these primary scanning operations, where DNDO testing at NYCT has already shown that ASP systems may reduce nuisance alarm rates by more than a factor of 10 (1.70 percent for PVT systems and 0.11 percent and 0.12 percent for two ASP systems). A reduction of secondary referral rates of this magnitude, when averaged over the entire volume of cargo containers entering the United States annually, would potentially result in hundreds of thousands fewer secondary inspections required each year. The savings that the elimination of these inspections would have in the efficient processing of trade and manpower resources of CBP should not be ignored in what is argued to be a "system-of-systems" analysis.

False dismissal rates in secondary inspections.—In its "system-of-systems" approach, the ASP–IRT initially questioned the decision of DNDO to omit LSS analysis of RIID data from comparisons of system performance. DNDO has cited evidence that RIIDs produced "unknown" alarms in up to 60 percent of cases, leading to either increased requirements for physical inspections, or the potential for an inadvertent release of a threat. The ASP–IRT analysis instead assumed that all of these alarms would be sent to LSS for further analysis. The ASP–IRT raised questions about the validity of this assumption, based on contrary evidence from operational data, which indicated that actual LSS referral rates were less than one-tenth of the expected rates, based on evaluations of RIIDs. However, while acknowledging this discrepancy, the ASP–IRT only asserted that, "If the ASP were to replace the RIID in Secondary screening, it seems likely that some fraction of these 'unknown' cases would be properly resolved as NORM or else referred to LSS for resolution. However, based on the available data, we were not able to determine what that fraction would be."

The reality is that it is not operationally feasible to send all "unknown" alarms to LSS for additional analysis. Operational data indicates that only 3,000 alarms

are sent to LSS annually—far less than the minimum of 40,000 annually predicted by the ASP–IRT. DNDO estimates indicate that using ASP systems in secondary scanning operations would reduce the number of alarms requiring LSS analysis to approximately 3,000–4,000 per year, a number manageable with current LSS resources. More importantly, this would allow all alarms that should be referred to LSS to be actually referred to LSS, ensuring that no threats are mistakenly released into the Nation under an "unknown" alarm, even when CBP CONOPs are followed.

First principles calculations of comparative performance.—In addition to providing analyses of available test data, the ASP–IRT performed a series of "first principles" calculations which attempted to predict the performance of hypothetical ASP systems and RIIDs. These calculations focused on the theoretical signal-to-noise ratios of the two systems, based upon distances from source to detector, the size of the detector, and the time interval of the scan. The ASP–IRT argues that the advantages provided by the additional detector size of ASP systems is, in some cases, outweighed by the shorter distance and longer scanning intervals provided by RIID systems. However, in initial calculations, the ASP–IRT assumed that RIIDs would be able to successfully locate the source "hot spot" and a lengthier (1 to 3 minute) scan could be focused on that location, with a source to detector distance of 1 foot. The incorrect assumption that a RIID would be able to effectively localize and scan any source within 1 foot of a detector drastically affected the outcome, and significantly reduced the perceived improvements provided by ASP systems.

The reality is that the height of containers (up to 13.5 feet) and the requirement that an operator hold the RIID (limiting effective detector height to 6 to 7 feet) make scanning the entire container surface with the RIID difficult. Additional calculations done by DNDO, and provided to the ASP–IRT, show that for sources located near the center of a loaded container the RIID is approximately as sensitive as the ASP but only over a 2-foot radius circle on the surface of the container. Outside of that radius, the sensitivity falls off drastically. This means that a single RIID measurement can only effectively scan approximately 2 percent of the area of the container. Test data indicate that it is difficult to accurately locate the correct "hotspot" at which to place the RIID, which further erodes the effectiveness of the unit. ASP systems, unlike RIIDs, stand 14 feet tall, and provide the ability to uniformly scan the entire contents of a container. In addition, this scan is performed in 15 seconds, as opposed to the 1 to 3 minutes per "hot spot" measurement by the RIID. To effectively scan the "entire" container with a RIID to the same consistency as an ASP would take approximately 1 hour, assuming only 1 minute per scan. While the ASP–IRT acknowledges some of these challenges in the Report, they also propose alternative solutions, such as improved RIID software, or gantry systems for consistent scanning of containers. However, these calculations show that ASP is the solution that will effectively scan an entire container quickly, because even RIIDs with improved software (one recommendation of the ASP–IRT) would still be limited in effective detection ranges based on the smaller detector size and probability of localization error.

Other effects that differentiate ASP Systems and RIIDs.—Finally, in addition to the issues highlighted above, DNDO has noted several other issues which affect the comparison of ASP systems and RIIDs that were not accounted for by the ASP–IRT. First, the ASP–IRT Report fails to account for the possibility of multiple "hot spots" in a single cargo container. Because CBP protocols require Officers to scan the entire container and then focus on the regions of highest detected radiation, threat materials with lower emissions could be missed and more intensive scans instead focused on other "hotter" locations within a container. Again, the ability of ASP systems to scan an entire container in a uniform fashion provides the ability to identify threats throughout a container, rather than just those that emit the most radiation. Second, while the ASP–IRT highlighted the importance of background radiation and the confounding effects that it has on radiation identification, their analysis does not account for the fact that ASP systems are designed to shield background radiation from interfering with the detection of sources in the containers being scanned. While ASP systems are shielded by one inch of steel on the back and sides of the detector, RIIDs have no similar shielding to focus the detection containers. While difficult to quantify, this shielding provides measurable improvement in the ASP signal-to-noise ratio when compared to RIIDs. While the ASP–IRT acknowledged these additional effects, it did not adopt firm positions as to the associated benefits.

ASP–IRT REPORT—CONCLUSION

The ASP–IRT Report provides a valuable independent assessment of the ASP program, and will serve as an important source of information in the eventual decision to certify ASP systems. However, their analysis was limited in the scope of informa-

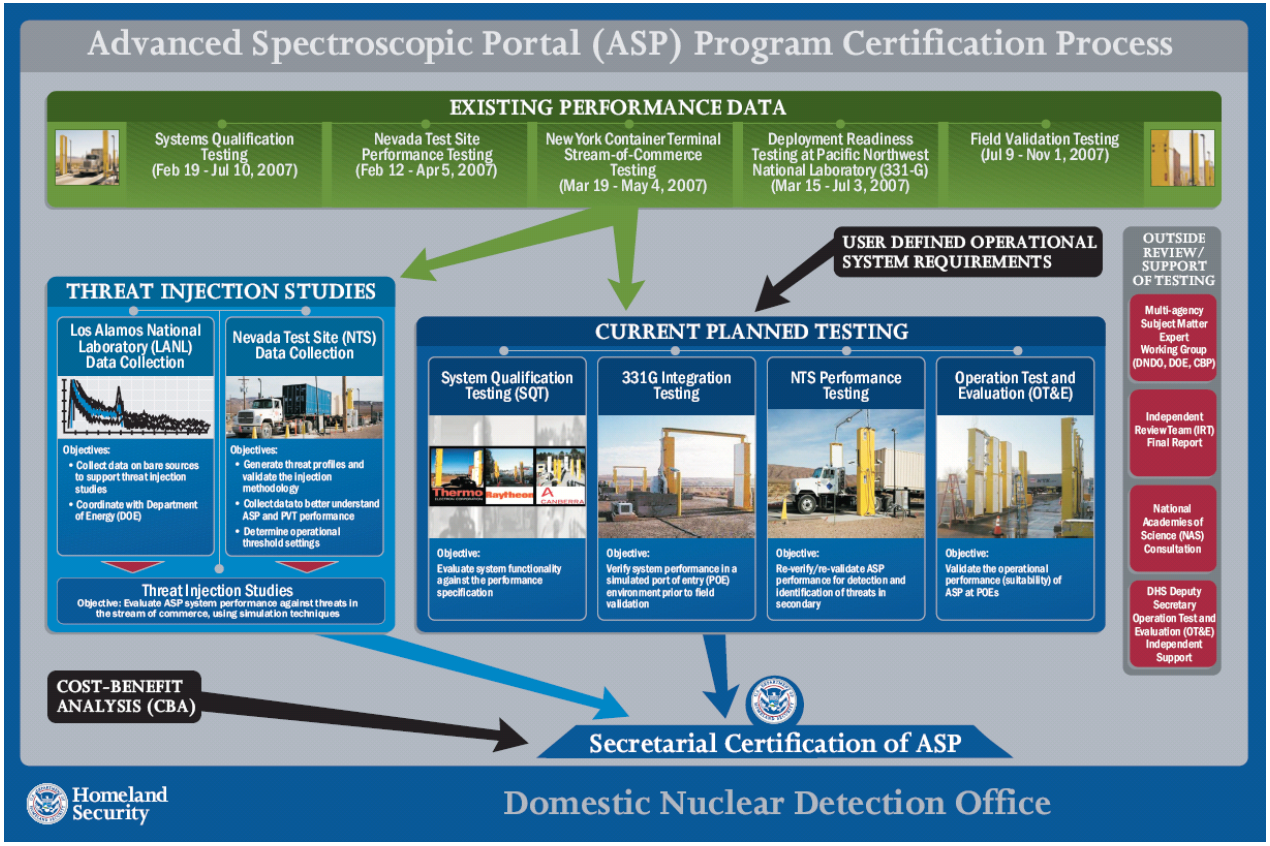
tion made available, which in some instances may have resulted in conclusions contrary to those that would have been reached if more information were available. Since that time, DNDO has met with the ASP–IRT and provided additional information and discussed differences in conclusions reached by each party. In some instances, DNDO analysis has shown that ASP–IRT conclusions provided unnecessarily limited appreciation for the improvements that ASP systems offer. These issues include the ASP–IRT decision to focus solely on ASP improvements to secondary scanning operations, assumptions made by the ASP–IRT concerning referrals of "unknown" secondary alarms to LSS, the probability of localization error on first principles analysis of RIID performance, and other issues which differentiate ASP systems and RIIDs. DNDO believes that when these issues are considered, ASP systems clearly provide an improvement in operational effectiveness when compared to current systems.

DNDO looks forward to continuing to work with CBP and other partners within and beyond DHS to improve the Nation's ability to detect radiological and nuclear threats at our ports and borders. DHS is facing an enormous challenge at our ports and borders as it struggles to balance the flow of goods and commerce with the need to sufficiently scan cargo for radiological or nuclear threats as it enters our Nation. The technologies that DNDO is pursuing in the ASP program are a critical component in addressing that challenge.

CONCLUSION

I am confident that our plan for the development and evaluation of ASP systems is sound. The Phase III test results show promise from ASP systems, and the ASP–IRT has provided a valuable assessment of the program to date.

I welcome and appreciate the committees' active engagement with this program, and look forward to continuing our cooperation as we move forward together. This concludes my prepared statement. Chairman Langevin, Ranking Member McCaul, and Members of the subcommittee, I thank you for your attention and will be happy to answer any questions that you may have.


Advanced Spectroscopic Portal (ASP) Program Certification Process
EXISTING PERFORMANCE DATA
Systems Qualification Testing (Feb 19 - Jul 10, 2007)
Nevada Test Site Performance Testing (Feb 12 - Apr 5, 2007)
New York Container Terminal Stream-of-Commerce Testing (Mar 19 - May 4, 2007)
Deployment Readiness Testing at Pacific Northwest National Laboratory (331-G) (Mar 15 - Jul 3, 2007)
Field Validation Testing (Jul 9 - Nov 1, 2007)
USER DEFINED OPERATIONAL SYSTEM REQUIREMENTS
OUTSIDE REVIEW/ SUPPORT OF TESTING
Multi-agency Subject Matter Expert Working Group (DNDO, DOE, CBP)
Independent Review Team (IRT) Final Report
National Academies of Science (NAS) Consultation
DHS Deputy Secretary Operation Test and Evaluation (OT&E) Independent Support
THREAT INJECTION STUDIES
Los Alamos National Laboratory (LANL) Data Collection
Objectives:
• Collect data on bare sources to support threat injection studies
• Coordinate with Department of Energy (DOE)
Nevada Test Site (NTS) Data Collection
Objectives:
• Generate threat profiles and validate the injection methodology
• Collect data to better understand ASP and PVT performance
• Determine operational threshold settings
Threat Injection Studies
Objective: Evaluate ASP system performance against threats in the stream of commerce, using simulation techniques
CURRENT PLANNED TESTING
System Qualification Testing (SQT)
Objective:
Evaluate system functionality against the performance specification
331G Integration Testing
Objective:
Verify system performance in a simulated port of entry (POE) environment prior to field validation
NTS Performance Testing
Objective:
Re-verify/re-validate ASP performance for detection and identification of threats in secondary
Operation Test and Evaluation (OT&E)
Objective:
Validate the operational performance (suitability) of ASP at POEs
COST-BENEFIT ANALYSIS (CBA)
Secretarial Certification of ASP
Homeland Security
Domestic Nuclear Detection Office

Mr. LANGEVIN. The Chair now recognizes Mr. Thompson for 5 minutes.

STATEMENT OF GEORGE E. THOMPSON, DEPUTY DIRECTOR, PROGRAMS, HOMELAND SECURITY INSTITUTE

Mr. THOMPSON. Mr. Chairman, Representative McCaul and distinguished members, thank you for the opportunity to address the subcommittee on the subject of the advanced spectroscopic portal.

My name is George Thompson, and I am the Chair of the ASP Independent Review Team or IRT. Our final report was delivered to you and your staff last week.

An independent expert review is a valuable source of advice, but only if the experts are truly expert and only if the advice is truly objective. So before talking about the findings of our report, I would like to take a moment to talk to you about the IRT itself and the process that was used to conduct the review.

Beginning with myself as Chair, my role was to help frame the issues, integrate the team's efforts and contribute substantively. I should mention that I am currently a deputy director of the Homeland Security Institute, which is an FFRDC or federally Funded Research and Development Center. It was established in 2004 under the Homeland Security Act. Thus, it was the Congress that wisely foresaw the need for DHS to have access to an independent objective source of expert technical advice on complex Homeland Security problems such as the one we are discussing today.

In September 2007, Mr. Paul Schneider, then Under Secretary for Management, asked me to serve as the IRT Chair. The review had been underway for several weeks at the time.

Upon accepting the role, I reviewed the quality of the team members selected by my predecessor. They were, in a word, outstanding: Dr. Alan Berman of the Penn State Applied Research Lab; Dr. Dennis Slaughter, formerly of the Lawrence Livermore Lab; Dr. Peter Vanier of Brookhaven National Laboratory; Dr. Michael Wright of Oak Ridge National Lab and Dr. Kaus-Peter Ziock of Oak Ridge. All recognized experts in the basic and applied science of nuclear detection.

However, I also recognize the need for experts in acquisition management and testing. Therefore, I asked three other distinguished individuals to serve as reviewers: Mr. Thomas Christie, former DOD director of Operational Test and Evaluations; Mr. William Houley, first director of Defense Acquisition Reform; and Dr. Marion Williams, formerly chief scientist at the Air Force Test and Operational Center or AFOTEC. These and all participants executed strict conflict-of-interest and nondisclosure agreements.

Mr. Schneider identified the specific questions that he wanted the team to answer, but he gave the IRT free rein in answering them. He also made it very clear that the team was free to offer any other observations we chose.

From late August to late October the team reviewed over 120 documents, interviewed dozens of key staff, both internal and external at DHS, and traveled to four ports of entry to observe both first-generation systems and ASP units in operation. At the time our goal was to complete the report by mid-November to inform the certification decision by the Secretary.

However, in early November as we were drafting our report, the IRT learned that the Secretary had chosen to defer that decision. Nevertheless, Ms. Duke asked us to complete the report, and we delivered an interim version on November 19.

During the remainder of November, December, January and early February, the DNDO and CBP reviewed the interim report. They discussed its contents with the team, provided some additional data and delivered a written response on February 15. The IRT carefully considered the additional data and comments, made some important revisions and delivered the final report to DHS on February 20.

With my remaining time, I would like to provide an overview of the final report. Our findings are organized around the two questions posed by Mr. Schneider last year to assess the ASP testing approach and to assess ASP performance.

Because the Department intended an initial deployment of ASP in the so-called secondary screening role and also because of the limitations of the test approach, we focused the performance assessment on secondary screening.

With respect to the ASP testing approach, the IRT identified several aspects of the overall testing approach that we believe could and should be improved. In general, these include a broader characterization of system performance and a stronger linkage between test results and operational outcomes.

We also looked at the specific test procedures used in 2007. Although they were not ideal, we did not find evidence that the test results had thereby been biased or manipulated.

Second, ASP performance. We considered both security, minimizing the chance of a threat entering the United States, and commerce, minimizing unnecessary inspection of innocent cargo. In general, we found that the hand-held systems currently used to identify radioisotopes in cargo are characterized by wide variations in performance. The ASP could, if it performs in the field as intended—and if appropriate standard operating procedures are developed—could substantially reduce these variations in performance and thus reduce some key uncertainties in the Nation's ability to counter the threat of nuclear smuggling.

Finally, the report also offered a number of observations concerning the need for greater discipline in requirements in test and evaluation oversight.

In closing, I am grateful for the opportunity to be in service. I will do my best to answer any questions you might have and I will gladly make myself available to you and your staff for more detailed discussions if you wish.

Thank you very much.

Mr. LANGEVIN. Thank you, Mr. Thompson.

[The statement of Mr. Thompson follows:]

PREPARED STATEMENT OF GEORGE E. THOMPSON

MARCH 5, 2008

INTRODUCTORY REMARKS

Mr. Chairman, Representative McCaul, and distinguished Members: Thank you for the opportunity to address the subcommittee on the subject of the Advanced Spectroscopic Portal. My name is George Thompson, and I am the Chair of the ASP

Independent Review Team (IRT). Our Final Report was delivered to you and your staff last week. The report is considered For Official Use Only, so I will be providing a general overview rather than a detailed description of the team's findings.

An independent review is a valuable source of advice for decisionmakers—but only if the experts on the review team are truly expert, and only if the advice they provide is truly objective. So before I talk about our findings, I'd like to describe the IRT itself and process that was used to conduct the review.

THE INDEPENDENT REVIEW TEAM (IRT) CHAIR

As Chair of the IRT, my own role was to help frame the issues and integrate the contributions of the IRT members into a coherent report. I also contributed substantively in those areas in which I am personally knowledgeable. My formal background is in Applied Mathematics. I have spent the last 30 years as a practitioner of Operations Analysis, which is really just disciplined problem-solving, using the tools of mathematics, probability and statistics, simulation modeling, and systems analysis—with a healthy measure of critical thinking and common sense thrown in. I am currently a Deputy Director of the Homeland Security Institute. The Institute is what is known as a federally Funded Research and Development Center (FFRDC). It was established in 2004, pursuant to section 312 of the Homeland Security Act, which specified that the Institute was to be administered by the Science and Technology Directorate on behalf of the entire Department of Homeland Security (DHS). Thus, at the same time it established DHS, the Congress wisely foresaw the need for the Department to have a knowledgeable, independent and objective source of expert technical advice on complex homeland security problems—and that is the mission of the Homeland Security Institute.

In September 2007, Mr. Paul Schneider, then Under Secretary for Management, asked me to serve as the IRT Chair. At that time, the review had already been underway for several weeks. Two other individuals, Dr. Pete Nanos of the Defense Threat Reduction Agency, and Mr. John Higbee of the Defense Acquisition University had, in turn, served briefly in this role but had to withdraw their services.

THE IRT MEMBERS

When I accepted the role of IRT Chair, one of my first actions was to review the qualifications of the team members that had already been selected by my predecessor. They were, in a word, outstanding.

- Dr. Alan Berman of the Penn State Applied Research Lab is a renowned expert in signal processing who has served on numerous advisory panels for the U.S. Navy and Office of the Secretary of Defense.
- Dr. Dennis Slaughter, formerly of the Lawrence Livermore National Laboratory, is an expert in low energy nuclear physics and cargo security.
- Dr. Peter Vanier of Brookhaven National Laboratory is an expert in the detection of nuclear weapons. He is also a member of the so-called Regional Reachback team that analyzes gamma-ray spectra submitted by State and local law enforcement organizations.
- Dr. Michael Wright of Oak Ridge National Laboratory is another Reachback analyst who is also expert in instrument development and systems integration.
- Dr. Klaus-Peter Ziock of Oak Ridge is a recognized authority on the subject of systematic noise and its impacts on radiation detection.

These individuals are certainly well-qualified in the basic science of nuclear detection.

However, it was clear to me that the review would also need to consider important issues involving acquisition management, systems engineering and the basic principles of test and evaluation. Accordingly, I asked three other individuals with distinguished careers in the Department of Defense (DoD) to serve as reviewers of the draft report.

- Mr. Thomas Christie was formerly the DoD Director of Operational Test and Evaluation.
- Mr. William Houley was the first Director of Defense Acquisition Reform and a former Director of Test and Evaluation on the staff of the Chief of Naval Operations.
- Dr. Marion Williams was formerly Chief Scientist and Technical Director of the Air Force Operational Test and Evaluation Center.

In addition, a small group of technical support analysts—Mr. James Hurd, Mr. Bruce Shelton, and Ms. Georganne John—provided valuable assistance in areas such as systems engineering, process modeling, and program management.

ENSURING OBJECTIVITY AND INDEPENDENCE

All these individuals—and indeed, all individuals who had access to the study in progress—were required to execute strict conflict of interest and nondisclosure agreements. As IRT chair, I had full visibility into the team's deliberations, and at no time did I observe anything less than an intellectually honest and open discussion of the issues.

The DHS Under Secretary for Management provided the team a Terms of Reference memorandum, which spelled out the specific questions to be answered. However, the IRT had free reign in answering those questions, and the Under Secretary made it clear that the team was free to offer any other observations we saw fit to provide.

REPORT CHRONOLOGY

During the roughly 2-month period from late August to late October, the team reviewed over 120 documents including test plans, test reports, directives, technical reports, briefings, and spreadsheets. (Further details are contained in Section II.B of the report, and a complete listing is at Appendix 4.) We conducted interviews and technical discussions with key staff from the Domestic Nuclear Detection Office (DNDO), Customs and Border Protection (CBP), the Pacific Northwest National Laboratory, the National Institute of Standards and Technology, the Department of Energy's National Nuclear Security Administration, and others. (The report lists the dates of the key meetings.) Team members traveled to four ports of entry to observe both first-generation systems and ASP units in operation. (Again, for full details, see section II.B of the report).

At the time, our goal was to complete the report by mid-November, to inform a certification decision by Secretary Chertoff. (As you know, the Fiscal Year 2007 Appropriations Act contained language requiring the Secretary to certify to the appropriations committees that the ASP represents a "significant increase in operational effectiveness" compared to first-generation radiation detection and identification systems.) However, in early November, as we were drafting our report, the IRT learned that the Secretary had chosen to defer that decision. Nonetheless, Ms. Elaine Duke, Deputy Under Secretary for Management, asked the team to complete the report, since its findings could still be used—for example, to improve a new round of ASP testing. We delivered an interim report on November 19, 2007.

During the remainder of November, December, January, and early February, DNDO and CBP reviewed the interim report. They discussed its contents with the team, and provided some additional data. DNDO and CBP delivered a written response on February 15, 2008. (That response is included in the report as Appendix 8.) The team carefully considered each statement in the response and decided whether to make changes as a result. (See Appendix 9 of the report.) In some cases, the team agreed with DNDO and CBP, and revised the report accordingly. In other cases, we disagreed with a DNDO and CBP statement; however, we could see the need do a better job in explaining our ideas. In all cases, we were careful to explain why we agreed or disagreed, and what changes (if any) we made as a result.

We delivered the Final Report to DHS on February 20, 2008.

SCOPE OF REVIEW—PRIMARY AND SECONDARY SCREENING

Section I.C of the report describes which topics were studied, which were not, and why. It is important to understand that our assessment of ASP performance concentrated on the use of the ASP in the so-called Secondary screening role: Primary screening detects the presence of radiation in cargo; Secondary screening identifies the isotopes to determine whether or not there is a threat.

One reason we focused on Secondary screening was DHS's intent, as of last Fall, to make an initial deployment to Secondary in order to gain greater operating experience with the ASP. We were charged with informing that decision. Another reason is that, in our judgment, the existing test data are insufficient to assess the operational impact of using the ASP in the Primary role. Section V.C of the report discusses the potential benefits and risks associated with using ASP in the Primary role, and the reasons why we believe that additional testing and analysis is needed.

OVERVIEW OF REPORT

The report includes a chronology of events associated with the review itself, a description of the process used to ensure quality and objectivity, a summary of our technical approach, the system-of-systems framework that we developed in order to assess the operational significance of improved detection and/or identification capa-

bility, and, of course, our independent assessment of the ASP test procedures and the test results.

A series of appendices provides additional technical detail, as well a list of source documents, biographies of the team members, and a copy of the Conflict-of-Interest/Non-Disclosure Agreement (COI/NDA) form that each of them was required to complete. As mentioned previously, the DNDO and CBP Response to the interim report is included as an appendix, as is the IRT's assessment of that Response.

The report findings are organized around the Terms of Reference (TOR). The TOR asked the team to do two things: first, assess the ASP testing approach; and second, compare the performance of the ASP to first-generation radiation detection and identification systems.

REPORT FINDINGS—ASP TESTING APPROACH

The IRT identified several aspects of the overall testing approach that we believe could and should be improved. In general, these include a broader characterization of system performance and a stronger linkage between test results and operational outcomes. We developed an operational process flow and proposed scoring schema that we believe could help DHS do a better job in assessing the operational impact of the ASP. We also looked at the test procedures that were used in 2007. Although those procedures were not ideal, we did not find any evidence that the test results were thereby biased or manipulated.

REPORT FINDINGS—ASP PERFORMANCE

In assessing ASP performance, the IRT considered both security (minimizing the chance that a threat would be allowed to enter the United States) and commerce (minimizing the unnecessary screening and inspection of innocent cargo). We identified the key variables and made an independent estimate of ASP impacts on security and commerce based on test data, operating experience with first-generation systems, physical first-principles, and other factors. As noted earlier, our assessment of performance assumes that the ASP is used in the Secondary screening role, to replace the hand-held systems that are currently used.

In general, we found that the hand-held systems currently used to identify radioisotopes in cargo are characterized by wide variations in performance. These variations derive from the degree to which these systems rely on the judgment of the CBP Officer in adjudicating radiation alarms, the degree to which their performance depends on source-detector geometry and the ability to localize the source within the container, and the degree to which their performance can be degraded by operator inattention or fatigue.

The ASP could—if it performs in the field as intended, and if appropriate standard operating procedures are developed—substantially reduce these variations in performance and thus reduce some key uncertainties in the Nation's ability to counter the threat of nuclear smuggling.

REPORT FINDINGS—OTHER

Many of the issues associated with the ASP test program are rooted in a larger set of issues having to do with the processes by which DHS manages large and/or complex acquisition programs. Accordingly, the IRT also offered a number of observations concerning the need for greater discipline in DHS acquisition management, requirements, and test and evaluation oversight.

CONCLUDING REMARKS

I am grateful for the opportunity to be of service and to help inform important decisions on homeland security issues such as nuclear smuggling. I will do my best to answer any questions you may have, and I will gladly make myself available to you and your staff for more detailed discussions if you wish. I respectfully request that my formal statement be submitted for the record. Thank you.

Mr. LANGEVIN. The Chair now recognizes myself for 5 minutes for purpose of questions.

Mr. Oxford, I would like to begin with you.

As I stated in my opening statements, several findings in both reports caused me concern, and I would like to discuss one that I found particularly troubling, and perhaps you can help clarify. The unclassified executive summary phase of your report states that when it comes to identifying mass sources, PVT system perform-

ance appears to be better than ASP systems, because the PVT systems are on Naturally Occurring Radioactive Material, or NORM. As I understand it, the whole reason for pursuing ASP is because PVT makes no distinction between threat material or NORM. So the ASP is supposed to be able to distinguish between these two types of material.

However, the report indicates that when a threat object is masked by NORM, the ASP is only seeing the masking material and not the threat object. This, in effect, makes it no better than the PVT. In some cases, it could even be more dangerous because if the ASP indicates that threat material masked by NORM is NORM only, then we have a false negative which could let dangerous material in.

However, it seems to me that because PVT cannot distinguish between the two at all, that you have the same problem with that system. I don't understand how you would say that the PVT performed better, and I will get to explain that in some more detail.

Mr. OXFORD. Thank you, Mr. Chairman. In fact in your opening statement, you mentioned the nuances that go on in this business. You are right on in that regard.

PVT will alarm on all NORM. In the report it says that it has higher alarm rates, which isn't necessarily the proper metric, as you tried to point out. When it does alarm, again, we have a lot of nuisance alarms. That gets sent to secondary.

The problem in secondary, and if you refer to the IRT report—this is where they become closely coupled—you are now dependent on this small hand-held device to be able to try to find the threat in the middle of the masking sources.

We have done analysis that shows to actually scan an entire container would take upwards of an hour with a hand-held device to be able to localize a potential threat. The hand-held devices will actually lock onto the highest output from the container and would likely pick up the NORM material regardless of what was embedded in it. So you are right in saying that if you refer to secondary, it doesn't necessarily get better.

Now, on the other side with ASP, you have to couple the Phase III report along with the Phase I report, where we tested against the actual threat basis that I referred to in my opening statement. In that case where we looked at masking cases with the size of sources that are representative of the actual threat that we are designing against, we were getting probability of detection and ID, both in primary and secondary, of greater than 95 percent.

So when you see the cases in the Phase III report, what you are seeing is a reflection of having now extended the size of the sources to, in some cases, a source size of less than approximately 15 percent of the threat basis, so we actually tried to look at how far we can extend the performance of ASP under those conditions. Even in those cases, we are getting answers of 50 to 60 percent, probability of detection ID for ASP against a much broader threat than what you see. So you have to really combine the Phase I and Phase III test reports to see the broad range of the outcomes.

Mr. LANGEVIN. To go back to the original question, does PVT perform better against masked material than ASP?

Mr. OXFORD. Again, it is not a fair comparison to do PVT and ASP. What you have to do is actually distinguish between the material, so you actually have to compare the overall alarm rates in primary to the ability in secondary to be able to find whether you can identify the threat source or not.

So in this case you have to compare ASP and primary and secondary to a PVT and a hand-held device; and secondary, because it is the hand-held device that gives you the identification and secondary. If you look at the IRT report, they spent a lot of time looking at the comparison of ASP and the RIID, the hand-held device and secondary. We think there are severe limitations of the hand-held device and secondary. So in case if you look at the system-to-system comparison, PVT does not outperform ASP.

Mr. LANGEVIN. In its report, the ASP Independent Review Team found that DHS could benefit from an independent operational test and evaluation process and organization structure to ensure that testing measures the operational performance and reliability of the new system.

Mr. Thompson, what were the factors with ASP testing that led to the IRT to make this recommendation? For Director Oxford, does the DNDO plan, too, use such an independent process or organization in the ASP testing plan for the next several months?

Beyond just ASP, do you agree with this general finding, and will you use an independent organization to conduct testing on other technologies developed by DNDO?

We will start with Mr. Thompson.

Mr. THOMPSON. Thank you, Mr. Chairman.

The factors that were behind that statement I would characterize as general principles or best practices, if you will, of test and evaluation. It is not uncommon in other organizations such as DOD to make a careful distinction between development tests conducted by the developing entity for the purpose of trying to improve the system and refine the design, make it better, prove that it does what it can do, versus operational test, where you put it in the operational environment, you let the actual operators operate it.

Since those are too clearly difference types of tests with two clearly different kinds of objectives, most organizations will assign two different entities to be responsible for those.

Mr. LANGEVIN. Thank you. Director Oxford.

Mr. OXFORD. Mr. Chairman, we agree with the recommendations.

As I noted in my opening statement there are several things in that report that we said we were going to adopt. I would also like to allow Ms. Duke to address this from the Department's perspective as well, but we are already taking steps to bring in independent testing on behalf of the operational basis Dr. Thompson mentioned, where we will essentially rotate the lead responsibilities over the course of the testing that will take place this year.

For those purely developmental tests, DNDO will still have the lead, although we will have an external oversight function that we will review all test plans, assign those test plans and then also report to the Under Secretary for Management about their adequacy.

When it gets into the operational testing, DNDO will provide mainly a support role as opposed to a lead role in the future because we did not have this independent capability.

Again, I would like Ms. Duke to have the opportunity to address how the Department is going to do this.

Mr. LANGEVIN. Ms. Duke.

Ms. DUKE. Yes. I also agree with the recommendation, and we are clearly looking at how we can build the independent operational test and evaluation capability for the Department.

Under Secretary for Science and Technology Jay Cohen has the lead on test and evaluation for the Department, and his executive agent is George Ryan, who has about 50 years of experience in the tests and evaluation. So we do believe that Mr. Ryan, as I stated earlier, will serve in what would be equivalent to the director of Operational Test and Evaluation role that DOD has for the continued testing of the ASP program.

Mr. LANGEVIN. Thank you. The Chair now recognizes the Ranking Member for 5 minutes.

Mr. MCCAUL. Thank you, Mr. Chairman.

Again, thank you for holding this hearing. I think the timing couldn't be more relevant. As we discovered yesterday from a computer seized from the FARC, a terrorist organization in Latin America, revealed that there were many communications with Venezuela and Hugo Chavez who is aligned with Iran, discussions about nuclear material, discussions about dirty bombs.

I have always been concerned about that alliance to the Middle East in our own hemisphere, and this puts it in our own backyard. Coming from Texas I am always concerned, without engaging in a lot of hyperbole or irresponsible rhetoric, that the border does face some challenges in the post-9/11 world because that is obviously where this stuff is going to come from and cross over into. That, I think, demonstrates the need for this.

I commend all of you for your work in this area because it is so important.

Mr. Thompson, your great work in reviewing this ASP system, making these outside independent recommendations is very helpful.

I tend to agree with you that the ASP when perfected will reduce the uncertainty in the current process. I think it will provide a more accurate system that will be more efficient. They can help the flow of commerce at the border, and yet still enter our ports of entry and also, at the same time, provide more accurate readings in terms of threat material and to distinguish between real threat material and nonthreat materials.

So, having said all of that, I think we can all—I think I am safe in saying this—I think we can all agree on the goal here, and that is to provide the best technology possible in this screening process. I happen to believe the ASP is a way to go in this.

I will throw this out to all three of you. What do you see as the current deficiencies in the ASP in terms of what needs to be improved upon? Perhaps more for you, Mr. Oxford, what is your timetable here in terms of your last round of testing and the ability to get this out? Then how, assuming we do perfect this, how soon can this be operational in the field?

Mr. OXFORD. Thank you for those questions.

First of all, I will use a combination of the charts that are available to you and try to speak to this in a logical way. When we did

the last round of field evaluation systems, we found what a key—what I call operational functionalities that CBP required that weren't quite ready for deployment, and this is what led to the Secretary's decision to delay the program. Those functionalities are not its ability to distinguish and detect and identify the threat.

Let me just give you some examples of what this means. Once you put these systems into this stream of commerce, as you have already mentioned, we can't allow commerce to stop. We are having trouble with what I call system stability with some of the systems, where if they powered down they would take hours to reboot, which means you are essentially cutting down the traffic in that lane.

The specification that the current ASP contractors are working to is they have got to be able to reboot within 1 minute. If they use the natural background readings that were already in the system, they have to be able to reboot within 7 minutes if they want to collect new background.

That is a stability function. It is not performance against the threat. It is the operability of the system that CBP requires. In a similar way, they want their supervisory computer to be able to control four traffic lanes at any port of entry. We focused on one lane. This is a broadening of the requirement the CBP asks for.

The contractors are now building to that. What will be the results of that—if you look at the chart that's in front of you—will be the first round of testing that we call systems qualifications test. That will be done at the vendor's location where they will start to demonstrate to ourselves, to the independent test office, as well as to the Customs and Border Protection, that these functionalities have now been built into the system and that they are stable.

That will allow us to mature down the path of taking these out to Pacific Northwest National Laboratory, the CBP and the independent test organization we now use, to make sure, once again in a field-like environment, that these systems are ready for fielding. That will then be followed by deployment to CBP locations at CBP's choice. That is where DNDO will play a support role as opposed to a lead role.

Independent of that, we will go back and verify that the performance against a threat has not been degraded in any means by the system upgrades. We always worry that if you upgrade a system that somehow you have lost performance elsewhere. So it is parallel to what CBP and the independent test organization do. We will take these back out to Nevada to make sure that they have not been degraded against the threat. That should lead us to an August timeframe, late fiscal year 2008, to a recommendation for the Secretary.

Mr. MCCAUL. So if we are fortunate, by August we could have the new system?

Mr. OXFORD. We will be able to make an immediate production and deployment decision if the Secretary chooses to. We have low-rate initial production systems sitting in the warehouse floors with our current vendors, and we can immediately provide the upgrades to those systems, and those would be the initial deployment units.

So that would be rather rapid while we go into the production buy, which is a 4- to 6-month time period to place the order to

begin delivery. So we will be able to field roughly 45 systems within a very short period of time after the decision is made.

Mr. MCCAUL. That is very good.

Mr. Thompson, do you have any comments?

Mr. THOMPSON. Yes, sir. In terms of improvements, I will mention four things: One area just has to do with the normal things you do as you take a technology or a system and you mature it, so it has to do with things like does the system operate reliably in the field. Those things you test and you prove them out over time.

The second area has to do with some of the details of how you set thresholds for detection and identification. That is a pretty complicated thing that goes on within the algorithms of these systems. I think it is fair to say that DNDO is still doing some learning on that, again, as you normally do when you develop a system.

The third area concerns what I call standard operating procedures, again, something that you do iteratively when you field a new system. It is a marriage of the technology and the procedures that you used to implement it.

So, for example, is 2 miles per hour the right speed for the truck to go? What exactly should the investigating officer do when he sees a certain alarm condition? Those kinds of things.

My fourth comment is not about the ASP system or technology itself, but on the analysis of test data, and you saw this in the report. It has to do with how you slice and dice the test data. I think there are some things that probably could be done better in this round of testing, but again that concerns the analysis of data, not the ASP system per se.

Mr. MCCAUL. Just for clarification again, Mr. Oxford, do you think by August you would have the last round of testing and then, if successful, it would take maybe 4 to 5 months of production and then all the systems could be upgraded in the field at that point?

Mr. OXFORD. The initial upgrades would actually be for the systems that were manufactured under what we call low rate of initial production. They have already been manufactured. We have been precluded by the appropriations language to doing—to spending any acquisition money to upgrade those right now.

So as soon as we would get a decision from the Secretary, we would have the ability to upgrade those systems immediately. That is not the 4 to 6 months. The 4 to 6 months would be to place the orders and to begin receiving deliveries of the brand-new systems on top of the 45 that are sitting in the warehouses now.

Mr. MCCAUL. Thank you.

Mr. LANGEVIN. I thank the Ranking Member.

The Chair now recognizes the gentleman from New Jersey, Mr. Pascrell, for 5 minutes.

Mr. PASCRELL. Thank you, Mr. Chairman.

Mr. Chairman, the Nuclear Detection Office, their cost-benefit analysis, it would seem to me, the report says this, does not justify the recent decision to spend $1.2 billion to purchase and deploy the ASP technology.

In particular, the Domestic Nuclear Detection Office used, the report says, "incomplete and unreliable data to evaluate the cost-benefit."

Mr. Chairman, we just had an example of what is going on in Homeland Security last week when we discussed the fence along the south, the southern border, Solution 28, Project 28. We saw how money was spent there, and now they have to replace everything.

I would hope, because I know the great work that Ms. Duke is doing since you have come on board, you have only been there a little while, but you are doing a good job and I think you are trying to get things in order. But there is a perception, you know, why are we—how did we ever get ourselves in the position to using incomplete and unreliable data?

The enemy is not—I mean the enemy, the enemy is within. We can't get it right. We are spending money in a very foolish way. We are wasting the money.

We know in this situation that we need a—you need a primary, and you need static screening. I think that is very obvious, it is very clear. You might have to spend more money up front, but you either pay now or you pay later, and that is what we are dealing with. I am very concerned about this general perception, about spending money and then going back and having to do a lot of redos again and again.

So, Dr. Oxford, I would like to ask you a question. We need the most sophisticated technology at our ports to ensure that there is proper nuclear detection. I think we would agree on that.

But we must strike a balance between the technology advancements, and, obviously, what it is going to cost. Those are factors that have to be taken into consideration.

It is my belief that the DNDO should not simply invest in new technology—this is my opinion—should not simply invest in new technology if it does not make a significant advancement over the equipment that is already deployed in the field. If it is not going to be a significant improvement, we are wasting money.

So my question to you is, do Customs and Border Protection members, officers in the field, do they regard advanced spectroscopic portal monitors as a significant leap forward in detection over the equipment that is presently used in the field?

The follow-up question to both Dr. Thompson and Under Secretary Duke is, do you have any additional thoughts on this question?

Let me start with Dr. Oxford.

Mr. OXFORD. Thank you. First of all, I need to set the record straight, because this $1.2 billion number is out there, and it is in the press, and it is wrong. But it is the total value of the contracts we signed.

But right now, if we live with the deployment decisions that we have planned with CBP, the total acquisition of systems would result in about 350, not that that is a small number, but about $350 million. So we have a contract flexibility to buy up to that amount.

Mr. PASCRELL. The total project is $1.2 billion, what we are talking about specifically. But we can't get through the specific project unless we go through each of those, so the $1.2 billion——

Mr. OXFORD. It is a contract ceiling. Contract ceiling versus what we plan to spend.

Mr. PASCRELL. I understand that. I think the Secretary will ultimately make the decision, not CBP, as to whether this represents a significant increase in operational performance. We are not spending the acquisition money in the amount that you are citing until the Secretary makes that decision, so we have not gone out and started to spend that money.

We are spending development money to get to the point where we can make that acquisition decision through the testing program that I have played out today.

CBP is a partner in this. I will tell you if you look at the numbers at Los Angeles/Long Beach, they are getting 400 to 500 nuclear alarms per day. They have dedicated almost 200 officers to this mission to help resolve those alarms. Current projections of ASP performance would allow that number to come down to 20 to 25 alarms that they would have to take seriously, which is a tremendous improvement in their flexibility to manage all the missions that CBP——

Mr. PASCRELL. Detected in one example, in one specific area we are talking about, what have we detected? What have we concluded? What have we found? Are they all false alarms? Are they all relevant? None of them, all of them?

Mr. OXFORD. No. So far if you look at the test data we have available, we have been able to against the threat basis that I mentioned in my opening statement that we are getting probability of identification and detection against those threats of greater than 95 percent. That is a much higher number than anything that is in the field today.

Second, when we looked at inserting these systems into an operational port, and we did this at the port of New York-New Jersey, we are able to show that the secondary referral rates right now would come down by at least a factor of 10. So the amount of secondary referrals that the operator would have to pay attention to is down by at least a factor of 10, maybe as much as 20.

That is the test data we have available. We will evaluate that over the course of the test program that I have laid out for you today.

Mr. PASCRELL. Would you agree when I am saying that we need a primary and secondary screening process so that we have a backup system that works that may be more cost-effective even though you have to spend more money up front?

Mr. OXFORD. Absolutely. That is the current configuration at our ports, at our land-border crossings. That is the model that we will continue to follow and just make CBP more effective.

Mr. PASCRELL. Madam Under Secretary.

Ms. DUKE. I agree. I think the position of CBP which was considered in the Secretary's decision was that they see significant promise in the ASP technology, but that the amount of operational test and evaluation done introduced too much risk.

In all the decisions we have to make, Vayl has to make in terms of being the program executive, are really risk management. You have to tradeoff the risk of schedule, of performance, of putting out a technology that is not ready to be done. So throughout this process we will continue to manage that risk so that we can get the technology out as quickly as possible if the test results continue to

demonstrate it is an improvement in threat detection and identification, but not put it out so quickly that the risk is actually increased because the operators aren't ready to use it. That is what we are going forward with CBP and DNDO.

Mr. THOMPSON. Sir, just three comments, if I may. First—and I guess this is my own clarification of the record—I believe the language that you have read on incomplete and unreliable data for the cost-benefit analysis is actually from a GAO report that was either circa October 2006 or——

Mr. PASCRELL. I think it is. They did a report also.

Mr. THOMPSON. That is correct.

Mr. PASCRELL. You don't identify with what they said? You don't agree with that?

Mr. THOMPSON. We were not tasked to look at the cost-benefit analysis or, I should say, to renew the cost-benefit analysis. I will say that since the time the cost-benefit analysis was done, there is much more test data. If the analysis were to be redone, it would use the new and updated data, I am sure.

The second point I wanted to make is I agree with your statement that it is important to look at both the costs and the comparison to the existing equipment. Absolutely. That was the reason for the second question that Mr. Schneider asked us to compare the ASP to the existing fielded systems.

I won't quote the numbers here in open session, but I think you can see that there are some potentially pretty significant improvements in terms of reducing the probability of a missed threat, even just with a deployment to secondary, assuming that the standard operating procedures and so forth can be gotten right.

The third point I want to make about ASP, the operator, is just an antidote to illustrate that that can be a pretty tricky affair. When the team went out to Long Beach and they had both the first-generation systems and the ASP side by side, and we said to the operators how do you like this ASP thing, they said—one of them said, I don't like it. We said, why not? It disagrees with my first-generation system. I said, well how do you know the first-generation system is telling you the right thing?

So it is—you don't always get the carefully considered result by just asking the operator.

Mr. PASCRELL. Of course the response from the operator is—you know, has to be tested too. But it would seem to me that that information must be part of your conclusion. These are the people that are going to be using this equipment. Their input into the equipment, and how the equipment should be used and what they are looking for would seem to me to be essential if we are ever going to protect the country.

Mr. THOMPSON. Absolutely, I agree with you, sir, so the operator is the expert when it comes to how this system will be used and whether it is useful to him in that way.

Mr. PASCRELL. Well, don't you ask the people who are going to use the equipment: What don't you have that you should have? Don't you kind of work that into the criteria of what new stuff is going to come on line?

Mr. THOMPSON. Yes, sir, that is an important step in the process.

Mr. PASCRELL. Thank you, Mr. Chairman.

Mr. LANGEVIN. The Chair now recognizes the gentlelady from the Virgin Islands, Ms. Christensen, for 5 minutes.

Mrs. CHRISTENSEN. Thank you, Mr. Chairman, and thank you for holding this hearing.

Let me just say that the whole thing, as my colleague before me said, we had the hearing on the fence and the technology on the fence and funding money that was spent, to only now find that we have to redo certain parts of the system. It really troubles me that a request for appropriation would be made to purchase a technology and we would have to say test it first.

So I am hoping—and I think I heard from Ms. Duke that more independent review teams will be set up and a process will be in place so that we don't have to go through this over and over again.

Some of my questions have to do with the process, and I guess I would start with Dr. Thompson.

One of your findings was that in the Phase I test, the team didn't find a document that laid out the requirements of the operational performance requirements and, instead, just a system specification that ASP should provide 95 percent or greater probability of detection. You concluded that this very reliance on system specification versus operational performance requirements made it difficult to achieve the real purpose of the test, which was to measure the progress of the ASP program toward meeting the operational program objectives.

Can you expand on that, explain what the concern was there?

Mr. THOMPSON. Yes, ma'am, I will certainly try.

Again, it has to do I think with what questions you ask when you are trying to gauge a program like this.

You can ask the question: Does this machine here have the ability to detect such and such of a substance at 95 percent probabilities, or whatever probability, and that is one question you can ask and that's a good and useful question.

But there is a larger question as well which is: What is the probability that a threat will actually get through at the ports? There has to be a way to relate the answer to the first question to the answer to the second question, and that was one step that we found difficult to do.

The good news is that the team felt compelled to be as constructive as possible so we actually constructed an end-to-end analysis framework and offered it to the Department as an example of how one might take the existing results and use them to answer that larger question.

Mrs. CHRISTENSEN. Dr. Oxford, have later tests followed that have addressed this problem? How would you specify the mission objectives, perhaps, in response to this concern from IRT?

Mr. OXFORD. Yes, ma'am. A couple of points that I would like to point out. First of all, we are going back and we are addressing the specific requirements of the customer in terms of the functionalities they need in the field—as I pointed out earlier—that we will make sure that the unique features of these systems that CBP requires are built into the system and adequately tested, so that when these are delivered they will function as CBP requires.

The other factors that Dr. Thompson mentions in terms of how do we score, how do we connect the operational outcomes was again

something—if we go back to the Chairman's comments, it is very nuanced. The fact that we weren't able to directly explain the test data in some cases and how we scored it made it hard for some people in the limited amount of time to connect that to the operational outcome.

We accept that, and we are trying to go come up with a better scoring mechanism where people can look at the results and then can make a direct comparison of that. That is what we will use when we go to the Secretary for any decision.

Mrs. CHRISTENSEN. The processes that you are setting up for independent review and analysis of new technology goes beyond the technology related to nuclear material, correct?

Ms. DUKE. Yes.

Mrs. CHRISTENSEN. Because several issues have been brought to our attention, for example, on the new passport card and changes that are being made; the fact that the new one doesn't have these identifying things on the back. So technology like this also—has it been going through the same process, being tested for efficiency and effectiveness?

Because it would just seem to me, just as a layperson in this field, that having this embedded information would make the card a better card.

Ms. DUKE. Yes, there are two pieces to it. One is the test-and-evaluation piece, which we are building. We do think we need an independent test capability. Whether we rely on one that exists in the Department of Defense or somewhere else or build our own has not been decided. We do think we need that sustained independent operational test capability.

The second piece is in terms of just as these investments, whether it SBInet, whether it is one of our credentialing, our identification cards, what we are building is an investment review process where these major programs—and we have about 100 of what we consider major programs—would come before the Department at key milestone decisions.

So in the case of ASP, we are at between low-rate initial production where they buy a small number of machines to test them, go into the production decision, so that is a system that is going to be put in for all our major acquisitions.

What we are doing right now to kind of, since we are just building that capability, is we are looking at all the major programs as they stand currently. As I said in my opening statement, we have done almost 40, what we are calling quick looks, just looking at the existing programs that haven't had oversight sustained, and assessing them based on risk and then focusing our attention on the programs that appear to have the most acquisition risk.

Mrs. CHRISTENSEN. Thank you, Mr. Chairman.

Mr. LANGEVIN. I thank the gentlelady.

The gentleman from Texas, Mr. Green is recognized.

Mr. GREEN. I thank you, Mr. Chairman, and I thank the Ranking Member as well for hosting this hearing, and I thank the witnesses for appearing.

I have some information indicating that GAO has had some concerns. Is this true?

Mr. OXFORD. They have looked at the program several times, and we continue to respond to their inquiries, yes, sir.

Mr. GREEN. Is it true that they have used terms like "biased methods to enhance performance results" having been used?

Mr. OXFORD. They have used those terms, yes.

Mr. GREEN. How have you responded to their contention that the methods have not been, shall we say, using the best practices for methods?

Mr. OXFORD. We clearly have disagreed with that, and we were happy to see that the IRT, when they took a fresh look at this, found no evidence of biasing of the data or manipulation of the data.

Mr. GREEN. So, do we still have a dispute between IRT and GAO?

Mr. OXFORD. I wouldn't want to speak on behalf of the GAO. I don't think they have had to even respond to the IRT report at this point.

Mr. GREEN. The IRT report has gone to GAO?

Mr. OXFORD. Well, it is separate from DNDO, so I would have to ask the Chair or Ms. Duke, as to what the dispensation of that report is.

Ms. DUKE. I do not know if—I would have to take a get back on that. I do not know if the final report has gone to GAO.

Mr. GREEN. How long has the report been one that we would label as final?

Ms. DUKE. The final report came—is dated February 20.

Mr. GREEN. Of?

Ms. DUKE. Of 2008.

Mr. GREEN. 2008. Is there in the process a procedure or requirement that the report eventually will get to GAO?

Ms. DUKE. There is no requirement to distribute the report at all, I don't believe. What we did within a week of receiving it, we briefed the Secretary on it and then immediately we released it to our authorizing and our appropriation committees, but that was because we knew the continued interest. So it was sent. But to my knowledge we have not sent it to GAO.

Mr. GREEN. If GAO has the concerns regarding GAO not getting the reports and whether or not the concerns have been adequately dealt with——

Ms. DUKE. If GAO would like the report, I would have no objection to releasing it to them.

Mr. GREEN. Mr. Chairman, is it appropriate for us to in some way expedite this process of having GAO review the report?

Mr. LANGEVIN. Well, I agree with Mr. Green's question and the suggestion that the GAO should look at the report, and I would urge the Department of Homeland Security to forward that report to GAO so they might take a look at it.

Ms. DUKE. Yes, Mr. Chairman. I don't have any objection to that.

Mr. LANGEVIN. Thank you.

Mr. GREEN. Thank you, Mr. Chairman. I yield back the balance of my time.

Mr. LANGEVIN. I thank the gentleman. I thank the witnesses for the testimony today. It has been very enlightening. I want to close by saying I have been a member of the Homeland Security Com-

mittee since its inception when it was first a select committee, and of course it was right after 9/11 that it was formed. I can remember the great concern of the entire country that we could potentially be vulnerable to a nuclear attack, being a material—either a weapon or material being smuggled in across our borders and we were totally unprotected. We have come a long way since then. I commend the DNDO and Department of Homeland Security for moving as aggressively as they have to ensure that we have maximum coverage of radiation portal monitors at our ports and border crossings. This is a daunting task. Obviously the work is not yet done, but significant progress has been made at least with the deployment of these first generation radiation portal monitors. I know we are anxious to get to the newest and best technology available. We all hope that it will be as soon as possible, but progress has been made and we look forward to more of it in the future.

Thank you all for the great work you are doing for the country. I appreciate it, and I do want to thank the witnesses for the valuable testimony, the Members for their questions, and the Members of the subcommittee, including myself, may have additional questions for the witnesses and would ask that you respond expeditiously in writing to those questions.

Hearing no further business, the subcommittee stands adjourned.

[Whereupon, at 3:41 p.m., the subcommittee was adjourned.]