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# COMBATING NUCLEAR SMUGGLING

# DHS has Developed a Strategic Plan for its Global Nuclear Detection Architecture, but Gaps Remain

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Chairman Lungren, Ranking Member Clarke, and Members of the Subcommittee:

We are pleased to be here today to discuss our past work examining the Department of Homeland Security's (DHS) progress and efforts in planning, developing, and deploying its global nuclear detection architecture (GNDA). The overall mission of the GNDA is to use an integrated system of radiation detection equipment and interdiction activities to combat nuclear smuggling in foreign countries, at the U.S. border, and inside the United States. Terrorists smuggling nuclear or radiological material into the United States could use these materials to make an improvised nuclear device or a radiological dispersal device (also called a "dirty bomb"). The detonation of a nuclear device in an urban setting could cause hundreds of thousands of deaths and devastate buildings and physical infrastructure for miles. While not as damaging, a radiological dispersal device could nonetheless cause hundreds of millions of dollars in socioeconomic costs as a large part of a city would have to be evacuated—and possibly remain inaccessible—until an extensive radiological decontamination effort was completed. Accordingly, the GNDA remains our country's principal strategy in protecting the homeland from the consequences of nuclear terrorism.

The GNDA is a multi-departmental effort coordinated by DHS's Domestic Nuclear Detection Office (DNDO).[1] DNDO is also responsible for developing, acquiring, and deploying radiation detection equipment to support the efforts of DHS and other federal agencies. Federal efforts to combat nuclear smuggling have largely focused on established ports of entry, such as seaports and land border crossings. However, DNDO has also been examining nuclear detection strategies along other potential pathways and has identified several gaps in the GNDA, including (1) land border areas between ports of entry into the United States; (2) international general aviation; and (3) small maritime craft, such as recreational boats and commercial fishing vessels. Developing strategies, technologies, and resources to address these gaps remains one of the key challenges in deploying the GNDA.

[1]Other departments and agencies contributing to the GNDA include the Departments of Energy, State, Defense, and Justice; the Office of the Director of National Intelligence; and the Nuclear Regulatory Commission.

Even before DNDO's inception in 2005,[2] we were highlighting the need for a more comprehensive strategy for nuclear detection. In 2002, we reported on the need for a comprehensive plan for installing radiation detection equipment, such as radiation portal monitors, at all U.S. border crossings and ports of entry.[3] We reported that this plan should (1) address vulnerabilities and risks; (2) identify the complement of radiation detection equipment that should be used at each type of border entry point—air, rail, land, and sea—and whether equipment could be immediately deployed; (3) identify longer-term radiation detection needs; and (4) develop measures to ensure that the equipment is adequately maintained. More recently, in July 2008, we testified that DNDO had not developed an overarching strategic plan and recommended that DHS coordinate with the Departments of Defense, Energy, and State to develop one.[4] In January 2009, we recommended that the Secretary of Homeland Security develop a strategic plan for the domestic part of the global nuclear detection strategy to help ensure the success of initiatives aimed at closing gaps and vulnerabilities in the United States.[5] We stated that this plan should focus on, among other things, establishing time frames and costs for the three gaps DNDO had identified—land border areas between ports of entry, aviation, and small maritime vessels. DHS agreed with the 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. DHS did not comment on our 2009 recommendation to develop a plan for the domestic portion of the GNDA but noted that it aligned with DNDO's past, present, and future actions.

As we will discuss today, some progress has been made, but DHS and other federal agencies have yet to fully address gaps in the global nuclear

[2]National Security Presidential Directive 43 / Homeland Security Presidential Directive 14, *Domestic Nuclear Detection*, April 15, 2005. DNDO was established in statute by the Security and Accountability for Every Port Act of 2006 (SAFE Port) Act, Pub. L. No. 109-347, § 501 (codified at 6 U.S.C. §§ 591-596a).

[3]GAO, *Customs Service: Acquisition and Deployment of Radiation Detection Equipment*, GAO-03-235T (Washington, D.C.: Oct. 17, 2002).

[4]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).

[5]GAO, *Nuclear Detection: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities*, GAO-09-257 (Washington D.C.: Jan. 29, 2009).

detection architecture. Specifically, this testimony discusses DHS's efforts to (1) address our prior recommendations to develop a strategic plan for the GNDA, including developing strategies to prevent smuggling of nuclear or radiological materials via the critical gaps DNDO identified, (2) complete the deployment of radiation detection equipment to scan all cargo and conveyances entering the United States at ports of entry, and (3) develop new technologies to detect nuclear or radioactive materials.

This testimony is based on our prior work on U.S. government efforts to detect and prevent the smuggling of nuclear and radiological materials issued from October 2002 through September 2010. We updated this information in July 2011 to reflect DHS's efforts to address our prior recommendations by meeting with DNDO officials and reviewing recent DNDO documents, such as the 2010 GNDA Strategic Plan and the 2011 GNDA Joint Annual Interagency Review.[6] Our comments on DNDO's efforts to develop new technologies to detect nuclear material are based on our prior work on DHS's progress and challenges developing and acquiring new technologies issued from May 2009 through July 2011. Details on the scope and methodology for those reviews are available in our published reports.[7] We conducted this work in accordance with generally accepted government auditing standards.

In summary, since December 2010, DNDO has issued both a strategic plan to guide the development of the GNDA and an annual report on the current status of the GNDA. The new strategic plan addressed some key components of what we previously recommended be included in a strategic plan, such as identifying the roles and responsibilities for meeting strategic objectives. However, neither the plan nor the annual report identifies funding needed to achieve the strategic plan's objectives or employs monitoring mechanisms to determine programmatic progress and identify needed improvements. DHS officials informed us that they

[6]The *Global Nuclear Detection Architecture Joint Annual Interagency Review 2011* was produced by DNDO in response to Section 1103 of the "Implementing Recommendations of the 9/11 Commission Act of 2007" (Pub.L. No. 110-53), which mandates a Joint Annual Interagency Review of the GNDA and the joint submission of a report on that review to the President and specified Congressional Committees by the Secretaries of Homeland Security, State, Defense, Energy; the Attorney General; and the Director of National Intelligence.

[7]See a list of related GAO products at the end of this statement.

will address these missing elements in an implementation plan, which they plan to issue before the end of this year.

As we reported in September 2010, DHS has made progress in deploying both radiation detection equipment and developing procedures to scan cargo entering the United States through land and sea ports of entry for nuclear and radiological materials.[8] For example, according to DHS officials, the department scans nearly 100 percent of the cargo and conveyances entering the United States through land borders and major seaports. However, as we reported in July 2011, DHS has experienced challenges in developing new technologies to detect nuclear and radiological materials, such as developing and meeting key performance requirements.[9] DHS has plans to enhance its development and acquisition of new technologies, although it is still too early to assess their impact on addressing the challenges we identified in our past work.

## DHS Has Developed a Strategic Plan for GNDA, but It Does Not Yet Discuss Key Elements for Addressing Gaps

In our past work on GNDA, we made recommendations about the need for a strategic plan to guide the development of the GDNA. Among other things, in July 2008, we recommended that DHS develop an overall strategic plan for the GNDA that (1) clearly defines the objectives to be accomplished, (2) identifies the roles and responsibilities for meeting each objective, (3) identifies the funding necessary to achieve those objectives, and (4) employs monitoring mechanisms to determine programmatic progress and identify needed improvements.[10] In January 2009, we also recommended that DHS develop strategies to guide the domestic aspects of the GNDA including establishing time frames and costs for addressing previously identified gaps in the GNDA—land border areas between ports of entry, international general aviation, and small maritime vessels.[11] DHS concurred with our 2008 recommendation to develop an overall strategic plan and did not comment on our 2009

[8]GAO, *Combating Nuclear Smuggling: Inadequate Communication and Oversight Hampered DHS Efforts to Develop an Advanced Radiography System to Detect Nuclear Materials*, GAO-10-1041T (Washington D.C.: Sept. 15, 2010).

[9]GAO, *Homeland Security: DHS Could Strengthen Acquisitions and Development of New Technologies*, GAO-11-829T (Washington D.C.: July 15, 2011).

[10]GAO-08-999T.

[11]GAO-09-257.

recommendation to develop a plan for the domestic portion of the GNDA, but noted that it aligned with DNDO's past, present, and future actions.

In December 2010, DNDO issued a strategic plan for the GNDA. The strategic plan establishes a broad vision for the GNDA, identifies cross-cutting issues, defines several objectives, and assigns mission roles and responsibilities to the various federal entities that contribute to the GNDA. For example, the Department of Energy has the lead for several aspects of enhancing international capabilities for detecting nuclear materials abroad, DHS has the lead for detecting nuclear materials as they cross the border into the United States, and the Nuclear Regulatory Commission has the lead on reporting and sharing information on lost or stolen domestic radiological material. In addition, earlier this year, DNDO released the *Global Nuclear Detection Architecture Joint Annual Interagency Review 2011*. This review describes the current status of GNDA and includes information about the multiple federal programs that collectively seek to prevent nuclear terrorism in the United States.

However, neither the strategic plan nor the 2011 interagency review identifies funding needed to achieve the strategic plan's objectives nor establishes monitoring mechanisms to determine programmatic progress and identify needed improvements—key elements of a strategic plan that we previously identified in our recommendations. Furthermore, while the plan and the 2011 interagency review discuss previously identified gaps in the domestic portion of the architecture, neither discusses strategies, priorities, timeframes, or costs for addressing these gaps.

In our view, one of the key benefits of a strategic plan is that it is a comprehensive means of establishing priorities, and using these priorities to allocate resources so that the greatest needs are being addressed. In times of tight budgets, allocating resources to address the highest priorities becomes even more important. Accordingly, while DNDO's new strategic plan represents an important step forward in guiding the development of the GNDA, DNDO could do more to articulate strategies, priorities, timeframes and costs in addressing gaps and further deploying the GNDA in order to protect the homeland from the consequences of nuclear terrorism. In discussing these issues with DHS officials, they indicated that they will be producing a GNDA implementation plan later this year that will address several of these issues.

## DHS Continues to Make Progress in Deploying Radiation Detection Equipment

As we reported in June 2010, DHS has made significant progress in deploying both radiation detection equipment and developing procedures to scan cargo and conveyances entering the United States through fixed land and sea ports of entry for nuclear and radiological materials, deploying nearly two-thirds of the radiation portal monitors identified in its deployment plan. According to DHS officials, the department scans nearly 100 percent of the cargo and conveyances entering the United States through land borders and major seaports. However, as we reported, DHS has made less progress scanning for radiation in (1) railcars entering the United States from Canada and Mexico; (2) international air cargo; and (3) international commercial aviation aircraft, passengers, or baggage.

### Fixed Land and Sea Ports of Entry

According to DHS officials, since November 2009, almost all non-rail land ports of entry have been equipped with one or more radiation detection portal monitors and 100 percent of all cargo, conveyances, drivers, and passengers driving into the United States through commercial lanes at land borders are scanned for radiation, as are more than 99 percent of all personally operated vehicles (non commercial passenger cars and light trucks), drivers, and passengers. Similarly, at major seaports, according to DHS officials, the department scans nearly all containerized cargo entering U.S. seaports for nuclear and radiological materials. DHS has deployed radiation portal monitors to major American seaports that account for the majority of cargo entering the United States. However, some smaller seaports that receive cargo may not be equipped with these portal monitors. DHS officials stated that current deployment plans have been in place to address all the remaining gaps in the deployment of portal monitors to seaports but that current and future budget realities require a re-planning of the deployment schedule.

### International Rail

DHS has made much less progress scanning international rail. As we reported in June 2010, there is limited systematic radiation scanning of the roughly 4,800 loaded railcars entering the United States each day from Canada and Mexico. Much of the scanning for radioactive materials that takes place at these ports of entry is conducted with portable, hand-held radioactive isotope identification devices. According to DHS officials, international rail traffic represents one of the most difficult challenges for radiation detection systems due to the nature of trains and the need to develop close cooperation with officials in Mexico and Canada. In addition, DHS officials told us that rail companies resist doing things that might slow down rail traffic and typically own the land where DHS would need to establish stations for primary and secondary screening. DHS is in

the early stages of developing procedures and technology to feasibly scan international rail traffic.

## International Air Cargo and Commercial Aviation

As we reported in 2010, DHS is in the early stages of addressing the challenges of scanning for radioactive materials presented by air cargo and commercial aviation. DHS officials are also developing plans to increase their capacity to scan for radioactive materials in international air cargo conveyed on commercial airlines. DHS officials stated that their experience in scanning air cargo at a few major international airports in the United States has helped them develop scanning procedures and inform current and future deployment strategies for both fixed and mobile radiation detection equipment. These officials said that they believe that further operational experience and research is necessary before they can develop practical mobile scanning strategies and procedures. DHS is also developing plans to effectively scan commercial aviation aircraft, passengers, and baggage for radioactive materials.

## DHS Has Had Difficulty in Developing New Technologies to Detect Nuclear Materials

Since 2006, we have reported that DHS faces difficulties in developing new technologies to detect nuclear and radiological materials. Specifically, we have reported on longstanding problems with DNDO's efforts to deploy advanced spectroscopic portal (ASP) radiation detection monitors. The ASP is a more advanced and significantly more expensive type of radiation detection portal monitor to replace the polyvinyl toluene (PVT) portal monitors in many locations that the Customs and Border Protection (CBP), an agency within DHS, currently uses to screen cargo at ports of entry. We have issued numerous reports regarding problems with the cost and performance of the ASPs and the lack of rigor in testing this equipment. For example, we found that tests DNDO conducted in early 2007 used biased test methods that enhanced the apparent performance of ASPs and did not use critical CBP operating procedures that are fundamental to the performance of current radiation detectors.[12] In addition, in 2008 we estimated the lifecycle cost of each standard cargo version of the ASP (including deployment costs) to be about $822,000, compared with about $308,000 for the PVT portal monitor, and the total program cost for DNDO's latest plan for deploying radiation

[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).

portal monitors to be about $2 billion.[13] Based in part on our work, DHS informed this Committee in February 2010, after spending over $280 million, that the department had scaled back its plans for the development and use of ASP technology.

In September 2010, we also reported that DNDO was simultaneously engaged in the research and development phase while planning for the acquisition phase of its cargo advanced automated radiography system (CAARS) to detect certain nuclear materials in vehicles and containers at CBP ports of entry.[14] DNDO pursued the deployment of CAARS without fully understanding that it would not fit within existing inspection lanes at ports of entry and would slow down the flow of commerce through these lanes, causing significant delays. DHS spent $113 million on the program since 2005 and cancelled the acquisition phase of the program in 2007. As we reported in September 2010, no CAARS machines had been deployed, and CAARS machines from various vendors were either disassembled or sitting idle without being tested in a port environment.

DNDO's problems developing the ASP and CAARS technologies are examples of broader challenges DHS faces in developing and acquiring new technologies to meet homeland security needs. Earlier this month, we testified that DHS has experienced challenges managing its multibillion-dollar acquisition efforts, including implementing technologies that did not meet intended requirements and were not appropriately tested and evaluated, and has not consistently completed analysis of costs and benefits before technologies were implemented.[15] In June 2011, DHS reported to us that it is taking steps to strengthen its investment and acquisition management processes across the department. For example, DHS plans to establish a new model for managing departmentwide investments, establish new councils and boards to help ensure that test and evaluation methods are appropriately considered, and is working to improve the quality and accuracy of program cost estimates. As we testified, we believe these are positive steps and, if implemented effectively, could help the department address

[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 DC: Sept 22, 2008).

[14]GAO-10-1041T.

[15]GAO-11-829T.

many of its acquisition challenges. However, it is still too early to assess the impact of DHS's efforts to address these challenges. Going forward, we believe DHS will need to demonstrate measurable, sustained progress in effectively implementing these actions.

Chairman Lungren, Ranking Member Clarke, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

## GAO Contacts and Staff Acknowledgements

For questions about this statement, please contact David C. Maurer at (202) 512-9627 or maurerd@gao.gov or Gene Aloise at (202) 512-3841 or aloisee@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this statement include Ned Woodward and Kevin Tarmann.

# Related GAO Products

*Homeland Security: DHS Could Strengthen Acquisitions and Development of New Technologies, GAO-11-829T* (Washington, D.C.: July 15, 2011).

*DHS Science and Technology: Additional Steps Needed to Ensure Test and Evaluation Requirements Are Met*, GAO-11-596 (Washington, D.C.: June 15, 2011).

*Supply Chain Security: DHS Should Test and Evaluate Container Security Technologies Consistent with All Identified Operational Scenarios To Ensure the Technologies Will Function as Intended*, GAO-10-887 (Washington D.C.: Sept. 29, 2010).

*Combating Nuclear Smuggling: Inadequate Communication and Oversight Hampered DHS Efforts to Develop an Advanced Radiography System to Detect Nuclear Materials*, GAO-10-1041T (Washington D.C.: Sept. 15, 2010).

*Department of Homeland Security: Assessments of Selected Complex Acquisitions.* GAO-10-588SP (Washington, D.C.: June 30, 2010).

*Combating Nuclear Smuggling: Lessons Learned from DHS Testing of Advanced Radiation Detection Portal Monitors,* GAO-09-804T (Washington, D.C.: June 25, 2009).

Combating Nuclear Smuggling: DHS Improved Testing of Advanced Radiation Detection Portal Monitors, but Preliminary Results Show Limits of the New Technology. GAO-09-655 (Washington, D.C.: May 21, 2009).

*Nuclear Detection: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities*, GAO-09-257 (Washington D.C.: Jan. 29, 2009).

*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 DC: Sept. 22, 2008).

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