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Report to Congressional Requesters

January 2009

NUCLEAR DETECTION

Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities

GAO-09-257

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Highlights

Highlights of GAO-09-257, a report to congressional requesters

Why GAO Did This Study

In April 2005, the Domestic Nuclear Detection Office (DNDO) was established within the Department of Homeland Security (DHS) to enhance and coordinate federal, state, and local efforts to combat nuclear smuggling domestically and overseas. DNDO was directed to develop, in coordination with the departments of Defense (DOD), Energy (DOE), and State (State), a global strategy for nuclear detection—a system of radiation detection equipment and interdiction activities domestically and abroad. GAO was asked to examine (1) DNDO's progress in developing programs to address critical gaps in preventing nuclear smuggling domestically, (2) DNDO's role in supporting other agencies' efforts to combat nuclear smuggling overseas, and (3) the amount budgeted by DHS, DOD, DOE, and State for programs that constitute the global nuclear detection strategy. To do so, GAO analyzed agency documents; interviewed agency, state, and local officials; and visited select pilot program locations.

What GAO Recommends

GAO recommends that DHS (1) develop a plan for the domestic part of the global strategy, and (2) in coordination with DOD, DOE, and State, use the Joint Annual Interagency Review to guide future strategic efforts to combat nuclear smuggling. GAO also has two recommendations related to maritime planning. DHS did not directly comment on the recommendations, but said they aligned with DNDO's efforts.

To view the full product, including the scope and methodology, click on GAO-09-257. For more information, contact David Maurer at (202) 512-3841 or maurerd@gao.gov.

What GAO Found

DNDO has made some progress in strengthening radiation detection capabilities to address critical gaps and vulnerabilities in combating nuclear smuggling, which include the land border area between ports of entry into the United States, aviation, and small maritime vessels. However, DNDO is still in the early stages of program development, and has not clearly developed long term plans, with costs and time frames, for achieving its goal of closing these gaps by expanding radiological and nuclear detection capabilities. For example, DNDO and Customs and Border Protection have been collaborating on radiological and nuclear detection options to better secure the land borders between ports of entry. However, DNDO-sponsored field evaluations to test radiation detection equipment are still not complete and DNDO and CBP may not have all radiation detection equipment in place until 2012. In addition, DNDO is in the first year of a 3-year maritime pilot program, working with the Coast Guard and local law enforcement agencies in the Puget Sound, Washington, area to field test equipment and to develop radiological and nuclear screening procedures. However, DNDO has made little progress in (1) developing criteria for assessing the success of the pilot to help determine whether it should be expanded to other locations, and (2) resolving some of the challenges it faces in the pilot program, such as technological limitations of the detection equipment and sustaining current detection efforts.

Although DNDO has no authority over other federal agencies' programs to combat radiological and nuclear smuggling overseas, it has worked with DOD, DOE, and State to provide subject matter expertise and exchange lessons learned on radiological and nuclear detection. However, most of DNDO's efforts are modest in scope, reflecting the fact that these agencies have well-established programs to combat nuclear smuggling. For example, DNDO has been working with State's Global Initiative to Combat Nuclear Terrorism to develop model guidelines that other nations can use to establish their own nuclear detection programs.

According to DNDO, approximately $2.8 billion was budgeted by DHS, DOD, DOE, and State in fiscal year 2007 for programs included in the global strategy for nuclear detection. Of this amount, approximately $1.1 billion was budgeted for programs to combat nuclear smuggling overseas, $1.1 billion was budgeted for nuclear detection programs at the U.S. border and within the United States, and approximately $577 million was budgeted to fund cross-cutting activities, such as providing technical support to users of the radiation detection equipment. DNDO collected budget data and published them in the Joint Annual Interagency Review, an annual report required by Congress. DOD, DOE, and State officials told GAO that this information is used primarily as a status report of individual programs to combat nuclear smuggling. It is not used as a tool to help plan for or inform the future direction of the strategy or to help establish current or future priorities.

Contents

Abbreviations

ASP	advanced spectroscopic portal (monitor)
CBP	Customs and Border Protection
DHS	Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
DOD	Department of Defense
DOE	Department of Energy
IAEA	International Atomic Energy Agency
NYPD	New York Police Department
RIID	radioactive isotope identification device
SAFE Port Act	Security and Accountability for Every Port Act of 2006
State	Department of State
TSA	Transportation Security Administration

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Congressional Requesters

Preventing terrorists from using radiological or nuclear material to carry out an attack in the United States is a top national priority. If terrorists were to carry out such an attack, the consequences could be devastating to national security. Since the events of September 11, 2001, there is heightened concern that terrorists may try to smuggle radiological and nuclear materials or a nuclear weapon into the United States or obtain such materials within the United States. In 2002, Congress established the Department of Homeland Security (DHS) and gave it authority to, among other things, develop and deploy technologies to detect, prevent, and interdict nuclear materials or devices from being transported into and used within the United States.

In April 2005, the President issued a directive establishing the Domestic Nuclear Detection Office (DNDO), within DHS, to enhance and coordinate federal, state, and local efforts to prevent radiological and nuclear attacks. Congress subsequently passed the Security and Accountability for Every Port Act of 2006 (SAFE Port Act), which established DNDO in statute.[1] Among other things, DNDO is required to develop, in coordination with the Department of Defense (DOD), the Department of Energy (DOE), the Department of Justice, and the Department of State (State), an enhanced global nuclear detection architecture—essentially a strategy involving radiation detection equipment and interdiction activities to combat nuclear smuggling in foreign countries, at the U.S. border, and inside the United States.[2] DNDO is responsible for coordinating the implementation of the domestic portion (at the U.S. border and within the United States) of the global strategy, including the efforts of federal, state, and local governments. It is also responsible for developing and acquiring radiation detection equipment to support the domestic efforts of DHS and other federal agencies. The directive and the SAFE Port Act reaffirmed that

[1]Pub. L. No. 109-347, section 501, 120 Stat. 1884, 1932 (2006).

[2]Neither the presidential directive nor the SAFE Port Act, which established DNDO and directed the agency to develop a global nuclear detection architecture, defined the term "architecture." DNDO has interpreted "architecture" as a time-phased, geographic approach to reducing the risk of a radiological or nuclear attack. For the purposes of this report, we refer to the architecture as a strategy.

DOD, DOE, and State, among other agencies, are responsible for programs to combat radiological and nuclear smuggling outside the United States.

In its initial approach, DNDO categorized existing nuclear detection programs into three main geographic regions—overseas, U.S. border, and U.S. interior—which it further divided into nine more specific geographic segments. In addition, agencies identified other programs that support more than one segment; DNDO categorizes these as cross-cutting. While DNDO is responsible for developing the global strategy for nuclear detection, each federal agency that has a role in combating nuclear smuggling is responsible for implementing its own programs. DNDO identified 73 federal programs, which are primarily funded by DOD, DOE, and DHS, that engage in radiological and nuclear detection activities.

Since its inception about 4 years ago, DNDO has been examining nuclear detection strategies along potential pathways—such as air, land, or sea—for smuggling radiological or nuclear material and identified opportunities to improve the likelihood of detection and interdiction. Through these studies, DNDO concluded that potential smuggling pathways outside of traditional ports of entry—where U.S. government efforts have been focused—represented critical gaps in the existing nuclear detection strategy. Specifically, DNDO identified several gap areas, among others, with respect to detecting potential nuclear smuggling and prioritized its efforts on three primary pathways: (1) land border areas between ports of entry into the United States, (2) aviation, and (3) small maritime craft.[3]

These pathways are important because of their size, volume of traffic, and limited deployment of radiological and nuclear detection capabilities. Specifically, the United States has more than 6,000 miles of land border with many locations where people and vehicles can easily enter the United States. Nuclear weapons and material also can be small and portable enough to be carried on most aircraft. On average, nearly 2,000 international commercial flights and over 400 international general aviation flights land in the United States each day.[4] In the maritime

[3]Small maritime craft are vessels less than 300 gross tons and can include recreational boats, commercial fishing vessels, and tug boats. These vessels are subject to few security regulations. For example, they do not have to provide a 96-hour advance notice of arrival.

[4]International general aviation applies to noncommercial, nonmilitary aircraft traveling to the United States from an international location. International general aviation aircraft can range in size from small planes (such as a Cessna 182) to planes as large as a DC-9 or even an Airbus A380.

environment, a Coast Guard risk assessment revealed that small boats pose a greater threat for nuclear smuggling than container ships. There are at least 13 million registered domestic pleasure craft in the United States and 110,000 commercial fishing vessels. These small boats have traditionally been used to smuggle drugs and people, but, as occurred in the attack on the U.S.S. Cole, can be used to deliver a weapon.

GAO was asked to examine (1) DNDO's progress in developing programs to address critical gaps in preventing nuclear smuggling domestically, (2) DNDO's role in supporting other agencies' efforts to combat nuclear smuggling overseas, and (3) the amount budgeted by DHS, DOD, DOE, and State for programs that constitute the global nuclear detection strategy and the extent to which the budget information is used for planning purposes. In addition, we are providing an update on DNDO's efforts to implement the recommendation made in our July 2008 testimony, which presented preliminary observations on the global strategy for nuclear detection.[5]

To evaluate the status of DNDO's progress in developing programs to address critical gaps and its role in supporting other agencies' efforts to combat nuclear smuggling overseas, we reviewed and analyzed documents DNDO used to help create the baseline, or initial strategy, as well as DNDO-sponsored studies on gaps identified in the strategy. We also reviewed our previous reports on nuclear and radiological detection.[6] We interviewed officials from DNDO about steps taken to develop and improve upon the existing strategy for nuclear detection and interviewed agency officials from DOD, DOE, and State who manage programs that are part of the global strategy to obtain their perspectives on how these programs fit into the global strategy and to learn about any new initiatives to address gaps and vulnerabilities. In addition, we interviewed officials from a variety of federal, state, and local agencies—including Customs and Border Protection (CBP), the Coast Guard, the New York City Police Department, and local law enforcement participating in the Puget Sound maritime pilot—to obtain their views on DNDO's initiatives to combat nuclear smuggling. We chose the New York City Police Department because of its efforts to enhance nuclear detection capabilities through the

[5]GAO, *Nuclear Detection: Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture*, GAO-08-999T (Washington, D.C.: July 16, 2008).

[6]See the list of related GAO products at the end of this report.

Securing the Cities initiative and Puget Sound because that was the first location chosen for the maritime radiological and nuclear detection pilot program. We also interviewed subject matter experts from the academic and nonprofit sectors, as well as representatives from the International Atomic Energy Agency (IAEA), to gain their perspective on efforts to develop and implement the strategy. To examine the amount budgeted for the programs that constitute the global strategy for nuclear detection, we analyzed budget data submitted by DHS, DOD, DOE, and State to DNDO as part of DNDO's Joint Annual Interagency Review and spoke with officials from these agencies to discern how this information was used. We assessed the reliability of these data and determined it was sufficient for the purposes of this analysis. We conducted this performance audit from November 2007 through January 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results in Brief

DNDO has made some progress in strengthening radiation detection capabilities to address critical gaps and vulnerabilities in combating nuclear smuggling, which include the land border areas between ports of entry into the United States, aviation, and small maritime vessels. However, DNDO is still in the early stages of program development, and has not clearly developed long-term plans, with costs and time frames, for achieving its goal of closing these gaps by expanding radiological and nuclear detection capabilities. Specifically, we found:

- *Land border areas between ports of entry.* DNDO and CBP, both agencies within DHS, have been collaborating on radiological and nuclear detection options to better secure the border areas between ports of entry. CBP is responsible for developing and implementing screening procedures; DNDO provides the equipment for these operations. DNDO and CBP plan to have radiation detection equipment in place at all 20 CBP sectors by fiscal year 2012. However, DNDO-sponsored laboratory and field evaluations to identify and test radiation detection equipment are still not complete, DNDO has fallen behind on its original test schedule, critical testing has been postponed owing to problems with the detection technology being tested, and DNDO has not estimated the total cost of this effort. In addition, DNDO has not provided CBP with the equipment

needed in a timely manner to improve radiation detection capabilities either at ports of entry or land border areas between ports of entry.

- *Aviation.* DNDO is still in the early stages of developing programs to achieve its goal of screening all incoming international planes, cargo, and passengers for nuclear weapons and material. Although some initiatives in the aviation arena are under way, it is unclear how long this effort will take or how much it will cost. Since December 2007, CBP has been screening 100 percent of passengers and baggage on arriving international general aviation flights (approximately 400 flights per day), as well as the aircraft, for radiological or nuclear materials. However, CBP efforts to screen international cargo have not proceeded as smoothly. Jurisdictional and operational issues between the Transportation Security Administration (TSA), CBP, and the local airport authority delayed efforts to screen international cargo at the initial airport selected for screening until September 2008. Planned expansion of this screening to a total of 30 U.S. airports, which represent 99 percent of incoming international cargo, is not projected to be fully achieved until 2014.

- *Small maritime vessels.* DNDO has developed and tested equipment for detecting nuclear material on small maritime vessels. However, efforts to use this equipment in a port area have been limited to pilot programs for demonstrating the feasibility of screening small vessels. Whereas initiatives to combat smuggling at land border areas between formal ports of entry and through aviation routes are being integrated into already existing CBP screening operations, initiatives in the maritime environment require developing and testing new equipment and new procedures with the Coast Guard and local law enforcement agencies. DNDO is currently in the first year of a 3-year pilot program in Puget Sound and San Diego to design, field test, and evaluate equipment and is working with CBP and Coast Guard as they develop procedures for screening. This review is scheduled to end in 2010, when DNDO will decide whether screening of small vessels for radiological and nuclear material is feasible. However, DNDO has not established criteria for assessing the success of this pilot effort to help determine whether it should be expanded to other locations. In addition, should DNDO decide to continue this program, it does not currently have a plan detailing which locations it would target for maritime radiological and nuclear detection programs, nor has it estimated the total cost of this initiative. Although DNDO is providing state, tribal, and local agencies with initial equipment, support, and training during the pilot, DNDO expects them to seek funding from federal grant programs to sustain these initiatives. For many state and local agency officials we spoke with, the uncertainty of federal resources jeopardizes their ability to continue radiological and nuclear detection activities.

Although DNDO has no authority over other federal agencies' programs to combat radiological and nuclear smuggling, it has worked with DOD, DOE, and State to support these agencies' efforts to combat nuclear smuggling overseas by, for example, providing subject matter expertise and exchanging lessons learned on radiological and nuclear detection. However, most of DNDO's efforts are modest in scope, reflecting the fact that DOD, DOE, and State have well-established programs to combat nuclear smuggling. Some of the areas in which DNDO has been able to contribute to other agencies' overseas programs include (1) working with State's Global Initiative to Combat Nuclear Terrorism to develop model guidelines that other nations can use to establish their own nuclear detection programs and sponsoring a related workshop, and (2) exchanging lessons learned with DOE from its efforts to develop operations to screen for radiological and nuclear materials in the aviation arena. In addition, DNDO has been collecting information and developing an inventory of radiation detection equipment deployed overseas. DNDO subsequently has shared this information with relevant agencies, and agencies have used this information to guide equipment placement decisions.

According to DNDO, approximately $2.8 billion was budgeted by DHS, DOD, DOE, and State in fiscal year 2007 for programs included in the global strategy for nuclear detection; however, agencies are not analyzing this budget information to ensure that resources are clearly aligned with overarching priorities. Of this $2.8 billion, approximately $1.1 billion was budgeted for programs designed to combat nuclear smuggling and secure materials overseas. Approximately $220 million was budgeted for programs to support the detection of radiological and nuclear material at the U.S. border; an additional $918 million funded security and detection activities within the United States. Finally, approximately $577 million was budgeted for a number of cross-cutting activities that support many different layers of the strategy, such as those focused on research and development or technical support to users of the detection equipment. When analyzed by agency, the majority of the $2.8 billion—$1.8 billion, or 62 percent—was budgeted for DOE programs, primarily those related to securing nuclear weapons and weapons material at its source and deploying radiological and nuclear detection systems at international border crossings, airports, and seaports. DNDO collected these program-level budget data in response to a statutory requirement that select agencies, including DHS, DOD, DOE, and State, annually assess their capacity to implement their portion of the global nuclear detection strategy. DNDO's June 2008 report discusses, among other things, programs and budgets in support of the global nuclear detection effort.

The report provides an overview of the global nuclear detection strategy and discusses programs and budgets for combating nuclear smuggling domestically and overseas. Agency officials from DOD, DOE, and State said that this information is used primarily to provide agencies and Congress with a picture of the already established roles and responsibilities within the layered structure of the strategy. The information is not being used, however, as a tool to look more broadly across the global strategy, to help assess the overall strategic direction of global detection efforts, or help establish current or future global priorities, according to these officials.

In July 2008, we testified that DNDO had not developed an overarching strategic plan to guide its development of a more comprehensive global strategy for nuclear detection.[7] We recommended that DHS, in coordination with DOD, DOE, and State, develop a strategic plan to guide the development of a more comprehensive global nuclear strategy including (1) clearly defining objectives, (2) identifying the roles and responsibilities for meeting each objective, (3) identifying funding necessary to achieve those objectives, and (4) employing monitoring mechanisms to determine programmatic progress and identify needed improvements. DNDO agreed with the need for an overarching strategic plan and believes that many elements of such a plan exist in DHS and other agency documents, but that there are gaps and vulnerabilities for which solutions are still under development. As of December 2008, DNDO had not yet established detailed plans to address those gaps and vulnerabilities, nor had it integrated all the plan elements into an overarching strategic plan as recommended.

To complement our July 2008 recommendation, we are recommending that the Secretary of Homeland Security develop a strategic plan for the domestic part of the global nuclear detection strategy to help ensure the future success of initiatives aimed at closing gaps and vulnerabilities. This plan should focus on, among other things, establishing time frames and costs for the three areas of recent focus—land border areas between ports of entry, aviation, and small maritime vessels. In addition, to enhance DNDO's future efforts to combat nuclear smuggling via small maritime vessels, we are recommending that the Secretary of Homeland Security develop criteria to assess the effectiveness, cost, and feasibility of its maritime radiological and nuclear pilot program. Furthermore, should the

[7] GAO-08-999T.

Secretary decide to expand the program beyond the pilot, we recommend that DHS undertake additional planning to identify next steps, including how and where a broader strategy would be implemented, what technology would be needed, what organizations should be involved, and how such efforts would be sustained.

We provided a draft of this report to DHS, DOD, DOE, and State for comment. DHS and DOD provided written comments, which are presented in appendixes I and II, respectively. DOE and State provided technical comments, which we incorporated as appropriate. DOD concurred with the recommendation that the Secretary of Homeland Security, in coordination with the Secretary of Defense, Secretary of Energy, and Secretary of State, use the Joint Annual Interagency Review to guide future strategic efforts to combat nuclear smuggling. DOD stated that greater use could be made of the review associated with the development of this annual report to guide U.S. efforts to combat nuclear smuggling. DHS did not directly comment on our recommendations but noted that the recommendations aligned with DNDO's past, present, and future actions. DHS pointed out what, in its view, were a number of shortcomings in the draft report. Specifically, the department believes that we did not give enough credit to DNDO's strategic planning efforts. Furthermore, the department believes that we did not clearly and adequately explain the background and context of DNDO's efforts to develop a global strategy, what has been accomplished so far, what remains to be done, and what challenges it faces. Finally, DHS asserted that the draft contained a number of inaccuracies and omissions that make it less reliable and useful than it could be. DHS also provided a number of more detailed comments on specific issues presented in the draft report. We have addressed those comments in our detailed responses in appendix I and incorporated changes, where appropriate.

We believe that our report fairly and accurately presents DNDO efforts to develop and implement a global strategy to enhance nuclear detection efforts. We have reported DNDO's key initiatives to improve radiation detection capabilities in the areas of land borders between the ports of entry, aviation, and maritime. For example, the report acknowledges how DNDO has helped highlight the need to address these critical gaps and has also made some progress in developing and supporting initiatives to close these gaps. In our view, DNDO needs better planning to improve the chances that the strategy will be successfully implemented and sustained in the future. In its comments, DNDO agreed that the overarching strategic plan we had previously recommended in our July 2008 testimony based on

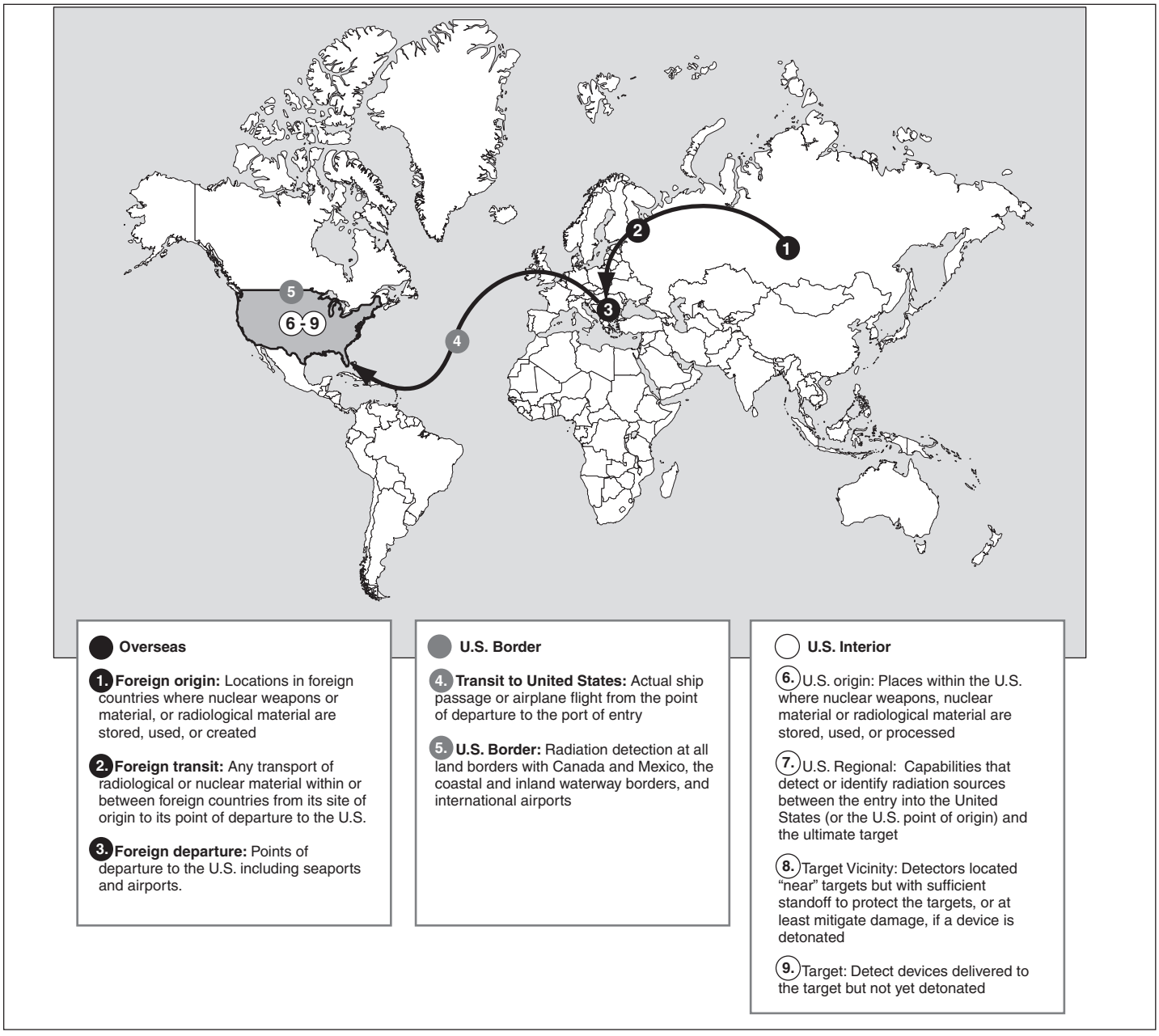
our preliminary findings on this very issue was valuable and that work on such a plan has begun.

Background

According to IAEA, between 1993 and 2006, there were 1,080 confirmed incidents of illicit trafficking and unauthorized activities involving nuclear and radiological materials worldwide. Eighteen of these cases involved weapons-usable material—plutonium and highly enriched uranium—that could be used to produce a nuclear weapon. IAEA also reported that 124 cases involved materials that could be used to produce a device that uses conventional explosives with radioactive material (known as a "dirty bomb"). Past confirmed incidents of illicit trafficking in highly enriched uranium and plutonium involved seizures of kilogram quantities of weapons-usable nuclear material but most have involved very small quantities. In some of these cases, it is possible that the seized material was a sample of larger quantities available for illegal purchase. IAEA concluded that these materials pose a continuous potential security threat to the international community, including the United States.

Nuclear material could be smuggled into the United States in a variety of ways: hidden in a car, train or ship; sent through the mail; carried in a private aircraft or small boat; carried in personal luggage through an airport; or walked across the border. In response to these threats, U.S. agencies—including DHS, DOD, DOE, and State—fund, manage, and implement programs to combat nuclear smuggling in foreign countries and the United States. DOD, DOE, and State are responsible specifically for the overseas programs. Many of these programs started operations prior to DNDO's creation and collectively cover all of the geographic regions of the global strategy. (See fig. 1.)

Figure 1: Elements of the Global Nuclear Detection Strategy



Sources: GAO analysis of DNDO data and Map Resources (map).

For example, DOE's Materials Protection, Control, and Accounting program, initiated in 1995, provides support to the Russian Federation and

other former Soviet Union countries to secure nuclear weapons and weapons material that may be at risk of theft or diversion.[8] In addition, during the 1990s, the United States began deploying radiation detection equipment at borders in countries of the former Soviet Union. DOD's Cooperative Threat Reduction program was established in the early 1990s to help address proliferation concerns in the former Soviet Union, including helping secure sites where nuclear weapons are located.[9] Two other DOD programs have provided radiation portal monitors, hand-held equipment, and radiation detection training to countries in the former Soviet Union and in Eastern Europe. Similarly, DOE's Second Line of Defense program, initiated in 1998, supplies radiation detection equipment, training, and communication systems to Russia and other countries.[10] DOE's Megaports Initiative, also part of the Second Line of Defense program, began in 2003 and is focused on providing radiation detection systems at major international seaports. Once the equipment is installed, it is then operated by foreign government officials and port personnel working at these ports.[11] State also has programs that provide radiation detection equipment and training to numerous countries.

Domestically, DHS, in conjunction with other federal, state, and local agencies, is responsible for combating nuclear smuggling in the United States and has provided radiation detection equipment, including portal monitors, personal radiation detectors (known as pagers), and radioactive isotope identifiers at U.S. ports of entry, as well as in other settings. For example, DHS has equipped Coast Guard boarding and inspection teams with portable detection systems and has provided equipment, training, and

[8]GAO, *Nuclear Nonproliferation: Progress Made in Improving Security at Russian Nuclear Sites, but the Long-term Sustainability of U.S.-Funded Security Upgrades Is Uncertain*, GAO-07-404 (Washington, D.C.: Feb. 28, 2007).

[9]GAO, *Cooperative Threat Reduction: DOD Has Improved Its Management and Internal Controls, but Challenges Remain*, GAO-05-329 (Washington, D.C.: June 30, 2005).

[10]GAO, *Combating Nuclear Smuggling: Corruption, Maintenance, and Coordination Problems Challenge U.S. Efforts to Provide Radiation Detection Equipment to Other Countries*, GAO-06-311 (Washington, D.C.: Mar. 14, 2006). Since its initial deployment of equipment in 1998, the Second Line of Defense program has grown to include cooperation with countries throughout the Former Soviet Union, Eastern Europe, and the Caucasus, providing radiation detection equipment at land border crossings, international airports, and feeder seaports.

[11]GAO, *Preventing Nuclear Smuggling: DOE Has Made Limited Progress in Installing Radiation Detection Equipment at Highest Priority Foreign Seaports*, GAO-05-375 (Washington, D.C.: Mar. 31, 2005).

assistance in other maritime, air, and land venues. In addition, DOE has programs to secure nuclear and radioactive sources domestically. For example, the U.S. Radiological Threat Reduction program recovers and manages excess and unwanted radioactive sources that belong to U.S. licensees. In addition, the Nuclear Regulatory Commission, as well as 35 states that have signed an agreement with the Nuclear Regulatory Commission, are responsible for regulating the security of radioactive and nuclear materials within the United States through its Radiological Materials and Reactor Security Programs.

Several types of radiation detection equipment are used by CBP, the Coast Guard, and other agencies involved in radiological and nuclear detection activities: radiation portal monitors, radioactive isotope identification devices (RIID), and personal radiation detectors, among others. Portal monitors are stationary or mobile pieces of equipment that can detect radioactive materials carried by vehicles or transported in cargo containers. RIIDs are a type of handheld radiation detection equipment that can detect radiation as well as identify the specific isotope of the radioactive source. Personal radiation detectors are worn by CBP officials, Coast Guard boarding teams, and other law enforcement agents. Unlike portal monitors and RIIDs, personal radiation pagers function primarily as personal safety devices to alert the individual wearer when he or she is exposed to an increased level of radiation. Under certain circumstances these devices also could be used to detect smuggled nuclear material. However, they can only indicate variations in the general level of radiation and their sensitivity is limited because of the small size of the detector. Therefore, they should not be relied upon for that purpose.

All radiation detection devices have limitations in their ability to detect and identify nuclear material. Detecting attempted nuclear smuggling is difficult because many sources of radiation are legal and not harmful when used as intended. These materials can trigger alarms—known as nuisance or innocent alarms—that may be difficult to distinguish in some cases from alarms that could sound in the event of a true case of nuclear smuggling without a thorough secondary inspection. Nuisance or innocent alarms can be caused by patients who have recently had cancer treatments, a wide range of cargo with naturally occurring radiation (e.g., fertilizer, ceramics, and food products), and legitimate shipments of radiological sources for use in medicine and industry. Additionally, detecting actual cases of illicit trafficking in weapons-useable nuclear material is complicated: one of the materials of greatest concern in terms of proliferation—highly enriched uranium—is among the most difficult materials to detect because of its relatively low level of radioactivity.

DNDO is currently testing the next generation of radiation portal monitors—the advanced spectroscopic portal monitor, or ASP. We have repeatedly raised concerns about DNDO's efforts to develop and test ASPs. Specifically, we found that testing of ASPs at DOE's Nevada Test Site did not represent an objective or rigorous assessment because DNDO used biased test methods that enhanced the apparent performance of the ASPs and did not test the limitations of the ASPs' detection capabilities.[12] In 2008, we also found that DNDO's cost estimate to equip U.S. ports of entry with radiation detection equipment is unreliable because it omits major project costs and relies on a flawed methodology. Furthermore, the agency is no longer following the original project execution plan, the scope of the agency's current ASP deployment strategy has changed, and DNDO now plans a much more limited deployment of the ASP than initially proposed.[13] The current ASP testing is expected to continue into 2009.

DNDO Is in the Early Stages of Enhancing Domestic Initiatives for Nuclear Detection

DNDO's ultimate goal is to expand radiological and nuclear detection capabilities to areas identified as vulnerable to nuclear smuggling. To that end, in 2005, DNDO identified critical gaps in domestic efforts to prevent and detect radiological and nuclear smuggling, including, but not limited to: (1) land border areas between ports of entry into the United States, (2) aviation, and (3) small maritime craft. However, DNDO is still in the early stages of developing initiatives to address these vulnerabilities, and it has not clearly articulated a long-term plan for how to achieve its goal of closing these gaps by expanding radiological and nuclear detection capabilities in the time frames identified.

Land border areas between ports of entry. The United States has more than 6,000 miles of land border susceptible to illegal crossings by people and vehicles. DNDO began addressing this gap in 2005 and currently is jointly working with CBP to equip Border Patrol agents—who are responsible for patrolling the U.S. borders with Canada and Mexico—with portable radiological and nuclear detection equipment by 2012. Portability

[12]GAO, *Combating Nuclear Smuggling: Additional Actions Needed to Ensure Adequate Testing of Next Generation Radiation Detection Equipment*, GAO-07-1247T (Washington, D.C.: Sept. 18, 2007).

[13]GAO, *Combating Nuclear Smuggling: DHS's Program to Procure and Deploy Advanced Radiation Detection Portal Monitors Is Likely to Exceed the Department's Previous Cost Estimates*, GAO-08-1108R (Washington, D.C.: Sept. 22, 2008).

is critical to strengthening radiation detection efforts because it expands the opportunity to detect a potential radiological threat should a Border Patrol agent encounter one. To date, as part of a phased approach, DNDO and CBP have tested and evaluated radiation detection equipment and CBP developed operating procedures for using the equipment and resolving radiation alarms along the southern U.S. border. However, similar tests along the northern U.S. border have been postponed.[14] Specifically, DNDO and CBP originally scheduled equipment testing along the southern border for January 2008 and along the northern border for March 2008. However, they did not actually begin testing along the southern border until May 2008. According to a CBP official, DNDO explained that this schedule slip was caused by a delay in selecting the equipment for the test. DNDO told us that it chose to conduct an additional review of commercially available detection equipment before field testing, which caused these tests to be delayed. As a result of preliminary findings from the field tests, DNDO and CBP decided in November 2008 to indefinitely postpone the previously scheduled tests along the northern border. According to these agencies, the preliminary test results indicated that further technological improvements will be necessary before the portable radiation detection equipment can be distributed more widely for use in this environment. Full distribution of equipment along the land border areas between ports of entry is contingent on completing these field evaluations and entails providing detection equipment and operating procedures to all 20 Border Patrol sectors across the United States. Assuming no further schedule and technological delays, the radiation detection equipment to help secure the U.S. land border areas between ports of entry may not be fully in place until fiscal year 2012. According to DNDO, the agency requested a total of $33.6 million in fiscal years 2008 and 2009 for such initiatives, but it has not estimated the total cost for this effort beyond those years.

One of DNDO's roles in supporting the effort to close gaps in the land border area between ports of entry is to procure and supply detection equipment to CBP. However, according to CBP officials, in fiscal year 2008, DNDO did not procure needed radiation detection equipment in a timely manner. Specifically, CBP's Office of Field Operations—responsible for official ports of entry—and its Office of Border Patrol requested

[14]The southern U.S. border tests occurred in the Border Patrol's El Paso, Texas, and Tucson, Arizona, sectors. The northern U.S. border test was planned for the Border Patrol's Swanton, Vermont, sector.

approximately 240 additional RIIDs. However, according to CBP officials, DNDO did not fill its procurement needs. As of November 2008, only 64 of the 240 devices requested had been delivered to CBP. This situation is particularly problematic for the Border Patrol because its agents do not have enough RIIDs to meet their current patrol needs, according to a Border Patrol official.

Aviation. Because nuclear weapons and material can be small and portable enough to be carried on most aircraft, CBP, with the support of DNDO, has been working on initiatives to screen all incoming international planes, cargo, and passengers. Although progress has been made on screening international general aviation, many of the other initiatives are either in their initial phases or still on the drawing board and it is unclear how long it will take or how much it will cost to complete these initiatives. In fiscal years 2008 and 2009, DNDO has requested a total of $35 million for aviation-related activities; [15] however, it has not estimated the costs of these initiatives beyond the near term.

Since December 2007, CBP has been screening 100 percent of arriving international general aviation aircraft (approximately 400 flights per day) for radiological and nuclear material. According to DNDO officials, such efforts are being included in the strategy for the first time. To assist with the international general aviation initiative, DNDO managed the testing and evaluation of radiation detection devices in close coordination with CBP officials to ensure that the technology and operating procedures would be consistent with CBP's responsibilities to screen all aircraft arriving from outside the United States.[16] Specifically, in 2008, DNDO, in partnership with CBP, tested portable radiation detection equipment for use in scanning small, medium, and large international general aviation aircraft and assessed whether CBP screening procedures needed to be modified.

While CBP has made progress in ensuring that appropriate operating procedures for using the equipment and resolving radiation alarms are established and all international general aviation is screened, its other aviation initiatives have not proceeded as smoothly or have not yet begun. CBP is working with DNDO on an initiative to screen international air

[15]This number includes the fiscal year 2007 Supplemental Appropriation which provided $22 million for aviation initiatives into fiscal year 2009.

[16]6 U.S.C. section 202.

cargo for radiological and nuclear material and has chosen Dulles International Airport as the first location for this screening. According to DNDO, this airport was chosen first because it has one gate through which all cargo travels. However, because both international and domestic cargo pass through this gate, the start of operations was delayed until September 2008 due to jurisdictional issues between CBP and TSA—CBP is responsible for screening international cargo for radiological and nuclear material and TSA for scanning domestic cargo for explosives. The two agencies had to reach an agreement allowing CBP to screen all cargo for radiological and nuclear material, regardless of origin. (Fig. 2 shows cargo moving through a stationary radiation portal monitor at Dulles International Airport.)

Figure 2: Cargo Vehicle Passing through Radiological Detection Equipment at Dulles International Airport

Source: GAO.

In October 2008, we visited Dulles to observe this operation, including a demonstration of radiation detection capabilities. CBP sent a vehicle containing a small sample of Cesium-137—a radiological material that is considered a highly attractive source for the purpose of a radiological dispersal device, or dirty bomb—through the detection equipment. Cesium-137, which is generally in the form of a powder similar to talc, is highly dispersible. CBP uses this sample to routinely test equipment. However, the detection equipment failed to sound an alarm until the

material had passed through it for a third time. CBP officials told us that this source material triggered an alarm during a test earlier that week, and attributed the problems with this demonstration to either the shielding of the source material by the vehicle or to a weak signal given off by the material because it may be nearing the end of its usable life.

CBP plans to have cargo screening at the 30 U.S. airports that account for 99 percent of incoming international cargo by 2014. However, because cargo processing at Dulles is simpler than at other airports, due to the configuration of its cargo area, CBP officials acknowledged that their plan is very ambitious. According to CBP officials, expanding the cargo screening initiative to larger, more complicated airports will require CBP to devise different operational procedures and possibly develop new detection technology. DNDO and CBP also plan to cooperate with other federal agencies on an initiative to screen passengers and baggage from international commercial flights. However, according to DNDO, it is still working on the basic approach for this initiative, such as where to locate passenger and baggage scanning equipment in an airport. To date, DNDO and CBP have initiated a pilot program for screening international passengers and their baggage at airports. In fiscal year 2008, they completed site surveys at five airports in order to develop requirements for testing planned for fiscal year 2009.

Current aviation initiatives focus on radiation detection both prior to departure from a foreign location and after the aircraft lands in the United States. Ultimately, DNDO and CBP would like the detection of radiological and nuclear materials to occur as far outside of U.S. borders as possible—at the point of departure instead of the point of entry. For example, rather than screening international general aviation once the plane arrives in the United States, it would be preferrable to screen the plane at the country from which it departs. However, such a strategy would rely on negotiating agreements with foreign governments, which could prove challenging given concerns about sovereignty and rights of access. Furthermore, DNDO officials were uncertain when and if agreements could be reached with enough foreign governments to establish a more effective aviation strategy. As of December 2008, DHS has concluded agreements with Ireland and Aruba to include radiological and nuclear screening of international general aviation aircraft in these countries.

Small maritime vessels. A Coast Guard analysis revealed that small boats pose a greater threat for nuclear smuggling than transporting illicit material in shipping containers, according to a senior Coast Guard official.[17] These small boats, which include maritime craft less than 300 gross tons, number in the millions. DNDO efforts related to radiological and nuclear detection on small maritime vessels are part of a larger DHS effort—the Small Vessel Security Strategy. This strategy recognizes a number of risks that small vessels pose, including serving as a vehicle to smuggle weapons or terrorists into the United States, and using the boat itself as an improvised explosive device. DHS is working to develop a Small Vessel Security Strategy implementation plan, which will, among other things, identify needed research, development, and testing, and recommend actions for future efforts and put the strategy into action. To address one of the vulnerabilities, DNDO has been working since 2005 with multiple federal agencies, including the Coast Guard and CBP, as well as state and local agencies, to develop and expand capabilities to detect radiological and nuclear materials that could be smuggled on small maritime craft. Coast Guard and CBP are responsible for developing the screening procedures and making decisions about what vessels are to be screened; DNDO provides the radiological and nuclear detection equipment. Coast Guard and DNDO have entered into a Joint Acquisition Strategy to update the current Coast Guard detection technology inventory, as well as to acquire new equipment if necessary.

There are a number of challenges associated with radiological detection capabilities in the maritime environment that have limited DNDO's ability to roll this initiative out widely. Specifically, these agencies have a pilot project underway in Puget Sound, Washington, to field-test equipment and develop standard operating procedures for detecting and interdicting radiological and nuclear materials on small vessels. DNDO chose Puget Sound because of its proximity to Vancouver, Canada, the host of the 2010 Winter Olympics; its military and economic significance; and the large number of commercial and recreational vessels. DNDO is also expanding this pilot to San Diego, California, where it has conducted an initial assessment of the area and briefed officials about the program. DNDO selected San Diego as a pilot location because of its proximity to Mexico, geographic configuration, and many military facilities. DNDO is currently

[17]From testimony delivered by Vice Admiral Thad Allen on the role of Coast Guard in border and maritime security, Committee on Appropriations, Subcommittee on Homeland Security, U.S. Senate, Apr. 6, 2006.

in the first year of a 3-year pilot program; the Puget Sound and San Diego operations are scheduled to be completed in December 2010. According to DNDO's data for fiscal years 2008 and 2009, the agency requested $14.7 million for the pilot project and a total of $54.2 million for these and other maritime initiatives.

One significant challenge in developing maritime radiological and nuclear detection efforts is sustaining them beyond the original pilot projects; DNDO has not yet developed plans for doing so. In addition to the Coast Guard and CBP, state and local governments play a key role in maritime law enforcement activities. For example, in Puget Sound, the majority of the law enforcement personnel and equipment available for radiological and nuclear detection belong to the 15 state, tribal, and local agencies participating in the pilot.[18] However, these agencies generally have limited resources, making it difficult to expand their mission to include radiological and nuclear detection. Furthermore, these agencies have competing demands and could choose to fund other priorities. Although DNDO is providing these agencies with the initial equipment, support, training, and maintenance during the Puget Sound and San Diego pilots, it is expecting them to seek funding from federal grant programs to sustain these initiatives. For many state and local agency officials we spoke with, the uncertainty of federal resources jeopardizes their ability to continue radiological and nuclear detection activities. According to one local sheriff from Washington state, if funding to maintain and support radiation detection equipment provided during the pilot disappears, his department will not continue radiological and nuclear detection activities.

Other state and local agencies participating in the Puget Sound pilot also emphasized the difficulty in keeping personnel trained on detection equipment without additional federal support beyond the current pilot project. Because maritime law enforcement personnel may not frequently need to use the equipment, future training is necessary to ensure that that they maintain their skills. However, without the additional resources currently provided by DNDO, state and local agencies would have difficulty covering the costs associated with ongoing training, including

[18]The state and local agencies are Washington Department of Fish and Wildlife, Washington State Patrol, Washington Department of Health, Whatcom County Sheriff, Pierce County Sheriff, Seattle Fire Department, Seattle Police Department, Port of Seattle Police, Everett Police Department, Bainbridge Island Police Department, Port Orchard Police Department, Tacoma Police Department, Suquamish Tribal Police, Port of Everett, and Skagit County Sheriff.

overtime salaries for personnel who have to take on the regular duties of those being trained.

Given these state and local concerns, DNDO's strategy for sustaining such programs appears problematic. According to DNDO officials, sustaining the existing pilot programs will be the responsibility of the local jurisdictions through a well-established federal grants process. Specifically, DNDO anticipates that funding for these programs will come from Homeland Security grants, Urban Areas Security Initiative grants, and the DHS Port Security Grant Program. However, DNDO currently does not have a plan detailing which locations it would target next for the maritime program, nor has it estimated the total cost of this initiative.

According to DNDO officials, the office has focused first on just two locations in order to determine whether maritime screening of small vessels for radiological and nuclear material is feasible and to gather lessons learned that can be used to minimize challenges and develop operating procedures for using the radiation detection equipment and resolving radiation alarms in other areas. However, DNDO has not established criteria for assessing the success of this pilot effort to help determine whether it should be expanded to other locations. Should its concept for detecting and interdicting radiological and nuclear material smuggled on small maritime vessels prove feasible, DNDO plans to develop guidance so that state and local law enforcement agencies can implement their own maritime radiological and nuclear detection programs.

In addition, unlike radiation detection technology for land or aviation, technology in the maritime environment is relatively undeveloped and poses unique challenges. For example, the level of background radiation in water differs from the level of background radiation on land, which affects the capability of equipment to detect and identify certain types of radioactive material. Furthermore, the equipment needs to be water resistant and designed so that it can be used by agents who need their hands free to board and climb around ships. To date, DNDO has, among other things, tested boat-mounted radiation detectors, detection equipment that can be carried in a backpack, and handheld radiological detection and identification devices that can withstand exposure to water. Nevertheless, the effectiveness of radiation detection equipment in the maritime environment remains limited. For example:

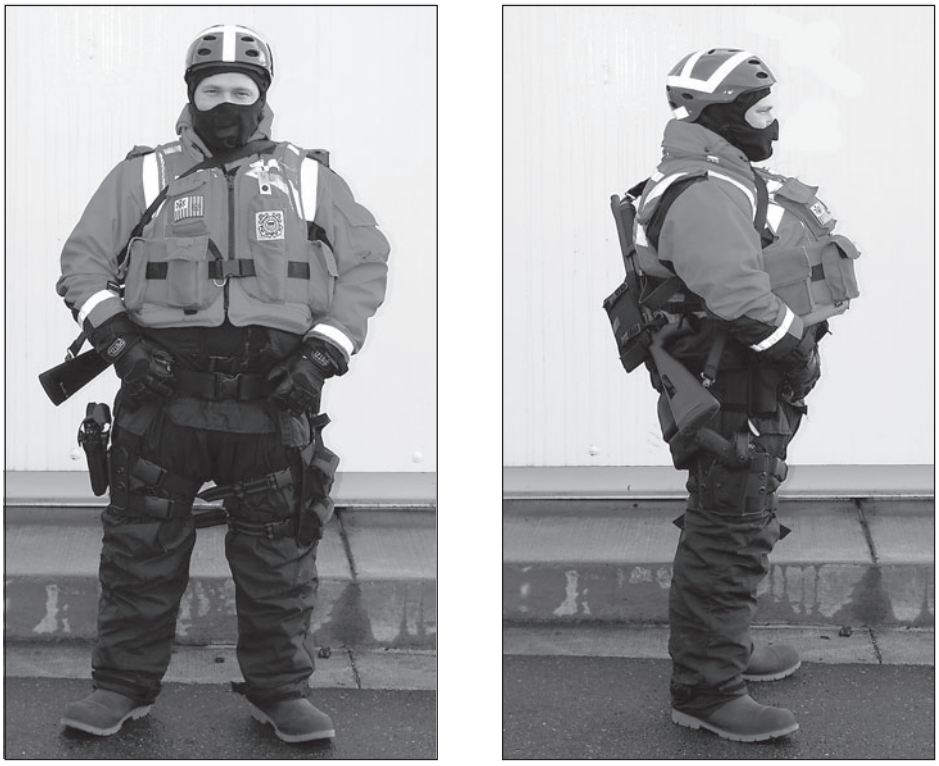
- The boat-mounted radiation equipment is unable to indicate the direction of the radioactive material causing the alarm, making it difficult to identify

the potential threat in an open sea with many small vessels, according to a local law enforcement officer we spoke with. CBP Air and Marine officers also expressed uncertainty about how boat-mounted detection equipment, which has been tested only in a fairly controlled lake environment, will work in a more turbulent open sea environment, where it is more difficult to detect and determine radioactive material. DNDO officials told us that a fiscal year 2009 initiative will assess boat-mounted detection systems in real-world environments.

- The backpack radiation equipment works best when physically worn by someone, according to a DNDO official. However, Coast Guard officers already have a difficult time maneuvering through the small passageways on boats with the current equipment they must wear. (Fig. 3 shows a Coast Guard officer wearing standard boarding team equipment, without a backpack.) The backpacks have the potential to further decrease officers' maneuverability and their ability to inspect boats.

- If a hand-held radiological detection and identification device is accidentally dropped overboard, it does not float and can withstand being submerged under only 30 feet of water. These handheld devices cost $15,000 per unit, making them expensive to replace.

Figure 3: A Coast Guard Officer Wearing Standard Boarding Team Equipment



Source: Coast Guard.

DNDO has also delayed in rolling out radiation detection equipment to the agencies engaged in its maritime initiatives. Although federal, state, and local agencies in the Puget Sound pilot determined their equipment needs in April 2008 and submitted this request to DNDO, they have received little equipment. According to a DNDO official, DNDO was slow to process the order and once it was placed, the manufacturer was unable to fill the order in a timely manner and did not immediately notify DNDO of this delay. According to DNDO, once it was notified of the delay from the vender, it borrowed units from the Coast Guard so that the pilot could proceed. Of the 362 personal radiation detectors ordered, 95 had been delivered as of October 2008. However, the order may not be completely filled until early 2009.

DNDO, in coordination with the Coast Guard, the New York City Police Department (NYPD), and other state and local agencies, is also engaged in maritime nuclear detection activities in the New York City area as part of the Securing the Cities initiative. This initiative is intended to enhance

protection and response capabilities in and around high-risk urban areas by designing a system to detect and interdict illicit radioactive materials that may be used as a weapon. As with the Puget Sound pilot, the agencies involved in the initiative's maritime activities do not presently have enough equipment to meet their needs, according to officials participating in the Securing the Cities initiative. For example, the Coast Guard has one boat, with radiation detection equipment provided by DOE, and the NYPD has two boats with radiation detection equipment. However, NYPD officials told us that the NYPD has another 28 boats that need to be equipped with radiation detection technology and these equipment purchases depend on the availability of future federal grant funding.

DNDO Has Limited Role in Influencing U.S. Efforts to Combat Radiological and Nuclear Smuggling Overseas

Although DNDO has no authority over other federal agencies' programs to combat radiological and nuclear smuggling overseas, it has exchanged lessons learned with DOD, DOE, and State and provided technical expertise on radiological and nuclear detection equipment. However, most of DNDO's efforts are modest in scope and reflect the fact that DOD, DOE, and State have well-established programs to combat nuclear smuggling overseas. DNDO officials told us that their efforts to develop a more comprehensive approach to global nuclear detection are very complex because each agency has a distinct area of authority. Areas in which DNDO has been able to contribute to other agencies' overseas programs include the following:

- *DOD.* DNDO has been working with DOD, among other agencies, to develop radiation detection equipment and to minimize duplication of research efforts. For example, DNDO and DOD are collaborating through the National Institute for Standards and Technology to develop interagency standards and common practices for testing and evaluating radiation detection systems. These standards will be threat based and will state the minimum detection capability that certain radiation detection systems should have to perform their purpose.

- *DOE.* DNDO has been collaborating with DOE to develop strategies for addressing gaps in DOE's overseas radiation detection programs that are similar to those DNDO has been working on domestically. For example, DOE's Second Line of Defense program had focused more on placing fixed detectors at particular sites. However, as a result of DOE's review of its existing nuclear detection programs and its discussion with other agencies, including DNDO, DOE officials told us the agency has begun to work with law enforcement officials in other countries to improve detection capabilities for the land between ports of entry. DOE officials

said they also are considering assisting other countries with the implementation of mobile detection technologies, similar to those used domestically by CBP. DNDO and DOE also are exchanging lessons learned from both agencies' efforts to screen aviation, specifically the development of standard operating procedures for using hand-held radiation detection equipment.

- *State.* DNDO is working with State on the Global Initiative to Combat Nuclear Terrorism—which provides 75 countries with an opportunity to integrate resources and share information and expertise on nuclear smuggling prevention, detection, and response—to develop model guidelines that other countries can use to establish their own nuclear detection strategies. DNDO sponsored a Global Initiative workshop in March 2008 to help 25 countries develop a draft of the model guidelines document. This document, among other things, is intended to raise awareness about the elements of an effective nuclear detection strategy and build consensus for its implementation. In addition, DNDO personnel have traveled with officials from State to countries involved in the department's Nuclear Smuggling Outreach Initiative, a program to assess and improve the capabilities of countries to combat smuggling of nuclear and radiological materials, in order to provide advice to these countries on how to build their own capabilities to counter nuclear smuggling. DNDO also helped State develop questions that these countries could use to assess their own vulnerabilities.

  In addition to providing the U.S. government agencies engaged in international nuclear detection programs with knowledge gained from domestic nuclear detection initiatives, DNDO has been directed by these agencies to develop an inventory of radiation detection equipment deployed overseas. In a March 2006 report, we recommended that State, working with DOD and DOE, create, maintain, and share a comprehensive list of all U.S.-funded radiation detection equipment provided to foreign governments.[19] In December 2006, State, in coordination with DOD, DOE, and DHS, issued a strategic plan giving DNDO responsibility for gathering data on the deployment of radiation detection equipment overseas, including portal monitors and handheld devices.[20] As part of DNDO's efforts to develop the global strategy for nuclear detection, it is charged with maintaining this database, share information from it at interagency

[19]GAO-06-311.

[20]U.S. Department of State, *Strategic Plan For Interagency Coordination of U.S. Government Nuclear Detection Assistance Overseas* (Washington, D.C., Dec. 1, 2006).

meetings, and provide other relevant government agencies with access to the database. According to DNDO, it collected information on radiation detection equipment from DOD, DOE, and State most recently in 2007 and is updating some of the information in 2008 and 2009. A DNDO official also said that the agency analyzed these data to determine the proximity of radiation detection equipment to areas with nuclear facilities.

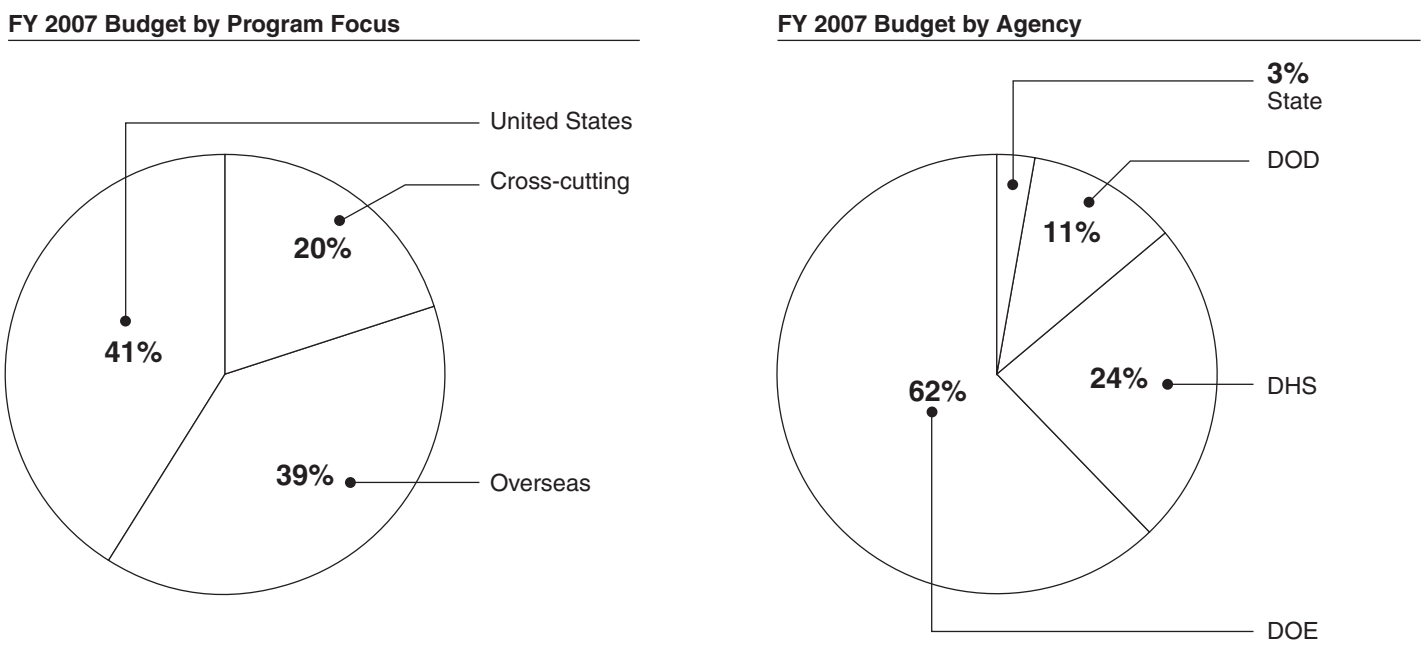
A Total of $2.8 Billion Was Budgeted in Fiscal Year 2007 for Programs Associated with Detecting Radiological and Nuclear Materials

DHS, DOD, DOE, and State budgeted a total of $2.8 billion in fiscal year 2007 for the programs included in the global strategy for radiological and nuclear detection, according to DNDO. Nearly the same amount of funds—$1.1 billion—were budgeted for programs and activities to (1) combat nuclear smuggling overseas and (2) detect nuclear materials primarily at U.S. borders and ports of entry; a smaller portion was budgeted for cross-cutting programs. By agency, the majority of 2007 budgeted funds for the global strategy for radiological and nuclear detection went to DOE—62 percent. Although DNDO has detailed information on the budgets for various security and detection programs, it is not using this information to coordinate with other agencies on the overall strategic direction of these detection efforts.

Amounts Budgeted for Programs to Combat Nuclear Smuggling Overseas and to Detect Nuclear Materials Primarily at U.S. Borders and Ports of Entry Were Nearly the Same

According to our analysis of DNDO's data, of the approximately $2.8 billion agencies budgeted in fiscal year 2007, about 39 percent went to combat nuclear smuggling overseas, while 41 percent went to programs to detect and secure radiological and nuclear materials at and within U.S. borders; another 20 percent went to programs that cut across foreign and domestic activities. Figure 4 shows budgets by program focus and by agency.

Figure 4: Budgets by Program Focus and Agency



Source: GAO analysis of DNDO data.

Table 1 shows the allocation of these funds by programs to combat nuclear smuggling overseas and within the United States.

Table 1: Distribution of Fiscal Year 2007 Budget for Detecting Radiological and Nuclear Weapons or Materials

Dollars in millions					
	Fiscal year 2007 budget				
Geographic focus	DHS	DOD	DOE	State[a]	Total
Overseas	$139.77	$161.90	$736.74	$81.13	**$1,119.54**
United States[b]	274.65	1.60	871.49	0.00	**1,147.74**
Cross-cutting	271.18	137.07	168.86	0.00	**577.12**
Total	**$685.60**	**$300.57**	**$1,777.09**	**$81.13**	**$2,844.39**

Source: GAO analysis of DNDO data.

[a]State does not sponsor domestic programs to combat nuclear smuggling and did not provide budget amounts for its cross-cutting programs because these programs do not provide direct financial assistance and generally leverage resources from other federal agencies and international partners.

[b]United States includes efforts at the border as well as within the interior of the country.

Programs to combat nuclear smuggling overseas. DOE received the majority of the budget for programs to combat international nuclear smuggling—$737 million (or approximately 67 percent) of the $1.1 billion total in fiscal year 2007. For all the agencies, the international programs are largely intended to secure nuclear and radiological materials at their source or detect them in transit. By agency, key programs include the following:

- DHS budgeted $139 million for its Container Security Initiative, which provides multidisciplinary teams—agents, intelligence analysts, and CBP officers—to selected foreign seaports in order to protect the United States from potential terrorist attacks using maritime cargo shipments and to help secure the primary system of containerized shipping for international trade.[21] Another DHS program, the Secure Freight Initiative,[22] is important to the global strategy for nuclear detection because it provides foreign countries with radiation scanning systems for containers at ports of departure and communications infrastructure to transmit radiological and nuclear material data to the United States. This program is designed to test the feasibility of 100 percent scanning of U.S.-bound container cargo at seven overseas seaports and involves the deployment of integrated scanning systems, consisting of radiation portal monitors and RIIDs.

- At DOD, 98 percent of its budget for combating nuclear smuggling overseas went to three programs that are part of the Cooperative Threat Reduction Program—a program that protects national security by reducing the present threat and preventing the proliferation of weapons of mass destruction.[23] The Nuclear Weapons Safety and Security Program had a budget of $92.8 million to enhance Russia's security systems at nuclear weapons storage sites and capability to account for and track nuclear weapons scheduled for dismantlement. The Proliferation Prevention Initiative had a budget of $32.4 million to help countries of the former Soviet Union prevent the smuggling of weapons of mass destruction or related materials across their borders; this initiative provides equipment, logistics support, and training. Finally, the Nuclear Weapons

[21]GAO, *Supply Chain Security: Examinations of High-Risk Cargo at Foreign Seaports Have Increased, but Improved Data Collection and Performance Measures Are Needed*, GAO-08-187 (Washington, D.C.: Jan. 25, 2008).

[22]GAO, *Supply Chain Security: Challenges to Scanning 100 Percent of U.S.-Bound Cargo Containers*, GAO-08-533T (Washington, D.C.: June 12, 2008).

[23]GAO, *Weapons of Mass Destruction: Nonproliferation Programs Need Better Integration*, GAO-05-157 (Washington, D.C.: Jan. 28, 2005).

Transportation Security Program had a budget of $32.7 million to enhance safe and secure transport of nuclear weapons from operational sites and storage areas to enhanced security storage sites and dismantlement sites throughout Russia.

- At DOE, two programs account for about 81 percent of the department's budget to combat nuclear smuggling overseas. First, the Materials Protection, Control, and Accounting Program had a budget of $414 million.[24] This program provides support to the Russian Federation and other countries of the former of Soviet Union to secure nuclear weapons and weapons material that may be at risk of theft or diversion from their current location. Second, DOE's Second Line of Defense—a cooperative assistance program for deploying radiological and nuclear detection systems and associated training at international border crossings, airports, and seaports—had a budget of $183 million.[25]

- State budgeted approximately $42 million for its Export Control and Related Border Security program to help stem the proliferation of weapons of mass destruction, their delivery systems, and conventional weapons by assisting recipient countries in detecting, deterring, preventing, and interdicting illicit trafficking in weapons and weapons-related items.[26] The program is also designed to provide a wide range of assistance and support, such as offering licensing and legal and regulatory technical workshops, and providing detection equipment and training for border control and enforcement agencies.

Programs to combat radiological and nuclear smuggling at and within U.S. borders. As with programs to combat nuclear smuggling overseas, DOE received most of the budget for programs to combat radiological and nuclear smuggling domestically—$871 million (or 76 percent) of the $1.1 billion budgeted in fiscal year 2007. By agency, key programs include the following:

[24]GAO, *Nuclear Nonproliferation: Progress Made in Improving Security at Russian Nuclear Sites, but the Long-term Sustainability of U.S. Funded Security Upgrades Is Uncertain*, GAO-07-404 (Washington, D.C.: Feb. 28, 2007).

[25]GAO, *Combating Nuclear Smuggling: Corruption, Maintenance, and Coordination Problems Challenge U.S. Efforts to Provide Radiation Detection Equipment to Other Countries*, GAO-06-311 (Washington, D.C.: Mar. 14, 2006).

[26]GAO, *Nonproliferation: U.S. Efforts to Combat Nuclear Networks Need Better Data on Proliferation Risks and Program Results*, GAO-08-21 (Washington, D.C.: Oct. 31, 2007).

- At DHS, the Advanced Spectroscopic Portals/Radiological Portal Monitors program had a budget of $209 million to provide systems development, acquisition, and deployment of these technologies to ports of entry. The Securing the Cities initiative, with a fiscal year 2007 budget of $8.47 million, is intended to enhance protection and response capabilities in and around the nation's highest risk urban areas. Starting with New York City, the department will work with state and local officials to develop urban and regional deployment and operations strategies, identify appropriate detection equipment, establish the necessary support infrastructure, and develop incident management and response protocols. In addition, DHS budgeted $1.1 million for the West Coast Maritime Radiation Detection Program, which is evaluating general radiation detection capabilities to be deployed aboard Coast Guard or other law enforcement vessels that participate in vessel-boarding activities.

- DOD budgeted $1.6 million for domestic radiation detection programs, with $1.1 million directed to its Radiation Protection Program. This program uses the best available detection technologies to prevent or mitigate the effects of radiation exposure on Pentagon personnel and structures. The remaining funds were budgeted for the department's Unconventional Nuclear Warfare Defense, which installed radiological and nuclear sensors at Camp Lejeune.

- At DOE, $846 million (or 97 percent) of the $871 million budgeted to combat nuclear smuggling went to the Nuclear and Radiological Materials Security Program, which is intended to protect DOE's critical assets—nuclear weapons, nuclear weapons components, special nuclear materials, classified information, and DOE facilities from such threats as terrorist activity, theft, diversion, loss, or unauthorized access.

Cross-cutting activities that simultaneously support multiple programs. DHS had nearly half of the $577 million budgeted for cross-cutting activities—about $271 million. By agency, key programs include the following:

- At DHS, the Human Portable Radiation Detection System had a budget of $18.1 million to support the development of detection systems and the acquisition of advanced, hand-held radiation detectors. In addition, DHS budgeted about $11 million for the Technical Reachback Program, which provides technical assistance to help personnel operating radiation detection equipment identify the source that triggered the alarm. Finally, the Joint Analysis Center had a budget of $1.75 million to collect and notify appropriate federal, state, and local agencies as early as possible of

radiological and nuclear threats and coordinate technical support to federal, state, and local authorities.

- DOD budgeted $94.5 million of the $137 million of its funds budgeted for cross-cutting programs to support its Weapons of Mass Destruction Civil Support Teams. These 55 teams are deployed nationwide to support civil authorities during domestic chemical, biological, radiological, nuclear, and high-yield explosives incidents.[27] In addition, the Nuclear Detection Technologies Division of DOD's Defense Threat Reduction Agency was budgeted $28 million in fiscal year 2007 to develop technologies to detect, locate, and identify radiological and nuclear weapons and materials to support search and interdiction missions.

- At DOE, nearly all of the $168 million DOE budgeted for cross-cutting programs went to one program—the Proliferation Detection Program. This program, budgeted at $148 million, provides technical expertise and leadership toward the development of next generation nuclear detection technologies and methods to detect foreign nuclear materials and weapons production. This program develops the tools, technologies, and techniques for detecting, locating, and analyzing the global proliferation of weapons of mass destruction, with a special emphasis on nuclear weapons technology and the diversion of special nuclear materials.

- Because many of State's efforts to combat nuclear smuggling leverage resources from other federal agencies and international partners, or these efforts do not provide direct financial assistance, State does not have a budget for all of its efforts. However, it still oversees a number of crosscutting programs. For example, the Nuclear Trafficking Response Group is responsible for coordinating responses to international nuclear and radiological alarms; its mission is to protect the United States by resolving incidents of nuclear smuggling and by interdicting materials in transit. The National Combating Terrorism Research Program works to develop prototypes for technology with specific applications to detect and characterize nuclear materials. This program is not a financial assistance program, and therefore has no formal budget.

[27]Each state, as well as the District of Columbia, Puerto Rico, the Virgin Islands, and Guam, has their own Civil Support Teams and California has two. Civil Support Teams are National Guard assets and are under the direction of the governor of that state.

DNDO's Joint Annual Interagency Report Is Not Used for Analysis or to Focus Nuclear Detection Priorities

In July 2007, Congress passed the "Implementing Recommendations of the 9/11 Commission Act of 2007," which required DHS, DOD, DOE, the Department of Justice, and the Director of National Intelligence to coordinate the preparation of a Joint Annual Interagency Review of the Global Nuclear Detection Architecture. DNDO collected these program-level budget data in response to a statutory requirement that select agencies, including DHS, DOD, DOE, and State, annually assess their capacity to implement their portion of the global nuclear detection strategy. DNDO issued this report in June 2008 after gathering data from relevant agencies on programs and budgets in support of each layer of the global nuclear detection effort. The report provides an overview of the global nuclear detection strategy and discusses programs and budgets for combating nuclear smuggling domestically and overseas.

DNDO has collected these data since 2006. It used these data to identify areas in which new domestic initiatives may be needed. For example, in the most recent review, DNDO said that programs focused on the land border areas between ports of entry, aviation, and maritime pathways will need to grow substantially in the years ahead. However, the Joint Annual Interagency Review does not serve as a tool to analyze nuclear detection budgets across agencies in order to ensure that the level and nature of resources devoted to combating nuclear smuggling are going toward the highest priority gaps and are aligned with the overall strategic direction of global detection efforts.

Agency officials said that their program decisions and budget requests are primarily guided by their agencies' mission-related needs, rather than by the overarching goals and priorities of a broader, more comprehensive global detection strategy. In addition, DOD, DOE, and State officials told us that the information in the review is primarily used to provide agencies and Congress with an overview of already established programmatic roles and responsibilities across the range of programs to combat nuclear smuggling. Finally, agency officials told us that they do not use the specific budget data included in the Joint Annual Interagency Review to help determine whether funding levels are reasonable in terms of individual agency or governmentwide needs.

DNDO Has Not Yet Implemented Recommendation from July 2008 Testimony

In July 2008, we testified on the preliminary findings of our work.[28] Specifically, we found that while DNDO's initiatives are a step in the right direction for improving the current efforts to combat nuclear smuggling, they are not being undertaken within the larger context of an overarching strategic plan. Although each agency with a role in combating nuclear smuggling has its own planning documents, an overarching strategic plan is needed to guide these efforts to address the gaps and move to a more comprehensive global nuclear detection strategy. Our past work has discussed the importance of strategic planning.[29] We have reported that strategic plans should clearly define objectives to be accomplished, identify the roles and responsibilities for meeting each objective, ensure that the funding necessary to achieve the objectives is available, and employ monitoring mechanisms to determine progress and identify needed improvements. For example, such a plan would define how DNDO would monitor the goal of detecting the movement of radiological and nuclear materials through potential smuggling routes, such as small maritime craft or land border areas in between ports of entry. Moreover, this plan would include agreed-upon processes and procedures to guide the improvement of the efforts to combat nuclear smuggling and coordinate the activities of the participating agencies.

DNDO agreed with the need for an overarching strategic plan and believes that many elements of such a plan exist in DHS and other agency documents, but noted that solutions for addressing gaps and vulnerabilities are still under development. As of December 2008, DNDO had not yet established detailed plans to address those gaps and vulnerabilities, nor had it integrated all the plan elements into an overarching strategic plan, as we recommended.

Conclusions

Preventing terrorists from obtaining and smuggling radiological or nuclear material into the United States is a national security imperative. DNDO has

[28] GAO-08-999T.

[29] GAO, *Managing for Results: Enhancing Agency Use of Performance Information for Management Decision Making*, GAO-05-927 (Washington, D.C.: Sept. 9, 2005); *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005); *Combating Terrorism: Observations on National Strategies Related to Terrorism*, GAO-03-519T (Washington, D.C.: Mar. 3, 2003); and *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-118 (Washington, D.C.: June 1996).

an important and complex task in this regard—develop a global nuclear detection strategy to combat nuclear smuggling and to keep radiological and nuclear material and weapons from entering the United States. However, DNDO has not yet taken steps to work with DOE, DOD, and State to develop an overarching strategic plan, as we recommended in July 2008. Given the national security implications and urgency attached to combating nuclear smuggling globally, we continue to believe that such a plan needs to be established as soon as possible. Without an overarching plan that ties together the various domestic and international efforts to combat nuclear smuggling and clearly describes goals, responsibilities, priorities, resource needs, and performance metrics, it is unclear how the strategy will evolve or whether it is evolving in the right direction.

While DNDO has gathered useful program and budget information in its Joint Annual Interagency Review, we believe it has missed an opportunity to use this information as a basis for working with other agencies—most notably DOD, DOE and State—to identify future priorities, and analyze and help determine future resource allocations. We are not suggesting that any of the agencies participating in U.S. efforts to combat nuclear smuggling cede authority to manage its own programs. However, this information could be used as a tool to better ensure that limited resources are leveraged to promote program effectiveness and avoid potential duplicative efforts. By doing so, we believe the federal government will be better positioned to take a holistic view of global nuclear detection and develop a plan that helps safeguard investments to date, more closely links future goals with the resources necessary to achieve those goals, and enhances the agencies' ability to operate in a more cohesive and integrated fashion.

DNDO, for its part, has helped highlight the need to address critical gaps in efforts to combat nuclear smuggling domestically. It also has made some progress in developing and supporting initiatives to close these gaps. However, remaining challenges are great, funding is uncertain, time frames are unclear, and the technology may not be available any time soon to bridge some of these vulnerabilities. Without a plan to guide development of initiatives to address domestic gaps, it is unclear how DNDO plans to achieve its objectives of closing these critical gaps, particularly in three key areas—land border areas between ports of entry, aviation, and small maritime vessels.

Maritime detection efforts pose unique technological and operational challenges. DNDO's maritime pilot is a sensible first step to addressing this vulnerability. However, DNDO should establish criteria for assessing the

effectiveness of this effort and use the result of this evaluation to determine the feasibility of expanding this program beyond the pilot stage. Should the pilot prove worthy of replicating, we believe that DNDO will need to engage in additional planning to identify next steps to help ensure that it will be able to roll the program out to other locations in a timely manner.

Recommendations for Executive Action

To help ensure that U.S. governmentwide efforts to secure the homeland are well coordinated, well conceived, and properly implemented, we reiterate the recommendation we made in our July 2008 testimony to develop an overarching strategic plan. We also recommend that the Secretary of Homeland Security take the following four actions:

- In coordination with the Secretary of Defense, the Secretary of Energy, and the Secretary of State, use the Joint Annual Interagency Review to guide future strategic efforts to combat nuclear smuggling. This effort should include analyzing overall budget allocations to determine whether governmentwide resources clearly align with identified priorities to maximize results and whether there is duplication of effort across agencies.

- Develop a strategic plan for the domestic part of the global nuclear detection strategy to help ensure the future success of initiatives aimed at closing gaps and vulnerabilities. This plan should focus on, among other things, establishing time frames and costs for the three areas of recent focus—land border areas between ports of entry, aviation, and small maritime vessels.

- Develop criteria to assess the effectiveness, cost, and feasibility of the maritime radiological and nuclear pilot program.

- Should the decision be made to expand the maritime radiological and nuclear program beyond the pilot, undertake additional planning to identify next steps, including how and where a broader strategy would be implemented, what technology would be needed, what organizations should be involved, and how such efforts would be sustained.

Agency Comments and Our Evaluation

We provided a draft of this report to DHS, DOD, DOE, and State for comment. DHS and DOD provided written comments, which are presented in appendixes I and II, respectively. DOE and State provided technical comments which we incorporated as appropriate. DOD concurred with the recommendation that the Secretary of Homeland Security, in

coordination with the Secretary of Defense, Secretary of Energy, and Secretary of State, use the Joint Annual Interagency Review to guide future strategic efforts to combat nuclear smuggling. DOD stated that greater use could be made of the review associated with the development of this annual report to guide U.S. efforts to combat nuclear smuggling.

DHS did not directly comment on our recommendations but noted that the recommendations aligned with DNDO's past, present, and future actions. The department agreed, however, that planning can always be improved and that the office will seek to continue to do so. DHS also reiterated that it agreed with a recommendation that we made in our 2008 testimony on the need for an overarching strategic plan to guide future efforts to combat nuclear smuggling and move toward a more comprehensive global nuclear detection strategy. In its comments, DHS noted that work had already begun on an overarching plan.

DHS also pointed to what, in its view, were a number of shortcomings in the draft report. Specifically, the department believes that we did not give enough credit to DNDO's strategic planning efforts. The department asserted that we did not clearly and adequately explain the background and context of DNDO's efforts to develop a global strategy, what has been accomplished so far, what challenges it faces, and what remains to be done. Finally, DHS asserted that the draft contained a number of inaccuracies and omissions that make it less reliable and useful than it could be. DHS also provided a number of more detailed comments on specific issues presented in the draft report. We have addressed those comments in our detailed responses and incorporated changes where appropriate.

First, we found no evidence that DNDO engaged in long-term strategic planning to carry out its initiatives to address gaps in domestic nuclear detection. During the course of our review, we specifically asked DNDO for strategic planning documents used to develop and implement a global radiation detection strategy. In response, DNDO officials referred to the more than 4,000 pages of documents provided and stated in their comments on the report that this material was the basis for their plan. Although this information documented the efforts put forth by DNDO in developing its initial strategy and identifying gaps and vulnerabilities, it did not constitute a plan with clear goals, time frames, and costs. More specifically, DNDO commented that we did not mention the DNDO-Coast Guard Joint Acquisition Strategy as a cornerstone of its small maritime strategy, that we only mention DHS Small Vessel Security Strategy in passing in the back of the report, and that we do not mention the DHS

Small Vessel Security Strategy implementation plan. We revised the report to include references to the Joint Acquisition Strategy and the implementation plan. However, we disagree with DNDO's characterization that we failed to give the Small Vessel Security Strategy adequate attention. In fact, the report describes the strategy and how it relates to efforts to combat nuclear smuggling. We would also point out, however, that these planning documents cited by DNDO only apply to one specific critical gap area identified—the small maritime vessel threat.

Second, we disagree with the department's comment that we did not clearly and adequately explain the background and context of DNDO's efforts to develop a global strategy, what has been accomplished so far, what remains to be done, and what challenges it faces. Specifically, our report contains an overview of DNDO's initial approach in developing a global strategy, including providing information on steps DNDO has taken to identify potential pathways for radiological and nuclear material. In addition, the report identified some of DNDO's accomplishments in specific areas, such as working with the other agencies to develop new radiation detection technologies. Furthermore, we recognize that DNDO has helped highlight the need to address critical gaps in efforts to combat nuclear smuggling, and we have reported DNDO's key initiatives to improve radiation detection capabilities in areas that had previously received insufficient attention—land borders between the ports of entry, aviation, and maritime. The report also recognizes the many challenges that DNDO faces as it attempts to enhance nuclear detection capabilities, including technological limitations of detection equipment and sustaining initiatives beyond their pilot phase. We also believe that DNDO needs to undertake additional planning so that it can be in a better position to determine the work that remains. That is why our recommendation to develop a strategic plan for the domestic part of the global nuclear detection strategy is so crucial.

Finally, where appropriate, we have incorporated a variety of technical comments provided by DHS to better characterize DNDO's role and accomplishments, and the challenges it faces in developing a global nuclear detection strategy to combat nuclear smuggling. We do not believe that any of the comments that we incorporated represented a serious flaw in the content or quality of the draft report and in fact improve the technical accuracy of the report. In the few areas where DHS commented that we were factually incorrect, we have made minor changes to the report to clarify our point, to correct technical inaccuracies, or to avoid confusion. Where appropriate, we have provided additional information to

further support our point, in some cases using information contained in DHS's letter.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to interested congressional committees and Members of Congress, the Secretary of Homeland Security, the Secretary of Defense, the Secretary of Energy, and the Secretary of State. The report will also be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staffs have questions about this report, please contact me at (202) 512-3841 or maurerd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

David Maurer
Acting Director, Natural Resources and Environment

List of Requesters

The Honorable Joseph I. Lieberman
Chairman
Committee on Homeland Security
and Governmental Affairs
United States Senate

The Honorable Bennie G. Thompson
Chairman
The Honorable Peter T. King
Ranking Member
Committee on Homeland Security
House of Representatives

The Honorable Bart Gordon
Chairman
Committee on Science and Technology
House of Representatives

The Honorable Edolphus Towns
Chairman
Committee on Oversight and Government Reform
House of Representatives

The Honorable Charles E. Schumer
United States Senate

The Honorable James R. Langevin
House of Representatives

The Honorable Michael T. McCaul
House of Representatives

Appendix I: Comments from the Department of Homeland Security

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

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

Homeland Security

January 14, 2009

Mr. David Maurer
Acting Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Maurer:

RE: Draft Report GAO-09-257, Nuclear Detection: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities (360896)

The Department of Homeland Security (DHS or Department) appreciates the opportunity to review and comment on the draft report referenced above. While the U.S. Government Accountability Office's (GAO's) recommendations align with the Domestic Nuclear Detection Office's (DNDO's) past, present, and future actions, DNDO does not believe that GAO gave due credit to DNDO's strategic planning efforts and significant accomplishments, as detailed below. DNDO agrees that planning, like all endeavors, can always be improved and that office will continue to do so. However, considering GAO's report as a whole, GAO does not clearly and accurately explain (1) the background and context of DNDO's efforts to develop an enhanced global nuclear detection architecture, (2) what has been accomplished thus far, (3) what still remains to be done, and (4) what challenges DNDO faces in addressing this portion of its mission. In addition, the report contains a number of inaccuracies and omissions that make it less reliable and useful than it could be.

Because DNDO's comments are lengthy, the response is divided into two parts. The first part consists of general comments. The second part, contained in the ten-page attachment, consists of a page-by-page listing, with details on specific issues and concerns relative to the draft report. The Department believes that these comments are more than technical in nature. The comments provide balance, context, explanation, and address omissions and both parts should be considered as the Department's formal response.

General Comments

DNDO has developed and in conjunction with its partners is implementing a sound strategy for enhancing the global nuclear detection architecture, one of its core missions. While more remains to be done, DNDO has already made substantial progress toward implementing this strategy.

Beginning in 2005, DNDO and its interagency partners analyzed the then-existing or baseline detection architecture and identified serious gaps and vulnerabilities that were not being adequately addressed by then-existing detection programs in any agency. To address the gaps, a series of significant new initiatives has been launched and adjustments to existing programs have been

introduced. Particularly noteworthy are four major sets of gaps that previously had received insufficient attention: general aviation, small maritime craft, the land borders between designated ports of entry, and gaps within the domestic interior layer of the architecture (i.e., areas of the U.S. not on the borders). New initiatives have been launched in all of these areas and substantial progress has been made.

Putting these gaps on the agenda, in many cases for the first time, and launching new programs to address them, has in itself been a major achievement. DNDO and its partners have begun to shift the emphasis from a nuclear detection strategy that previously had focused almost exclusively on ports of entry, to a more balanced and comprehensive architecture that addresses a much broader spectrum of credible pathways by which adversaries could attack the United States.

None of these gaps has a "quick fix." In many cases, new technology and new concepts of operations will be needed to fully address the vulnerabilities. These new approaches will need to be adapted and refined based on lessons learned in the field to withstand the practical demands of deploying detection systems in challenging new settings. In some cases, a sustained effort over many years will be necessary.

As is often the case with challenging, long-term problems, not every detail can be spelled out at the beginning, and not every solution is in hand at the outset. Although much remains to be done, DNDO and its partners have identified the important vulnerabilities, are pursuing sound strategies for reducing them, and are making significant progress toward their solutions.

GAO's explanation of the status of these efforts does not present a complete and balanced picture of what has been accomplished and what is being done to address remaining vulnerabilities. For example, one of the cornerstones of the small maritime strategy is the DNDO-Coast Guard Joint Acquisition Strategy, a joint plan to procure and sustain the radiological and nuclear detection equipment needed for hundreds of Coast Guard boarding teams. This plan has already achieved its initial goals, providing full operational capability to the Coast Guard by the end of fiscal year 2007, and the sustainment phase is proceeding smoothly. GAO does not mention the Joint Acquisition Strategy in their report. A second example, also concerning the small maritime vessel threat, concerns the DHS Small Vessel Security Strategy and the accompanying DHS Small Vessel Security Implementation Plan. GAO mentions the Strategy in passing far back in the report, but not in the introductory or summary sections. The Implementation Plan is not mentioned at all.

DNDO agrees with GAO on the need for better documentation. It should be noted that there is no lack of documentation. DNDO provided GAO with more than 4000 pages of documents, numerous briefings with charts and handouts, and extensive written answers to questions contained in GAO questionnaires. However, better summary documents, including the overarching strategic plan recommended by GAO, will be valuable. Work has already begun on the overarching plan and additional supporting documents.

Sincerely,

Michael E. McPoland

for Jerald E. Levine
Director, Departmental GAO/OIG Liaison Office

Detailed Comments

See comment 1.

On the highlights page, GAO states: "However, DNDO-sponsored field evaluations to test radiation detection equipment are still not complete and DNDO may not have all radiation detection equipment in place until 2012." GAO does not clearly state why the field evaluations are not complete. The reason is that the first round of evaluations has shown that the existing commercial-off-the-shelf technology would not be effective in the intended application. Going ahead and continuing the evaluations, or proceeding to deploy ineffective equipment, just to meet the original field evaluation schedule, would have been inappropriate. Although not mentioned in the draft report, the Border Patrol has told GAO that lessons learned from the field evaluations have helped avert the expenditure of large amounts of taxpayer funds for equipment that would not have been effective.

See comment 2.

GAO states that DNDO may not have all radiation detection equipment in place until 2012. This statement does not make clear that this project is a joint effort with Customs and Border Protection (CBP). DNDO does not unilaterally put equipment in place. Furthermore, neither CBP nor DNDO will agree to put in place equipment that is not effective.

See comment 3.

At the end of that same paragraph, in connection with the Puget Sound small maritime pilot, GAO states that: "However, DNDO has made little progress in … resolving some of the challenges it faces in the pilot program, such as technological limitations of the detection equipment and sustaining current detection efforts." GAO does not explain the reasons behind these observations, thereby leaving a misleading impression that little is being accomplished. Not every challenge has a quick fix. An important part of DNDO's charter is to develop mid-term and long-term solutions when quick fixes are not available or effective. DNDO believes this work is vitally important and complementary to work focused on near-term solutions.

See comment 4.

In characterizing as a lack of progress those mid-term and long-term technology development efforts that have not yet "resolved the challenges," GAO understates the value, importance, and challenge of technology development efforts needed to arrive at effective solutions. With regard to GAO's statement that little progress is being made on "sustaining current detection efforts," the assertion is incorrect. Further related comments are mentioned later.

See comment 5.

On page 5, in the section on "Land border between ports of entry," GAO does not clearly acknowledge that DNDO and CBP developed a joint "Phased Deployment Implementation Plan," which was approved by senior management in both DNDO and CBP. Furthermore, GAO does not acknowledge that that plan specifically called for a phased approach, as its title indicates, whereby (1) each step was intended to be contingent on the results of previous steps, and (2) it was clearly understood at the outset that schedule adjustments would be made if the results of field evaluations so indicated. Similarly, the original plan had preliminary cost estimates, based on a set of working assumptions that were intended to be updated periodically based on the results of the field evaluations. GAO's report does not recognize that this type of phased approach is in fact appropriate for problems where simple, off-the-shelf solutions are not available, including for example the particularly challenging environment for radiation detection on the land border between ports of entry. Not every problem has a quick fix. As the Border Patrol has stated to GAO, this careful, step-by-step approach has averted the expenditure of large amounts of taxpayer funds on ineffective or inappropriate solutions. DNDO and CBP are working diligently to develop solutions that are effective and suitable for their intended applications.

See comment 6.

On page 5, in the section on "Aviation," GAO does not acknowledge that DNDO has put some of these issues on the agenda for the first time. If not for DNDO's work on aviation gaps and vulnerabilities, some of these issues (e.g., the issue of radiological and nuclear detection for international general aviation) would have received little or no attention.

See comment 7.

Second, GAO does not clearly explain the roles and responsibilities of DNDO, CBP and other government agencies in this section. The first two sentences refer to DNDO and to "DNDO initiatives." The next part of the paragraph then refers to CBP and states that CBP's "efforts to screen international cargo have not proceeded as smoothly" because of jurisdictional and operational issues between CBP and the Transportation Security Administration (TSA) and the local airport authority. The paragraph then states that these jurisdictional issues have "delayed DNDO's efforts…." GAO's account creates confusion about who is responsible for what. In fact, DNDO has no substantive involvement in jurisdictional issues between CBP and TSA, and the efforts to screen international cargo (which GAO refers to as "DNDO's efforts") are in fact a complex joint effort, involving multiple agencies. The paragraph should be rewritten to clarify roles and responsibilities.

See comment 8.

On page 5, in the section entitled "Small maritime vessels," GAO mischaracterizes the differences between detection in the small maritime setting and detection in the aviation and land border settings, saying that "…initiatives in the maritime environment require developing and testing new equipment and new procedures…," in contrast to the land border and aviation where the initiatives "are being integrated into already existing CBP screening operations." This supposed distinction is inaccurate. Many of the detection activities for the land border and for aviation do in fact require new procedures and new equipment (although existing equipment can be used in some instances). In the small maritime vessels setting, the Coast Guard has been doing maritime radiological and nuclear detection for years, and so existing equipment and procedures are being used there. In all settings, it is usually desirable to overlay radiological and nuclear detection operations onto existing law enforcement activities. This is being done for aviation, small maritime vessels and land applications.

See comment 9.

Later in that same paragraph, GAO does not provide essential context and perspective, and reaches conclusions that are not correct. GAO states: "DNDO has not established criteria for assessing the success of this pilot effort to help determine whether it should be expanded to other locations. In addition, should DNDO decide to continue this program, it does not currently have a plan detailing which locations it would target for maritime radiological and nuclear detection programs, nor has it estimated the total cost of this initiative." GAO also inaccurately implies that nothing is being or has been done about sustaining detection programs: "DNDO expects them [state, tribal, and local agencies] to seek funding from federal grant programs to sustain these initiatives. For many state and local agency officials we spoke with, the uncertainty of federal resources jeopardizes their ability to continue radiological and nuclear detection activities."

See comment 10.

GAO may have misunderstood what is intended here, perhaps because of the complexity of the grant process, although they acknowledge that Department of Homeland Security grant programs are the prescribed mechanism for extending these detection programs beyond the pilots. Congress has established the grant programs for precisely these kinds of activities. Congress does not provide funding to DNDO to pass through to State and local governments, except for certain pilot programs. If that Congressional policy is taken as the starting point (GAO has not recommended otherwise), then the operative question is how to adapt the grant process to address the small maritime vessel detection challenge. That is precisely what DNDO is working on.

GAO does not acknowledge that DNDO has already worked closely with the Coast Guard and the Federal Emergency Management Agency (FEMA) to craft language in the DHS Fiscal Year 2009 Port Security Grant Guidance and Homeland Security Grant Program Guidance that clearly makes funding for preventive radiological/nuclear detection systems a priority and encourages State and local agencies to consider this mission when submitting grant applications. Planning, equipment, training and exercise expenses are allowable under the grants, as well as specified overtime expenses. DNDO has also recommended that FEMA expand allowable maintenance costs and will continue to work with FEMA officials on these issues.

In terms of criteria, the port security grant process relies on a well-established risk scoring tool known as MSRAM (Maritime Security Risk Assessment Model) to score grant applications and, in conjunction with other factors, to determine whether they should be funded. Thus the criteria are risk-based. DNDO is working with the Coast Guard to adapt the MSRAM tool to accommodate more explicitly the radiological and nuclear detection challenge so that grant applications can be properly evaluated, through an annual competitive process that has been in routine use for several years.

Nominally, there are some 361 ports in the United States. In principle, they might all be candidates for some form of radiological/nuclear detection capabilities to guard against small maritime vessel threats. As stated earlier, however, the basic criteria are risk-based and not all ports will score equally. Basic data to estimate risk scores for ports are already included in the MSRAM model, and thus will be factored into the scoring; as noted above, the model is also being refined to better address radiological and nuclear scenarios.

In practice, the mechanism DNDO and the Coast Guard have adopted for outreach to the ports is via the Area Maritime Security Committees, of which there are some 46, generally covering multiple ports. (This fundamental element of DNDO's small maritime strategy is not mentioned anywhere in GAO's report.) It is DNDO's expectation that grant applications will ultimately come from participants in some fraction of these 46 AMSCs; the AMSCs are the organizing framework, and already have a well-established role. At present, we cannot estimate how many will apply, what specific assistance and funding they will seek, nor how their grant applications will score in comparison to others. Thus, it is not possible at present to estimate the total cost of the initiative. One of the principal purposes of the pilot projects is to establish a solid technical and analytic foundation so that those kinds of estimates can eventually be prepared. By not explaining this context, and calling for details that cannot possibly exist at this stage, GAO is presenting an incomplete picture of the situation.

See comment 11.

Also on page 6, in the paragraph on international activities, GAO does not recognize DNDO's recommendations for stronger international efforts on "Megaports for Air," small maritime vessel threats, general aviation, land borders between designated border crossings, and interior law enforcement in foreign countries. These represent significant gaps that DNDO has highlighted in the existing international programs and thus deserve explicit mention.

See comment 12.

On page 7, in a paragraph about budgets, GAO states that the budget crosscut information is not used to examine whether programs are aligned with priorities or to help establish current or future priorities. However, GAO says the opposite later in the report (on page 32), where it notes that "[DNDO] used these data to identify areas in which new initiatives may be needed. For example, in the most recent review, DNDO said that programs focused on the land border between ports of entry,

aviation, and maritime pathways will need to grow substantially in the years ahead." Other examples could also be cited. In addition, GAO does not provide context and explanation for the comment, and does not mention here an essential point, clearly recognized by Senators in the July 16 hearing before the Senate Homeland Security and Government Affairs Committee: DNDO has no authority over the budgets of other agencies. There is no requirement for other agencies to accept or act on recommendations or advice emerging from the budget crosscut.

See comment 13.

On page 8, GAO states that "DNDO has not yet established detailed plans to address those gaps and vulnerabilities…." GAO's statement is misleading, since it suggests DNDO has no plans or strategy to address the gaps and vulnerabilities. That is not correct. DNDO has identified gaps and vulnerabilities that previously were not being addressed, and we are systematically working to identify and develop workable solutions. The supposed lack of "detailed" plans, as GAO characterizes them, reflects the fact that solutions are not yet in hand for some of the key gaps and vulnerabilities. That does not mean there are no plans or strategy. We have already commented on this point in connection with the small maritime discussion on page 6, and we will return to it several times in the remainder of these comments.

See comment 14.

On page 11, GAO states: "In addition, DOE has programs to secure nuclear and radiological sources domestically. For example, the U.S. Radiological Threat Reduction program recovers and manages excess and unwanted radioactive sources that belong to U.S. licensees." GAO does not recognize the important role of many other agencies in domestic security. For radioactive materials, for example, the Nuclear Regulatory Commission and the Agreement States play a far more fundamental role than the DOE program mentioned by GAO, although that program is a valuable part of the overall picture.

See comment 15.

On page 12, GAO states: "Portal monitors are stationary or mobile pieces of equipment that can detect radioactive materials carried by vehicles." This statement is incomplete, overlooking other important uses of portal monitors to monitor pedestrians or packages, for example.
At the end of that same paragraph, GAO states: "Under certain circumstances, these devices [personal radiation detectors, or "pagers"] could also be used to detect smuggled nuclear material. However, they can only indicate variations in the general level of radiation and their sensitivity is limited because of the small size of the detector. Therefore, they should not be used for that purpose." This statement requires qualification and correction, because there are accepted applications in which pagers are used as a "tripwire," as part of a more complex inspection process. Although the limitations of pagers are significant and must be kept in mind, GAO overstates the case in saying "they should not be relied upon." Pagers have a legitimate role in some circumstances.

See comment 16.

Also on page 12, in a paragraph about the limitations of radiation detection devices, GAO states that "highly enriched uranium … is among the most difficult materials to detect because of its relatively low level of radioactivity." Although this is true for passive radiation detection, it is not true for all types of radiation detection devices, for example, active interrogation techniques or x-ray and gamma-ray imaging. Since this purports to be a generic discussion of radiation detection, GAO should take the extra effort to make its account technically precise by adding one word, "passive," before radiation detection. DNDO and other agencies are devoting significant R&D resources to active interrogation methods. Nonintrusive imaging techniques (e.g., x-ray and gamma ray) are also a significant focus of programs such as the Secure Freight Initiative. There is an important reason these techniques are receiving such emphasis—to solve the very problem that GAO raises but does not

accurately describe: limitations of ***passive*** radiation detection. To suggest, as GAO's language does, that the problem is intractable (i.e., that HEU cannot be detected at all) is incorrect.

See comment 17.

On the bottom of page 12, GAO has inserted a paragraph on Advanced Spectroscopic Portals (ASP). This subject is outside the agreed scope of this audit and the paragraph should be removed. GAO officials agreed that ASP would not be a part of this audit. At the entrance conference on October 18, 2007, Mr. F. James Shafer, Jr, accompanied by Messrs. Daren K. Sweeney and Eugene W. Wisnoski, explicitly stated that they would be pursuing "two separate jobs," namely this audit and an audit on the life cycle cost estimate for ASP. In response to DNDO questions about the scope of the two audits, Mr. Shafer further emphasized that for the audit of the global nuclear detection architecture (i.e., this audit) "I don't want to focus on ASP." In the earlier March 1, 2007 entrance conference, Mr. Shafer was equally clear about the scope—it would be a separate audit. In 2007 and 2008, Congressional staff who requested the audit told us the same thing: they wanted to have a separate audit on the global nuclear detection architecture.

We had the opportunity to review GAO's draft testimony prior to the July 16 hearing before the Senate Homeland Security and Government Affairs Committee. We questioned the inclusion of ASP matters in that testimony, for the same reasons we have stated here. Indeed, during the course of this audit, including extensive written questions and answers and numerous briefings, GAO did not ask us a single question about ASP, and, as such, ASP should not be included within the scope of this report.

See comment 18.

On page 13, GAO states: DNDO is still in the early stages of developing initiatives to address these vulnerabilities, and it has not clearly articulated a long term plan for how to achieve its goal of closing these gaps by expanding radiological and nuclear detection capabilities in the time frames identified." This is similar to the comment on page 8. Again GAO's statement is misleading, since it suggests DNDO has no plans or strategy to address the gaps and vulnerabilities. That is not accurate. DNDO has identified gaps and vulnerabilities that previously were not being addressed, and we are systematically working to identify and develop workable solutions. The supposed lack of "long term plans" as GAO states here reflects the fact that solutions are not yet in hand for some of the key gaps and vulnerabilities. Not every problem has a quick fix. That does not mean there are no plans or strategy. In the very next paragraph, GAO even talks about the joint plan with the Border Patrol extending to 2012 (as mentioned earlier, this plan is known as the Phased Deployment Implementation Plan). We have already commented on this point several times, and we will return to it again several times in the remainder of these comments.

See comment 19.

Beginning at the bottom of page 14, GAO's account of the work on the land border between ports of entry paints an incomplete picture, and does not clearly explain the real issues that DNDO and CBP are attempting to address. The key challenge is not simply to buy equipment. DNDO and CBP, including the Border Patrol, are engaged in a deliberate, systematic program to identify effective and workable solutions, and at the same time avoid wasteful expenditures on systems that would not work or that would not be suited for the intended application. GAO's heavy focus on alleged schedule delays, without clearly explaining the context and the challenges, is an oversimplification of a complex and important problem. For example, GAO does not mention the challenges posed by 4th Amendment legal issues, which have an important impact on some of the technical and operational options. GAO does not mention the four-layer, defense-in-depth concept for the land border between ports of entry, and the technical needs that each layer entails. GAO briefly mentions portability as a consideration in selecting equipment, but does not clearly explain the severe demands this places on

hardware choices, and the consequent implications for wide scale deployment of equipment in the near term.

See comment 20.

At the bottom of page 14, GAO reports incomplete information about the procurement of radioactive isotope identification devices (RIIDs), and confuses several distinct issues and programs.

With regard to the purchase of radioactive isotope identification devices (RIIDs) for the Border Patrol, the joint DNDO-CBP Phased Deployment Implementation Plan originally did not call for the purchase of any RIIDs for the Border Patrol in FY08. Therefore, GAO's statement (attributed to "CBP officials") that "in fiscal year 2008, DNDO did not procure needed detection equipment in a timely manner" requires explanation.

The FY08 procurements for the Border Patrol were initiated by DNDO and the Border Patrol in an effort to accelerate the milestones in the original Phased Deployment Implementation Plan, in order to meet the Border Patrol's urgent needs. Of course, by definition, in meeting urgent needs, faster is always better, but GAO's implication that there were inordinate delays and a lack of responsiveness on the part of DNDO is not an accurate account of what actually happened.

Although not in the original plan agreed to by DNDO and CBP, DNDO (in response to discussions with Border Patrol counterparts) became aware and recognized the importance of the acute shortage of detectors at the Office of Border Patrol (OBP). Since this procurement was not in the original plan or budget, DNDO took steps during the summer of 2008 to identify a source of funds at DNDO to accelerate purchase of RIIDs from FY09 to FY08. Because it was not part of the original approved plan, the DNDO Phased Deployment Implementation Plan (PDIP) representative asked for and received a written request from the OBP representative for 64 RIIDs to be procured at the earliest possible time. This request was approved by DNDO management, and a procurement request was processed. The detectors are scheduled to arrive early in fiscal year 2009. If they had not been ordered until FY09, as originally planned, they would have been delivered later, probably sometime in the second or third quarter in CY09. Thus, instead of delaying the procurements, DNDO expedited them.

DNDO similarly accelerated FY09 purchases for the Border Patrol, again responding to urgent Border Patrol requirements and going beyond the quantities specified in the PDIP. On December 16, we initiated a purchase order for an additional 169 RIIDs. Delivery of the first ten units is scheduled on January 23. After that, 10 systems a week will be shipped from January 30 through May 8, 2009, with the last delivery being 8 systems.

GAO reports statements by CBP officials about procurement delays, but does not mention the background or reasons. In FY 08, DNDO placed an order for 240 RIIDs, as GAO stated. It should be noted that this was a combined procurement for the Office of Field Operations (OFO) as well as for the Border Patrol. The status of RIIDs at ports of entry raises a different set of issues than the Border Patrol application, which GAO does not clearly explain. The Border Patrol aspect of the issue was discussed in the previous comments above, and as explained there, DNDO actually accelerated the procurement ahead of the original schedule. In any case, 240 RIIDs were ordered and the first 2 shipments were found during receiving inspection to have many failed units. Corrective actions were therefore necessary. In direct consultation with CBP, it was determined that a back-up RIID (a different make and model) should be explored so that if the original vendor could not fix its

production problems, DNDO and CBP could then switch to a new device and thereby meet OFO and OBP needs. A field evaluation was planned for the new device. Fifty new units were to be procured and tested at 2 CBP ports of entry. Steps were also taken in parallel to have the original vendor upgrade quality control procedures. All of these actions were taken with complete CBP involvement and cooperation. In summary, the root cause of these procurement issues was reliability problems with the equipment, a point not mentioned by GAO.

See comment 21.

On page 15, in the section on aviation, GAO has not clearly delineated the roles and responsibilities of the agencies involved in these programs. First, GAO states: "CBP, with the support of DNDO, has been working since 2005, on initiatives to screen all incoming international planes, cargo, and passengers." Then GAO states: "While DNDO has made progress in ensuring that appropriate operating procedures … are established, its other aviation initiatives have not proceeded as smoothly or have not yet begun." Later in the same section, GAO discusses the efforts to screen air cargo, saying "DNDO is working with CBP…," and also referring to jurisdictional disputes between CBP and TSA. The air cargo project was originally a CBP initiative that predated DNDO. It was part of CBP's Radiation Portal Monitoring Program. It is true that progress has been slow, for a variety of reasons. However, to attribute the delays to DNDO ("its other aviation initiatives have not proceeded as smoothly") is not correct. The reported jurisdictional disputes between CBP and TSA, for example, are not the responsibility of DNDO. This section should be rewritten to clarify roles and responsibilities.

See comment 22.

At the bottom of page 16, GAO describes a "demonstration of radiation detection capabilities" at Dulles airport. This anecdote, as presented, does not have a sound technical foundation, since the activity of the 137Cs' radiation source may not have been suitable for this type of dynamic test. First, GAO does not explain that the Cesium-137 check source used in the demonstration is tiny compared to the amounts that would constitute a serious concern. In the IAEA Code of Conduct, a category 3 quantity of Cesium-137 is 3 curies (or 0.1 TeraBecquerel), orders of magnitude larger than the check source in question. Most check sources are exempt-quantity amounts characterized by very low activity levels. These levels are far below the portal's design threshold when carried by a moving vehicle.

Furthermore, GAO's statement that "CBP uses this sample to routinely test equipment" is misleading. It is a check source, not a test source. The procedures for the use of a check source versus a test source are different. A check source is used to validate detector response to a source of radiation or possibly a calibration point, and is typically placed on the surface of the detector. This is the reason that check sources contain very little radioactive material. A test source is used to verify the operation of a detector by using it in the configuration that mimics the material in normal commerce. (e.g., in a car, in luggage) Thus a test source would contain a larger amount of radioactive material and more closely approximate the category 1 or 2 quantity that would be of concern. The demonstration, as described, has no technical basis.

See comment 23.

In the last paragraph on page 17, GAO states: "DNDO and CBP would like the detection of radiological and nuclear materials to occur as far outside U.S. borders as possible…." There is in fact a compelling security imperative here, which GAO minimizes by describing it as a mere preference by DNDO and CBP ("DNDO and CBP would like"). This is one of the largest and most important vulnerabilities in the existing detection architecture.

See comment 24.

On page 18, in the discussion of small maritime vessels, GAO's statement of the reasons that Puget Sound was chosen is incomplete. One of the major drivers behind the selection of Puget Sound is the volume of traffic from Asia, an important potential source of radiological and nuclear threats that pass through and near the Pacific Northwest.

See comment 25.

On page 18, the last sentence states: "According to DNDO's data for fiscal years 2008 and 2009, the agency requested $54.2 million for these and other maritime initiatives." This comment is misleading since it is at the bottom of a paragraph highlighting details of the West Coast Maritime Pilot project, leading the reader to infer the majority of this funding went to pilot project. For fiscal years 2008 and 2009 funding allocated for the pilot project is $14.7M.

See comment 26.

On page 19, GAO states that "DNDO has not yet developed plans for [sustaining maritime radiological and nuclear detection efforts]." This statement is inaccurate. As discussed earlier, DNDO plans to leverage the grant process and has already taken steps to make this happen, including working with the Coast Guard and FEMA to craft suitable grant guidance, and working with the Coast Guard to refine the MSRAM risk scoring tool to better represent radiological and nuclear detection scenarios. Furthermore, GAO does not recognize the role and clear direction of Congress in establishing grant programs as the mechanism for supporting State and local efforts. GAO's repeated statements that DNDO does not have a plan are incorrect. For example, the ongoing effort to update the MSRAM tool would not be happening in the absence of a plan to leverage the grant process.

See comment 27.

In the middle paragraph on page 20, GAO states: "Should its concept for detecting and interdicting radiological and nuclear material smuggled on small maritime vessels prove feasible, DNDO plans to develop guidance so that state and local law enforcement agencies can implement their own maritime radiological and nuclear detection programs." This has already been done. The "maritime module" of the Preventive Radiological and Nuclear Detection Handbook has been developed with the input of more than thirty state and local entities. The draft is currently under review and will be completed early in calendar year 2009.

See comment 28.

On page 21, GAO makes a number of incomplete statements about detection technologies in the maritime environment. First, GAO states that: "The boat-mounted radiation detection equipment is unable to indicate the direction of the radioactive material causing the alarm, making it difficult to identify the potential threat in an open sea with many small vessels, according to a local law enforcement officer we spoke with." The same problem occurs in the land and aviation vectors, and is addressed by applying appropriate concepts of operations (CONOPS). This is not a limitation that is unique to the maritime environment, nor is it intractable. Second, GAO implies serious problems with backpack detectors, because of the difficulties Coast Guard officers supposedly have maneuvering with these detectors. Difficulties notwithstanding, the Coast Guard has adopted, and routinely uses, backpack detectors. They determined several years ago that backpacks provide, on balance, a reasonable tool for meeting certain needs in the Coast Guard boarding team environment. Third, GAO implies that a serious problem exists because handheld detectors do not float if dropped overboard. The same can be said of many other tools used in the maritime environment, e.g., firearms, radios and other communication equipment, cameras and video equipment, etc. Simple solutions such as tethering the equipment are readily available and in some cases, have already been applied in the maritime environment to minimize loss or damage.

See comment 29.

On page 22, GAO asserts that "According to a DNDO official, DNDO was slow to process the order." Equipment delivery delays for the West Coast Pilot involved a number of challenges. For example when a pager, was ordered, the vendor did not have sufficient units in stock (the vendor actually had none) and did not notify DNDO. Upon discovery, DNDO took immediate action. Delivery of this equipment has begun, and with the exception of the backpacks, will be completed over the next several months with no adverse impact on the overall pilot timeline expected.

See comment 30.

On page 23, GAO states "However, NYPD officials told us that NYPD has another 28 boats that need to be equipped with radiation detection technology and these equipment purchases depend on the availability of future federal grant funding." NYPD was a major participant in developing the Securing the Cities initiative maritime concept of operations (CONOPS), which for the nine identified maritime chokepoints, called for "…2 boat-mounted detectors per chokepoint at a minimum with a minimum of 1 RIID at each chokepoint to obtain spectrum..." Sufficient funding exists within the STC initiative to achieve this CONOPS if NYPD so desires.

See comment 31.

On page 23, GAO states: "DNDO officials told us that their efforts are very complex because each agency has a distinct area of authority." This quote is incomplete. There are many other reasons contributing to the complexity, besides the one GAO mentions, and we have raised those issues with GAO.

See comment 32.

On page 27, GAO states: "According to DNDO, it collected information on radiation detection equipment from DOD, DOE and State most recently in 2007." DNDO collected such information beginning in 2005 and is updating some of the information in 2008 and 2009.

See comment 33.

At the bottom of page 25, GAO states: "Although DNDO has detailed information on the budgets for various security and detection programs, it is not using this information to ensure that agencies efforts are directed toward the highest priorities." GAO does not note that DNDO has no authority to "ensure that agencies efforts are directed toward the highest priorities." This issue was a major point of discussion at the July 16 hearing before the Senate Homeland Security and Government Affairs Committee; GAO does not address it.

See comment 34.

On page 34, GAO states that "DNDO has not yet taken steps to work with DOE, DOD, and State to develop an overarching strategic plan, as we recommended in July 2008." GAO's statement is incorrect. For example, we included a call for strategic planning information as part of the data call issued for the next edition of the Joint Annual Interagency Review of the Global Nuclear Detection Architecture.

The following are GAO's comments on the Department of Homeland Security's letter dated January 14, 2009.

GAO Comments

1. We agree with DHS that deploying or purchasing ineffective equipment would be inappropriate. We also agree with DHS that, as we reported, field evaluations are not complete and that the necessary equipment may not be deployed until 2012. We discuss the reasons for these delays on page 14 of the report. In addition, we disagree with DHS's assertion that Border Patrol told us that lessons learned from field evaluations "would help avert large amounts of taxpayer funds for equipment that would not have been effective." We do not dispute the importance of spending taxpayer dollars wisely; however, it was not expressed to us as such until this letter.

2. We added language on the highlights page to clarify that CBP is also responsible for putting radiation detection equipment in place.

3. We discuss in more depth the technological limitations of detection equipment and sustaining detection efforts on pages 19 through 21 of the report.

4. DHS commented that we have understated the value, importance, and challenge of technology development efforts needed to arrive at effective solutions. We disagree. We acknowledge these challenges in the body of the report and discuss some of the measures DNDO has taken to develop needed equipment. Furthermore, we disagree with DNDO's statement about our findings regarding the status of sustainability planning. We describe at more length on pages 19 and 20 of the report our concerns with DNDO's efforts to sustain maritime initiatives into the future.

5. While we do not mention the Phased Deployment Implementation Plan by name, on page 14 we state that DNDO and CBP are jointly working on measures to better secure the border areas between ports of entry and that these efforts are part of a phased approach. We have added clarifying language to the paragraph on page 4 to more clearly delineate the different roles CBP and DNDO play in this regard. Furthermore, while we do not disagree with taking a phased approach, DNDO has not kept to its original schedule and if such delays continue, it is uncertain whether DNDO and CBP will meet their original goal of full deployment of equipment by 2012.

6. We have modified the text on page 16 to include a reference that efforts to screen aviation for radiological and nuclear materials are being included in the strategy for the first time.

7. We have modified the language on page 5 to clarify the roles and responsibilities of DNDO and CBP.

8. DHS may have misunderstood the point we were making concerning maritime screening as compared with land and aviation screening. We agree that non-port of entry screening will require modifications to existing screening operations and new equipment. However, we were told that maritime screening posed unique challenges, which we have documented on pages 18-21 of this report.

9. We disagree with DHS that the conclusions we reach regarding the maritime program are incorrect. Although DHS comments that our conclusions are incorrect, DHS does not dispute the facts we present. Namely, DNDO has not established criteria for assessing the success of pilot efforts and it has no plan detailing which locations it would target next. Furthermore, during the course of our work we heard repeated concerns about the sustainability of the maritime radiological and nuclear screening from state and local law enforcement. Specifically, we asked the maritime mission area manager if a sustainability plan existed and we were told no. After our visit to Puget Sound, we received an e-mail from the manager stating DNDO would begin to develop a sustainability plan should the decision be made to continue the initiative.

10. We understand the role of grants in funding these types of activities and agree with DHS that, according to DNDO, grants are the primary mechanism it plans to rely on for sustaining radiological and nuclear detection activities in the maritime environment. We agree with DNDO efforts to work with the Coast Guard to adapt the Maritime Security Risk Assessment Model to accommodate more explicitly radiological and nuclear detection challenges. However, we maintain our concern that DNDO does not have any detailed plans, including how and where a broader strategy would be implemented, what technology would be needed, what organizations should be involved, and how such efforts would be sustained for this important national security issue.

11. DNDO incorrectly asserted that we did not recognize its contributions to international efforts. On page 23 of the report we acknowledged DNDO's efforts to look for opportunities to work with other agencies to help strengthen their radiological and nuclear detection efforts,

despite the fact that these programs to combat nuclear smuggling are well established and are under the purview of another agency.

12. DNDO has misunderstood the reference to its annual assessment of the global nuclear detection strategy and we believe the text that now appears on page 6 is consistent with our discussion later in the report. Our discussion on page 6 focuses on the global strategy, encompassing radiological and nuclear detection activities across all relevant government agencies. The reference DNDO makes to text later in the report focuses specifically on actions taken by DNDO to enhance domestic detection capabilities. However, we have modified the language to be clearer about what is being discussed in each place. We acknowledge that DNDO does not have authority over the budgets of other agencies and we would not advocate for such authority to be provided to it. However, DNDO is responsible for enhancing and coordinating federal, state, and local efforts to combat nuclear smuggling domestically and overseas. We believe that the analysis we are recommending—that DNDO undertake using data collected as part of the Joint Annual Interagency Review—is consistent with this requirement.

13. We recommended that DNDO develop a strategic plan to guide the development of a more comprehensive global nuclear strategy and delineated what such a plan should contain, including clearly defined objectives, roles, and responsibilities for meeting the objectives; necessary funding; and monitoring mechanisms to determine progress in meeting goals. However, DNDO has not yet produced such a strategic plan. We acknowledge that combating nuclear smuggling on a global scale is a large and complex undertaking. We repeatedly asked DNDO for detailed plans, containing the elements described above, but did not receive any.

14. We have modified the text on page 12 to recognize the role of the Nuclear Regulatory Commission.

15. DNDO commented that portal monitors can also be used to monitor pedestrians, but according to CBP, it does not currently use portal monitors for this purpose. However, we have modified the text to reflect that portal monitors are used for screening cargo containers. With regard to the use of pagers to detect smuggled nuclear material, we have reported in the past on the limitations of using these devices and that pagers should not be relied upon to detect smuggled nuclear material.

16. None of the radiation detection devices discussed in this report use the active interrogation techniques cited by DHS.

17. DHS commented that including a paragraph on ASPs (now on page 13) was beyond the scope of this audit and should be removed from this report. The scope of our review is presented on pages 3 and 4 of the report. As such, we agree with DHS that our review did not include an assessment of DNDO's efforts to test and procure ASP technology. However, several prior GAO reports have found significant problems with DNDO's work in this area. Reporting the results of our prior work in the background of this report is appropriate and germane because portal monitors are a key component of the global nuclear detection strategy.

18. DHS commented that our findings on DNDO's lack of long-term plans are misleading and suggest DNDO has no plans or strategies. We agree that DNDO has identified gaps and vulnerabilities and has taken some steps to address these, including jointly working with CBP as mentioned on page 14 of our report. However, DHS does not dispute our finding that it has not developed a detailed plan, which clearly conveys the goals, responsibilities, resource needs, and performance metrics needed to further its detection efforts. Identifying gaps and initiating programs are positive steps toward enhancing detection capabilities, but these efforts alone do not constitute a long-term plan. Without a detailed, documented plan, DNDO will be unable to determine whether these new programs are actually succeeding and addressing the identified gaps.

19. We believe DHS had misconstrued our description of efforts to implement radiological and nuclear screening at the border areas in between official ports of entry. We acknowledge that there are a number of challenges associated with implementing portable detection equipment for use in the field and appreciate DNDO and CBPs efforts to develop this capability. However, the fact remains that DNDO has not kept to its original schedule, and if such delays continue, it is uncertain whether DNDO and CBP will meet their original goal of full deployment of such equipment by 2012.

20. Our description of the procurement challenges faced by DNDO and CBP is an accurate summary of the information we were provided. One of DNDO's primary roles is to test and procure needed radiological and nuclear detection equipment for use by CBP and other agencies. We were informed by CBP that it did not receive the equipment it had originally ordered in the agreed upon time frames.

Regardless of whether the equipment was for use at an official border crossing or for use by Border Patrol officers in the field, the needed equipment was not procured as requested. In CBP's technical comments on a draft of this report, it stressed that its radiological and nuclear detection equipment procurement funding was handed over to DNDO in 2006. CBP further stated that it believes that the most effective way to procure commercial off-the-shelf equipment is for CBP to have its own radiation and nuclear equipment budget.

21. We have modified the text on pages 15 through 17 to more clearly delineate roles and responsibilities.

22. We have accurately described what we observed during our visit to Dulles International Airport. We were told by CBP officials that the source used in the demonstration was what they use to routinely check the responsiveness of the portal monitor and successfully did just that earlier in the week.

23. We believe DHS has misconstrued our statement about detecting radiological and nuclear material outside the U.S. borders. We are not minimizing the importance of such a goal. In fact, since DNDO believes that it is one of the largest and most important vulnerabilities in the existing detection architecture, it will be even more important that DNDO develop detailed plans for securing such arrangements with as many nations as possible.

24. We have listed on page 18 of the report a number of other factors we were told by DHS officials influenced the decision to pilot the maritime program in the Puget Sound area. In response to the draft report, DHS provided an additional reason for the selection of Puget Sound.

25. We modified the text on page 19 to include the actual funding amount for the pilot project.

26. See comments 9 and 10.

27. DHS provided new information that the Preventative Radiological and Nuclear Detection handbook is under development and that DNDO reached out to state and local entities in its development. This is another positive step. However, as DNDO stated, this handbook is currently in draft, undergoing review, and not yet finalized or in use by any locale.

28. We believe DNDO has incorrectly characterized our finding regarding detection technologies in the maritime environment. On pages 20 and 21, our report delineates some of the technological limitations, as they were presented to us by the users of the equipment. We do not assert that these limitations are insurmountable; only that they exist and should be taken into consideration when crafting a plan for radiological and nuclear detection in the maritime environment.

29. The information contained in the report on page 22 is factually accurate.

30. The information contained on pages 22 and 23 of the report was obtained through interviews with NYPD officials in the presence of a DNDO representative. The primary purpose of the statement was to point out the number of boats with boat-mounted radiation detection equipment in use at the time of our review.

31. While there are other complexities with developing a global nuclear detection strategy, DNDO officials repeatedly told us during the course of our review that a primary complicating factor is the office's limited ability to influence other agencies' programs to combat nuclear smuggling.

32. We modified the text on page 25 to reflect DNDO's efforts to update some of the information.

33. We modified the text on page 25 to reflect the fact that DNDO should coordinate with other agencies on the overall strategic direction of detection efforts.

34. In response to our July 2008 recommendation that DNDO develop an overarching strategic plan, DNDO commented that it has included a request for strategic planning information as part of its efforts to develop the next edition of the Joint Annual Interagency Review. However, DHS did not comment on how this will inform or contribute to an overarching strategic plan to guide future enhancement to global nuclear detection.

Appendix II: Comments from the Department of Defense

ASSISTANT TO THE SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

NUCLEAR AND CHEMICAL
AND BIOLOGICAL DEFENSE
PROGRAMS

JAN 13 2009

Mr. David Maurer
Acting Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Maurer:

The following submission is the Department of Defense (DoD) response to the GAO draft report GAO-09-257, "NUCLEAR DETECTION: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities. Detailed comments on the report recommendations are enclosed.

DoD appreciates the opportunity to review and comment on this draft report. After reviewing the report, DoD concurs with the recommendation.

Sincerely,

for Fred S. Celec

Enclosure:
As stated

GAO Draft Report Dated December 18, 2008
GAO-09-257 (GAO CODE 360896)

"NUCLEAR DETECTION: DOMESTIC NUCLEAR DETECTION OFFICE SHOULD IMPROVE PLANNING TO BETTER ADDRESS GAPS AND VULNERABILITIES

DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS

RECOMMENDATION: The GAO recommends that the Secretary of Homeland Security, in coordination with the Secretary of Defense, the Secretary of Energy, and the Secretary of State, use the Joint Annual Interagency Review to guide future strategic efforts to combat nuclear smuggling.

DOD RESPONSE: DoD concurs with this recommendation. Greater use could be made of the review associated with the development of this annual report to guide U.S. efforts to combat nuclear smuggling.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

David Maurer, 202-512-3841 or maurerd@gao.gov

Staff Acknowledgments

In addition to the contact person named above, Glen Levis (Assistant Director), Elizabeth Erdmann, Rachel Girshick, Sandra Kerr, Omari Norman, Kim Raheb, Rebecca Shea, Carol Herrnstadt Shulman, and Tommy Williams made key contributions to this report.

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