

DEPARTMENT OF HOMELAND SECURITY
Office of Inspector General

**DHS' Domestic Nuclear Detection Office
Progress in Integrating Detection Capabilities
and Response Protocols**



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Preface

The Department of Homeland Security (DHS) Office of Inspector General was established by the *Homeland Security Act of 2002* by amendment to the *Inspector General Act of 1978*. This is one of a series of audit, inspection, and special reports prepared as part of our oversight responsibilities to promote economy, efficiency, and effectiveness within the department.

This report addresses DHS' Domestic Nuclear Detection Office programs and initiatives to support the integration of domestic radiological and nuclear detection, notification, and response systems, including its coordination efforts with other federal and state governmental entities. The report also examines efforts undertaken by the Domestic Nuclear Detection Office to identify and address potential program overlap with other federal agencies involved in nuclear detection. It is based on interviews with employees and officials of relevant agencies and institutions and a review of applicable documents.

The analysis herein has been developed to the best knowledge available to our office, and has been discussed in draft with those responsible for implementation. It is our hope that this report will result in more effective, efficient, and economical operations. We express our appreciation to all of those who contributed to the preparation of this report.

A handwritten signature in cursive script that reads "Richard L. Skinner".

Richard L. Skinner
Inspector General

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Abbreviations

CBP	U.S. Customs and Border Protection
DoD	Department of Defense
DOE	Department of Energy

Table of Contents/Abbreviations

DHS	Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
HSPD	Homeland Security Presidential Directive
NSPD	National Security Presidential Directive
OIG	Office of Inspector General
TSA	Transportation Security Administration

OIG

*Department of Homeland Security
Office of Inspector General*

Executive Summary

Federal agencies and state and local governments have developed numerous programs seeking to prevent the unauthorized possession and use of radiological or nuclear material to carry out an attack in the United States. In April 2005, the President issued a directive establishing the Domestic Nuclear Detection Office, within the Department of Homeland Security, to enhance and coordinate federal, state, and local efforts to prevent radiological and nuclear attacks.

We reviewed the Domestic Nuclear Detection Office's coordination with federal agencies and state governments to integrate detection capabilities and enhance response protocols. We also reviewed whether the office's programs overlap with those of other federal agencies.

Federal and state officials' feedback on the Domestic Nuclear Detection Office's engagement and outreach efforts have been positive. For example, some state officials said the Domestic Nuclear Detection Office's assistance was beneficial in helping them determine the best the way to integrate their existing radiological and nuclear detection programs, and providing states with guidance and technical support for developing future programs.

The Domestic Nuclear Detection Office is working to coordinate federal, state, and local government efforts to expand and improve detection capabilities. Also, the office has made progress in developing a Global Nuclear Detection Architecture. The architecture is a multilayered system of detection technologies, programs, and guidelines designed to enhance the ability to detect the threat of a radiological or nuclear attack.

The Domestic Nuclear Detection Office, in conjunction with the Federal Emergency Management Agency's Office of Grant Programs, is collaborating with state and local officials in developing and delivering radiological and nuclear detection programs and training. Lastly, the Domestic Nuclear Detection Office is coordinating with federal partners to identify and prevent overlap of federal radiological and nuclear detection programs. We are making one recommendation to improve the Domestic Nuclear Detection Office's coordination efforts with the Federal Emergency Management

Agency's Office of Grant Programs. DNDO is taking steps to implement this recommendation.

Background

Preventing terrorists from using radiological or nuclear material to carry out an attack in the United States is a priority and major focus of the U. S. government. Experts contend that a radiological dispersal device, which combines a conventional explosive with radiological material, or an improvised nuclear device, which could cause a nuclear detonation, would potentially result in damage ranging from economic disruption to catastrophic loss of life. Federal agencies have developed programs to counter this threat. Additionally, state and local governments have deployed radiological and nuclear detection equipment for response to attacks or accidents.

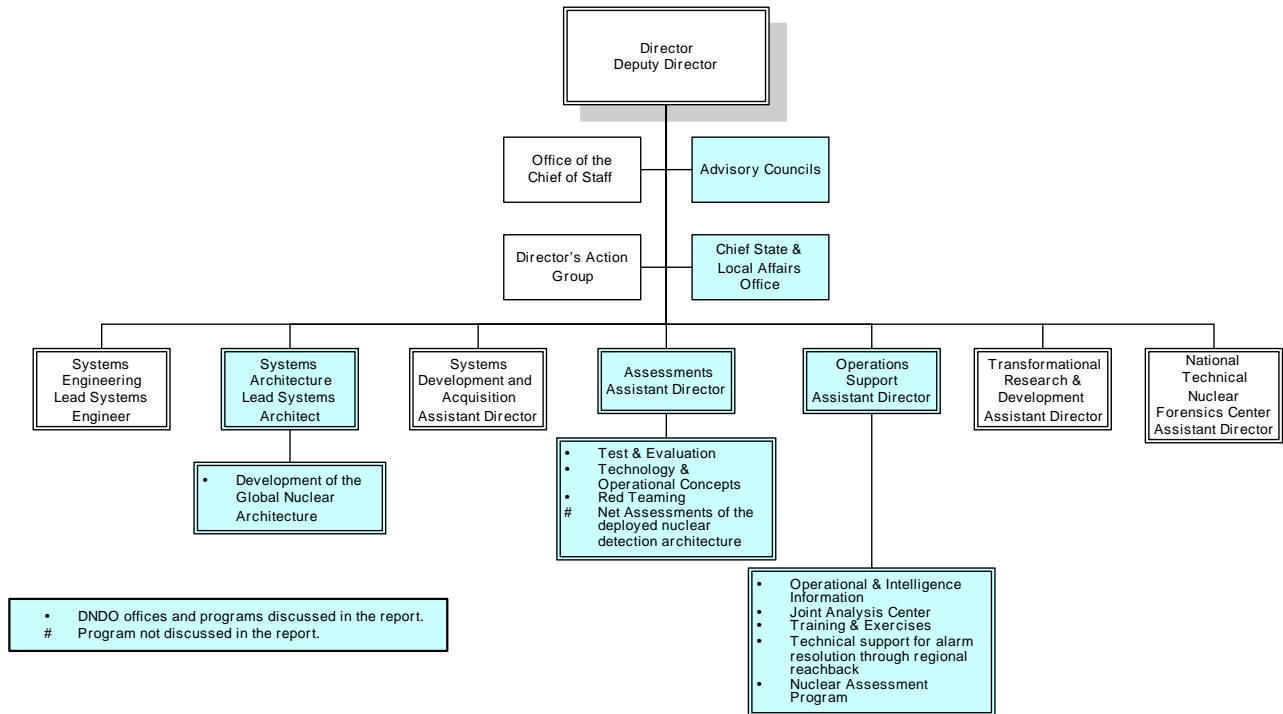
In April 2005, the President issued a joint directive, National Security Presidential Directive 43 (NSPD-43)/Homeland Security Presidential Directive 14 (HSPD-14), establishing the Domestic Nuclear Detection Office (DNDO) within the Department of Homeland Security (DHS) to enhance and coordinate federal, state, and local efforts to prevent radiological and nuclear attacks. Congress made DNDO a statutory entity with the passage of Section 501 of the *SAFE Port Act* of 2006.¹ DNDO is working with federal agencies and state and local governments to enhance and coordinate radiological and nuclear detection programs. Also, DNDO in conjunction with the Federal Emergency Management Agency's (FEMA) Office of Grant Programs is offering state and local governments training and other technical support on detection equipment.

DNDO Organization and Staff

DNDO has offices and directorates that engage in research and development, purchasing detection equipment, and outreach to federal, state, and local entities involved in radiological or nuclear detection. Also, the Director of DNDO has a staff of advisors who provide strategic support and expertise. Figure 1 shows DNDO's organizational structure as of May 2007.

¹ Public Law 109-347.

Figure 1: Domestic Nuclear Detection Office Organization



DNDO is staffed with experts from the national laboratories under the authority of the *Intergovernmental Personnel Act* and detailees from other federal government entities.² DNDO refers to these other federal agencies as partner agencies. Partner agencies include the Department of Defense (DoD), the Department of Energy (DOE), the Department of Justice’s Federal Bureau of Investigation (FBI), the Department of State, and the Nuclear Regulatory Commission. In addition, DHS components such as U.S. Customs and Border Protection (CBP), the Transportation Security Administration (TSA), and the U.S. Coast Guard provide personnel to DNDO. DNDO also has its own complement of permanent employees.

As of April 2007, DNDO had 150 employees of whom 48, or 32%, were either detailees or liaisons from partner agencies and 70, or 47%, were contractors. Detailees serve as subject matter experts and are assigned across DNDO offices and directorates. DNDO has executed memoranda of agreement with partner agencies that commit detailees to an assignment for a specified period. The length of commitment is negotiated on a case-by-case basis, with some supporting three to four year assignments, such as the U.S. Coast Guard, while others prefer one-year assignments. DNDO and interagency officials told us detailees are a beneficial asset in establishing and maintaining dialogue among partner agencies.

² The *Intergovernmental Personnel Act* of 1970, amended May 29, 1997; Title 5, United States Code §§ 3371-76.

The Global Nuclear Detection Architecture

NSPD-43/HSPD-14 requires DNDO to develop an “enhanced global nuclear detection architecture.” The Global Nuclear Detection Architecture is a multilayered system of detection technologies, programs, and guidelines designed to enhance the nation’s ability to detect and prevent a radiological or nuclear attack. DNDO is the primary office within the federal government responsible for furthering the development of the Global Nuclear Detection Architecture. DNDO began the process of defining the architecture by conducting a net assessment of the nation’s radiological and nuclear detection capabilities. The assessment identified vulnerabilities and gaps in the nation’s nuclear detection capabilities. Identifying gaps in existing capabilities enabled DNDO to develop a list of detection priorities.

The Global Nuclear Detection Architecture is intended to integrate federal, state, and local governments’ nuclear detection and notification systems. DNDO is responsible for implementing the domestic portion of the Global Nuclear Detection Architecture, and works with other federal agencies to integrate their detection programs into the architecture. For example, the architecture encompasses existing efforts of other federal agencies such as DOE’s Second Line of Defense Core program and the Megaports Initiative. It also includes DHS efforts such as the Container Security and Secure Freight Initiatives to prevent illicit radiological and nuclear materials from reaching the United States.

Collaboration With Federal, State, and Local Partners

DNDO works in coordination with its federal partners as well as with state and local governments. For example, DNDO coordinates with federal partner agencies to ensure radiological and nuclear detection activities are not duplicated. Additionally, DNDO, in collaboration with FEMA’s Office of Grant Programs, supports state and local governments by making detector training courses available to first responders or law enforcement officers.

Support for Nuclear Detector Alarms

DNDO supports federal, state, and local entities by connecting them to technical reachback services for radiological or nuclear alarm adjudication. Alarm adjudication is the process used to determine the cause of a detector alarm. Technical reachback services provide the expertise to make this determination. DNDO uses the term technical reachback to describe its system and access to on-call technical experts who are used to adjudicate alarms generated by radiological and nuclear detection equipment. DNDO established the Joint Analysis Center to make technical reachback services readily available to state and local entities. Through the Joint Analysis

Center, DNDO connects state and local entities to scientists at national laboratories. The scientists use data from radioisotope identification devices to determine the cause of a detector alarm. In general, other radiation detection devices can only detect the presence of radiation. A radioisotope identification device can detect and identify the type of radioactive material present. Joint Analysis Center staff advises state and local entities of the scientists' findings, and the state and local entities take appropriate action.

DNDO Fiscal Year Funding

For Fiscal Years (FY) 2005 and 2006, DNDO's operations were funded within DHS' Science and Technology directorate's budget. According to the DHS FY 2007 Budget-in-Brief, in FYs 2005 and 2006, DNDO was allocated \$123 million and \$318 million, respectively. In October 2006, DNDO separated from DHS' Science and Technology directorate and became a direct reporting office to the Secretary of Homeland Security. DNDO's FY 2007 budget provided \$481 million and included \$30 million for salaries, expenses, and management and administration of programs and activities. The FY 2008 budget request for DNDO is \$561.9 million, and includes a \$3.5 million increase for management and administration costs to create additional full-time positions and reimburse other federal agencies for detailees assigned to DNDO.

Results of Review

DNDO Has Made Progress in Developing a Global Nuclear Detection Architecture

DNDO has made progress developing a nuclear detection and reporting architecture, referred to as the Global Nuclear Detection Architecture. NSPD-43/HSPD-14 and corresponding language in the *SAFE Port Act* requires DNDO to develop an "enhanced Global Nuclear Detection Architecture." Further, DNDO's strategic objectives indicate that it shall develop "the global nuclear detection and reporting architecture." For the first phase of architecture development, DNDO identified programs within the U. S. government that make up the baseline of the architecture. The baseline represents the current state of nuclear detection and reporting systems. Also, DNDO identified gaps in the current state and is seeking—through technology deployments, research and development, other programs, and outreach with federal, state, and local agencies—to counter those vulnerabilities.

Progress in Developing the Architecture

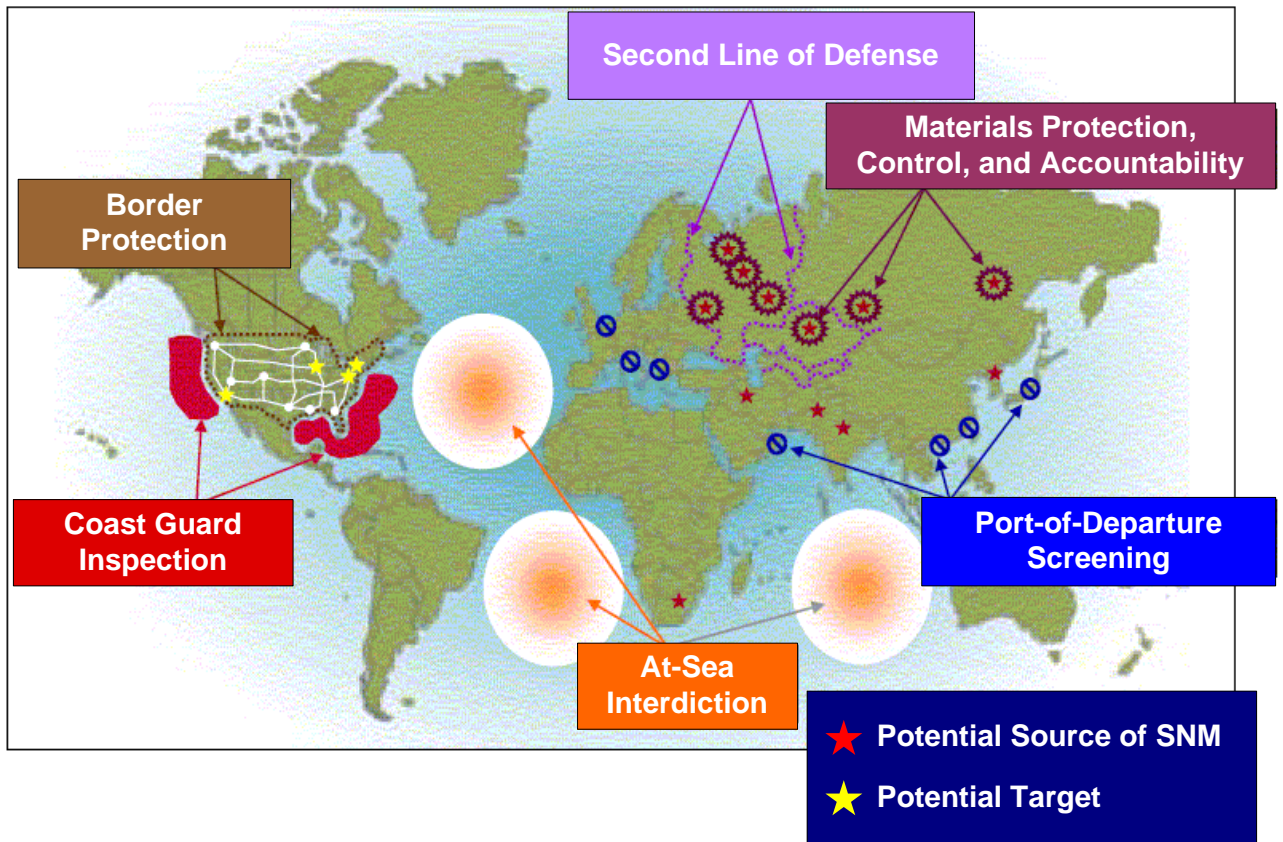
In developing the Global Nuclear Detection Architecture, DNDO is working to integrate existing radiological and nuclear detection programs. Several related programs make up the various layers of the Global Nuclear Detection Architecture, as a multilayered approach increases the probability that illicit nuclear material will be detected.

DNDO is working with other federal agencies to deploy radiation detection equipment and related infrastructure overseas. Doing so provides the U. S. government with a greater ability to detect and interdict threats before such threats reach the United States. For example, the Megaports and the Secure Freight Initiatives are similarly focused on detecting and interdicting radiological or nuclear material in shipping containers at foreign seaports destined for the United States. These foreign ports of departure initiatives constitute one layer of the multilayer Global Nuclear Detection Architecture.

Other programs are focused on securing nuclear material at its source. The DOE's Materials Protection, Control, and Accounting program is working to secure nuclear material at its origin in Russia and other countries, and the Nuclear Regulatory Commission is in charge of ensuring that nuclear material at sites within the United States are properly stored and protected.

DNDO is using the baseline architecture to prioritize efforts to improve it. In a relatively short period—seven months—the office identified the baseline of the Global Nuclear Detection Architecture. For example, using the baseline as a starting point, DNDO is working with CBP's Office of Border Patrol and the U.S. Coast Guard to strengthen the architecture between land ports of entry and in the maritime domain. Additionally, DNDO continues to work to enhance the detection capabilities of other federal, state, and local agencies, thereby improving the effectiveness of the overall architecture. Figure 2 depicts the layered global approach of the architecture.

Figure 2: The Global Nuclear Detection Architecture³



Source: Domestic Nuclear Detection Office, April 20, 2006.

The Architecture Baseline

DNDO completed an analysis of the current worldwide nuclear detection programs in November 2006. In the current state, or baseline, the office identified 72 programs across the U. S. government focused on radiological and nuclear management. For the most part, DoD, DOE, and the Department of State manage these programs. As to DHS-managed programs, CBP seeks to prevent illicit transport of nuclear material through and between official ports of entry, and DNDO works to enhance the detection capabilities of federal, state, and local agencies.

DNDO estimates that more than \$2.2 billion has been spent on these programs in FY 2006. However, this estimate does not reflect all spending on the 72 programs, as some programs had additional elements that did not involve nuclear management, and the amount for nuclear management could not be

³ SNM is the abbreviation for Special Nuclear Material. According to the Nuclear Regulatory Commission, special nuclear material is plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235.

isolated. For example, costs associated with CBP's enforcement activities are not included in the funding total because of the difficulty in separating radiological and nuclear detection costs from CBP's other operational responsibilities.

Gaps Identified in the Architecture

DNDO officials presented the baseline to its partner agencies and the White House in October and November 2006. While DNDO will continue to expand its knowledge of the baseline architecture, the office is examining options for improving the architecture's effectiveness both in the near- and long-term.

The office is focusing its efforts on addressing vulnerabilities associated with the aviation and maritime domains, particularly the possibility that radiological or nuclear material could be smuggled via general aviation aircraft or small maritime craft, by expanding detection capabilities. DNDO is working with the U.S. Coast Guard, TSA, and CBP to improve their radiation detection programs. For example, DNDO is working to deploy "next generation" mobile and handheld radiation detection systems to the U.S. Coast Guard and CBP's Office of Border Patrol to improve and expand detection capabilities between official ports of entry.

Layers of the Architecture

DNDO has adopted a multilayered approach to reducing radiological and nuclear threats. It considers the Global Nuclear Detection Architecture in terms of three layers—exterior, border, and interior. According to one senior DNDO official, the Global Nuclear Detection Architecture is layered in that it is a multifaceted approach to reduce radiological and nuclear threats. DNDO noted that a multilayered international system provides more than one opportunity for authorities to detect and interdict threatening materials.

The interior layer of the architecture includes programs implemented within the United States. The border layer includes programs focused on detecting and interdicting radiological or nuclear material at our land, sea, and air ports of entry, as well as the borders between official land and sea ports of entry. The Global Nuclear Detection Architecture's exterior layer includes programs implemented at sea and on foreign territory. Each of the architecture's layers has sub-layers, and the layers sometimes overlap. For example, in order to interdict threats before they reach the United States, the border layer is expanded to overlap part of the architecture's exterior layer, including the foreign departure and transit to the U.S. sub-layers. In the Global Nuclear Detection Architecture, efforts to screen cargo containers at foreign ports—the exterior layer—is also considered part of the border layer of the architecture. Figure 3 depicts the architecture's layers and sub-layers.

Figure 3: Layers of the Global Nuclear Detection Architecture

Layers	Sub-Layers	Examples
Exterior	Foreign Origin	Foreign sites with nuclear material that could be misused
	Foreign Transit	Illicit trafficking of nuclear material within the exterior layer
	Foreign Departure	Foreign seaport with cargo containers destined for the U.S.
	Transit to U.S.	Ships transporting cargo from overseas to the U.S.
Border	U.S. Border	Official U.S. ports of entry and between official land and sea ports of entry
	U.S. Origin	Hospital with nuclear medicine equipment, or industrial site
Interior	U.S. Regional	Areas surrounding origins of nuclear material in the U.S.
	Target Vicinity	Areas surrounding potential targets of nuclear attack
	Target	Potential locations of nuclear attack within the U.S.

Source: Domestic Nuclear Detection Office, May 17, 2007.

Some Examples of Programs Identified in the Architecture Baseline

DNDO identified programs that make up the baseline of the Global Nuclear Detection Architecture. Some of the programs are focused exclusively on securing nuclear material at overseas locations, such as the Materials Protection, Control, and Accounting program, which is managed by DOE’s National Nuclear Security Administration. While other programs, such as CBP’s Container Security Initiative have a nuclear detection component, the program also addresses other threats. There is also DOE’s Second Line of Defense Program that seeks to prevent smuggling of nuclear warheads overseas. In addition, the U.S. Coast Guard’s maritime radiation detection

program uses its boarding and inspections authority to detect and interdict illicit radiological or nuclear smuggling.

Container Security Initiative

A focus of the Global Nuclear Detection Architecture is securing the supply chain, particularly cargo-shipping containers. One program designed to secure the supply chain is CBP's Container Security Initiative, which began in January 2002. DNDO identified this initiative in the exterior layer of the architecture. Through the Container Security Initiative, CBP deploys multi-disciplined teams including criminal investigators, intelligence analysts, and CBP officers to selected foreign seaports.

The CBP teams seek to identify and screen high-risk containers destined for the United States before the container departs the foreign port. To screen containers, CBP and host governments, upon CBP's request, use large-scale X-ray and gamma ray machines as well as radiation detection equipment. As of August 2006, the Container Security Initiative was operational in 44 seaports throughout the world. Figure 4 shows an example of radiation detection equipment deployed at a foreign port.

Figure 4: Radiation Detection Equipment at a Foreign Port



Source: CBP, Container Security Initiative, 2006-2011 Strategic Plan, page 17.

Materials Protection, Control, and Accounting

Another program DNDO identified in the exterior layer of the architecture is DOE's Materials Protection, Control, and Accounting program. Sometimes referred to as the "first line of defense," the program focuses on radiological source security. Under this program, DOE's National Nuclear Security Administration works with foreign governments to secure nuclear weapons and weapons material at its current location, as the material could be prone to theft or misuse. To prevent the illicit use or trafficking of the material, the National Nuclear Security Administration improves physical security protections and upgrades material accounting and control systems at buildings and other sites housing nuclear warheads and weapons material.

The Second Line of Defense

DOE has another major program, called the Second Line of Defense, which complements the Materials Protection, Control, and Accounting program. The Second Line of Defense provides an additional layer of protection against illicit trafficking of nuclear weapons and weapons material. The Second Line of Defense program works to secure international land borders, seaports, and airports that might be used as points for illicit trafficking of radiological or nuclear materials.

The program has two components, the Second Line of Defense Core program and the Megaports Initiative. The Core program provides fixed and handheld radiation detection equipment and related training and communications technology to border security authorities in foreign countries. The purpose for providing the equipment and training to foreign government authorities is to improve their ability to detect and interdict potential radiological or nuclear threats before they reach the United States. According to the National Nuclear Security Administration, the program has installed equipment along the borders of Russia and Greece, and is working with other countries in Eastern Europe, and the Caucasus, Baltic, and Mediterranean regions.

The goal of the Megaports Initiative, which began in 2003, is to improve the ability of foreign governments to detect radiation in cargo containers at seaports using radiation portal monitors. Figure 5 shows an example of a radiation detector deployed overseas. Through the program, the National Nuclear Security Administration supports the installation of radiation detection monitors and provides training and maintenance to support the continued use of the equipment.

Figure 5: Example of DOE-Funded Radiation Detector Deployed Overseas



Source: DOE National Nuclear Security Administration, April 2006.

The United States Coast Guard's Radiation Detection Program

The goal of the U.S. Coast Guard maritime radiation detection program is to use its boarding and inspections authority to detect and prevent illicit nuclear or radioactive materials from entering the United States. In its baseline architecture, DNDO identified the efforts of the U.S. Coast Guard to detect and interdict radiological or nuclear threats at sea as pieces of the border and exterior layers of the Global Nuclear Detection Architecture.

U.S. Coast Guard detailees are working with DNDO to improve the Coast Guard's ability to detect and interdict radiological or nuclear threats near United States coastal borders. For example, one U.S. Coast Guard detailee said that prior to establishing DNDO, creating a preventive radiological and nuclear program for the maritime environment was not a focus for the U.S. Coast Guard. Rather, the U.S. Coast Guard focused most of its maritime policy and efforts on port and container security. To complement deploying detectors at sea ports of entry, DNDO and the U.S. Coast Guard are working to improve the Coast Guard's maritime radiation detection program, which

will increase the overall likelihood of preventing the illicit traffic of nuclear or radiological material before it reaches the United States.

Radiation Detection at United States Borders

While the U.S Coast Guard protects the nation's coastline, CBP is responsible for protecting U.S. coastal borders as well as U.S. land borders. Programs in the architecture, such as the Megaports Initiative, seek to detect radiological or nuclear materials before they reach the United States. Programs in the architecture also attempt to detect radiological or nuclear materials at U.S. borders. At official ports of entry, CBP uses radiation detection equipment and other technology to keep radiological materials out of the United States. Also, DNDO has been working with CBP to improve the radiation detection capabilities of the Border Patrol to detect nuclear or radiological material between land ports of entry.

Other Notable Nuclear Detection Initiatives

There are additional nuclear and radiological programs not mentioned in DNDO's baseline architecture that merit discussion. For example, DHS and DOE recently announced a joint program, the Secure Freight Initiative. The aim of the initiative is to detect radiological or nuclear material in shipping containers before the containers reach the United States. Additionally, there are other programs involved in detecting illicit trafficking of radiological or nuclear material and preventing unconventional nuclear attack, which DoD agencies lead, particularly the Defense Threat Reduction Agency.

Secure Freight Initiative

After DNDO identified the Global Nuclear Detection Architecture baseline, DHS and DOE announced the Secure Freight Initiative. This initiative involves cooperation with foreign governments and the maritime industry. The *SAFE Port Act* of 2006 requires DHS, DOE, and the Department of State to designate three foreign ports to test the practicality of scanning all containers for radiation and using imaging technology to see the various densities of objects inside the container.⁴

According to DHS, phase one of the initiative will involve scanning all containers for radiation and using non-intrusive imaging technology at ports in Pakistan, Honduras, and the United Kingdom. Also, limited detection technology will be deployed at ports in Oman, Singapore, and South Korea to test integrating new radiation detection technology with existing port operations.

⁴ Public Law 109-347, section 231.

DHS is contributing \$30 million to the effort to pay for the installation of the imaging equipment, and DOE's National Nuclear Security Administration is contributing \$30 million to fund the installation of the radiation detection equipment. Data from radiation detection alarms and the non-intrusive imaging equipment is sent to CBP's National Targeting Center for analysis.

Department of Defense Programs

The DoD has the overall mission to provide for the common defense of the United States. Because of sensitivity issues, DoD programs that DNDO identified as part of the architecture are not included in our report.

Nonetheless, under NSPD-43/HSPD-14 and the *SAFE Port Act*, the Secretary of Defense retains the "responsibility for implementation of DoD requirements within and outside the United States," and maintains responsibility "for policy guidance and implementation of the portion of the global architecture outside the United States."⁵ The Office of the Secretary of Defense is determining DoD's roles under NSPD-43/HSPD-14 and the *SAFE Port Act* and how DoD programs fit into the Global Nuclear Detection Architecture.

The Defense Threat Reduction Agency is working to counter the threat of weapons of mass destruction. The agency's primary customers are the armed services and their units that carry out combat operations. Programs that support combat operations are not discussed in this report.

Implementing the Domestic Portion of the Architecture

Under NSPD-43/HSPD-14 and the *SAFE Port Act*, DNDO has the responsibility to implement the domestic portion of the global architecture. The interior layer of the Global Nuclear Detection Architecture includes programs to detect illicit trafficking of radiological or nuclear materials and efforts to detect radiological or nuclear materials at or near potential terrorist target locations.

DNDO is implementing the domestic portion of the architecture in partnership with other federal, state, and local governmental entities. For example, DNDO is working with state and local agencies to improve their preventive radiological and nuclear detection capabilities through pilot programs, such as the Southeast Transportation Corridor Pilot and the Securing the Cities initiative. Also, DNDO pointed to the equipment it has purchased for CBP's use at official ports of entry as part of DNDO's effort in implementing the domestic portion of the architecture.

⁵ NSPD-43/HSPD-14, paragraph 2(d), and the *SAFE Port Act* (Public Law 109-347) § 501.

Additionally, DNDO is working to enhance the detection capabilities of the U.S. Coast Guard and CBP's Office of Border Patrol in the maritime and land border domains. Complementing the domestic efforts of DNDO, the Nuclear Regulatory Commission works on source security of domestic commercial nuclear material.

DNDO Coordinates Preventative Radiological and Nuclear Detection Initiatives With Federal Partners

DNDO is coordinating radiological and nuclear detection initiatives with federal partners through committees, councils, and integrated product teams. DNDO also collaborates with federal partners on developing protocols to address radiological and nuclear detector alarms and provides grants and detector training opportunities to state and local officials.

A goal of NSPD-43/HSPD-14 is to enhance the coordination and cooperation among the various federal agencies with radiological and nuclear management responsibilities. The presidential directive also requires DNDO to work with federal departments and agencies to coordinate the integration of radiological and nuclear detection programs. DNDO uses a number of methods to engage DHS components and works closely with its interagency partners on nuclear detection program issues. DNDO has also taken action to establish or implement initiatives that facilitate the flow and management of information between federal, state, and local partners. Its actions include:

- Chartering interagency working groups;
- Developing detection alarm adjudication protocols;
- Conducting joint agency assessments on the operational capabilities of radiation detection equipment; and
- Collaborating with FEMA's Office of Grant Programs on delivery of training courses for state and local officials.

The Domestic Nuclear Defense Policy Coordinating Committee

The DNDO Director is the DHS representative to the Domestic Nuclear Defense Policy Coordinating Committee. Created in 2004 by the Homeland Security Council and the National Security Council, the committee is a joint policy coordination body that is made up of representatives of all federal agencies with management responsibilities for nuclear defense, detection, and interdiction. This committee has been instrumental in providing guidance on developing DNDO's nuclear detection response protocols. Policy Coordinating Committee meetings are attended by an under or assistant secretary of each cabinet department. Meetings are also attended by staff

from other Executive Office of the President offices with an interest in nuclear defense matters.

Interagency Coordination Council and DHS Advisory Council

The Interagency Coordination Council is the forum established by DNDO to coordinate its activities with other federal agencies. Members of the council include senior officials from DoD, DOE, the Department of State, the FBI, and other appropriate agencies. The Interagency Coordination Council meets to discuss strategy planning, policy, and other activities across the federal government that require coordination to support national nuclear counterterrorism and counter-proliferation programs and initiatives. For example, the council developed the Global Nuclear Detection Architecture deployment strategy, and the maritime and aviation pathway studies to address gaps in the architecture.

The internal DHS counterpart to the Interagency Coordination Council is the Advisory Council. Members of the Advisory Council include intra-agency senior officials from CBP, TSA, the U.S. Coast Guard, and other DHS components as appropriate. The Advisory Council provides guidance to DNDO, and is the forum used to address intra-agency issues and activities related to DNDO strategies and initiatives. It also plays a role in coordinating and communicating across DHS components on nuclear detection requirements and related security programs. For example, DNDO officials said the concept of operations for the Joint Analysis Center was discussed thoroughly and endorsed by the Advisory Council before the Secretary of Homeland Security approved its implementation.

Use of Integrated Product Teams

DNDO uses a cross-functional team approach, referred to as Integrated Product Teams, to provide project and program management for some major initiatives, such as detection equipment deployment to state and local governments. Integrated Product Teams consist of members from the different mission elements within DNDO, such as Systems Architecture, Assessments, and Operations Support, as well as representatives from the Department of State, DoD, and other DHS components such as TSA and CBP. Integrated Product Team meetings provide members an opportunity to discuss and take action on issues and to facilitate planning and implementation efforts. The DNDO Integrated Product Teams that are relevant to our review include:

- **The Domestic, State, and Local** Integrated Product Team is responsible for implementing efforts to reduce the risk to densely populated urban areas by developing, demonstrating, procuring, and supporting the deployment of radiological and nuclear detection

equipment, and reporting systems for the interior layer of the Global Nuclear Detection Architecture.

- **The Joint Analysis Center** Integrated Product Team is the DNDO entity that addresses requirements and programs that support the Global Nuclear Detection Architecture and Joint Analysis Center operations.

DNDO Red Team Activities

DNDO is working toward implementing a red team program to assess the effectiveness of deployed detection systems. The term red team is used to describe adversarial role-playing to test a system's security vulnerabilities or readiness. Red teams provide DNDO the ability to identify vulnerabilities or gaps within radiological and nuclear detection and reporting systems before adversaries can exploit them. In a FY 2007 House Appropriations Committee Report,⁶ concerns were expressed that the Government Accountability Office had succeeded in smuggling nuclear material into the country during a red team exercise.⁷ The committee report acknowledged DNDO's proposed plan to begin red team activities to test the portions of the architecture in the coming years, and it cautioned that DNDO should not only test the technological component of the architecture, but also explore administrative and bureaucratic weaknesses of the system. The Committee directed DNDO to submit a report on red team exercises and make any recommendations by January 16, 2007.

During our review, DNDO was in the process of conducting an extensive open source information review on adversarial capabilities. DNDO officials reported it had not conducted any field red team operations, but it is working with partner agencies to develop objectives for red team activities in the near future. In the interim, DNDO program managers, in partnership with CBP, have participated as observers in two border penetration operations. DNDO has also participated in a TSA sponsored two-week operational test of a quickly deployable mobile radiation detection system.

Collaboration With FEMA's Office of Grant Programs

DNDO has collaborated with FEMA's Office of Grant Programs to provide funding for radiological and nuclear detection programs through DHS' Homeland Security Grant Program. DNDO, in partnership with the Office of Grant Programs, crafted language promoting the development of preventative radiological and nuclear detection programs in the Homeland Security Grant

⁶ House Report 109-476.

⁷ GAO-06-389, Combating Nuclear Smuggling: DHS Has Made Progress Deploying Radiation Detection Equipment at U.S. Ports-of Entry, but Concerns Remain.

Program FY 2007 solicitation kit. DNDO also wrote an appendix that explained its support for preventative radiological and nuclear detection program development. In addition, DNDO provided subject matter expertise during the state grant application review process. The Office of Grant Programs also supported DNDO initiatives through its participation in DNDO state and local web-based outreach initiatives.

DNDO and the Office of Grant Programs have also developed and piloted radiological and nuclear detector training courses that are designed for first responders and public safety officials. The training provides educational instruction on the use of detectors in daily operational environments. DNDO and FEMA's Office of Grant Programs have an informal agreement on the funding and delivery of jointly developed courses. A senior grant programs official expressed concern about DNDO's reliance on Grant Program funding for the development and delivery of training courses. The official said DNDO should provide more funding for course delivery, exercises, and detection equipment for state and local operators. For future initiatives, the official expressed a desire for a formal memorandum of agreement with DNDO outlining the respective roles of both offices and funding obligations. DNDO officials responded that detection program funding should be provided through DHS' Homeland Security Grant Program, because the Office of Grant Programs, which manages the program, is the DHS office that provides funding for training, equipment procurement, exercise support, and technical assistance to state and local entities.

Both DNDO and FEMA's Office of Grant Programs recognize the need for a formal agreement on the funding responsibilities of each office. Officials from both offices were negotiating the terms of a memorandum of agreement in April 2007, when the Office of Grant Programs was re-aligned from DHS' Preparedness directorate to FEMA. DNDO officials said they are prepared to undertake the issue again, once the interagency transition is complete.

Recommendation

We recommend that the Director of the Domestic Nuclear Detection Office, in coordination with the Administrator for the Federal Emergency Management Agency:

Recommendation #1: Negotiate and execute a memorandum of agreement between the Domestic Nuclear Detection Office and the Federal Emergency Management Agency's Office of Grant Programs that defines funding responsibilities of each office for preventative radiological and nuclear training courses.

DNDO is Coordinating the Effort to Improve the Detector Alarm Adjudication Process

Many state and local officials, such as police officers and transportation personnel, have radiological and nuclear detection equipment for use during routine operations and patrols. This equipment alerts the user to the presence of radiological or nuclear material. Alarm adjudication is the process to determine whether a detector alarm represents a threatening situation or not. DNDO is coordinating the effort with federal, state, and local governments to develop an improved alarm adjudication process. Additionally, state officials told us they plan to acquire more equipment in the future.

The Joint Analysis Center

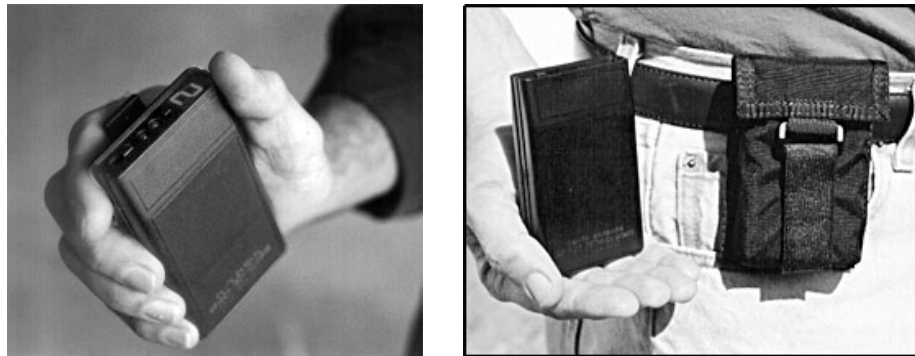
DNDO established the Joint Analysis Center to facilitate alarm adjudication at a single location. DNDO's Operations Support directorate manages the center, and DNDO personnel and detailees from partner agencies staff the center.

A state or local official with a detector alarm can call the Joint Analysis Center's toll-free number and be connected to federal alarm adjudication assistance. Scientists at national laboratories conduct analysis of detector data to make the determination of the cause of an alarm. Joint Analysis Center personnel then communicate the results to the state or local official. If at any time terrorism is suspected, the FBI, which is the lead federal agency for investigating terrorism, is contacted.

Common Nuclear Detection Equipment

Most detection equipment being used by state and local officials includes personal radiation detectors, radiation portal monitors, and radioisotope identification devices. Personal radiation detectors, commonly called "pagers," can also detect the potential presence of radiological or nuclear material. Figure 6 shows examples of the types of personal radiation detectors.

Figure 6: Examples of Personal Radiation Detectors



Source: www.radiationpaper.com

When a personal radiation detector worn by a law enforcement officer or first responder alerts to radiation, the source of the alarm is isolated and a secondary inspection is conducted with a handheld radioisotope identification device. A radioisotope identification device is more sensitive to radiation and enables the operator to identify and locate the exact source of the material or materials that triggered the detection alarm. Examples of handheld radioisotope identification devices are shown in Figure 7.

Figure 7: Examples of Radioactive Isotope Identification Devices



A Customs and Border Protection officer inspects a container with a handheld radiation detector. (U.S. Customs & Border Protection)

Sources: Domestic Nuclear Detection Office and U.S. State Department.

Radiation portal monitors, which are used to screen vehicles or cargo containers, can also detect the potential presence of radiological or nuclear material. Like radioisotope identification devices, most radiation portal monitors can give the operator an indication of the isotope causing a detector alarm.

Reachback Programs

If the state or local official cannot determine the cause of an alarm in the field by using state assets, such as a state's radiation protection office, the officer can call the Joint Analysis Center. If required, Joint Analysis Center staff will contact scientists at the national laboratories through the Regional Reachback program. Should those scientists be unable to identify the cause of an alarm, Joint Analysis Center staff would then contact the National Reachback program.

Regional Reachback

Currently, the Regional Reachback program is active in two regions. The Southeast region uses the Oak Ridge National Laboratory in Tennessee and the Savannah River Site in South Carolina, and the Northeast region uses the Brookhaven National Laboratory in New York, and the DHS Environmental Measurements Laboratory in New York City. DNDO officials told us, as more states acquire radiological or nuclear detection equipment, Regional Reachback will expand to include the Midwest, Southwest, and Northwest regions using six additional national laboratories to support the expected demand for technical reachback. Regional Reachback is the first DNDO program used to adjudicate a detector alarm.

To improve the capability of the Regional Reachback program, DNDO funded training for 20 spectroscopists. The spectroscopists were selected from personnel already employed at the laboratories as health physicists, general scientists, or radiation measurement technicians. Spectroscopists receive training in several areas such as understanding radiological and nuclear terrorist threats, sources of naturally occurring radioactive material, and radiation material commonly used for medical or industrial purposes. They also receive training on radiation detection equipment including the proper use of equipment, and common equipment failure and error codes. Spectroscopists perform alarm adjudication functions in addition to their primary duties.

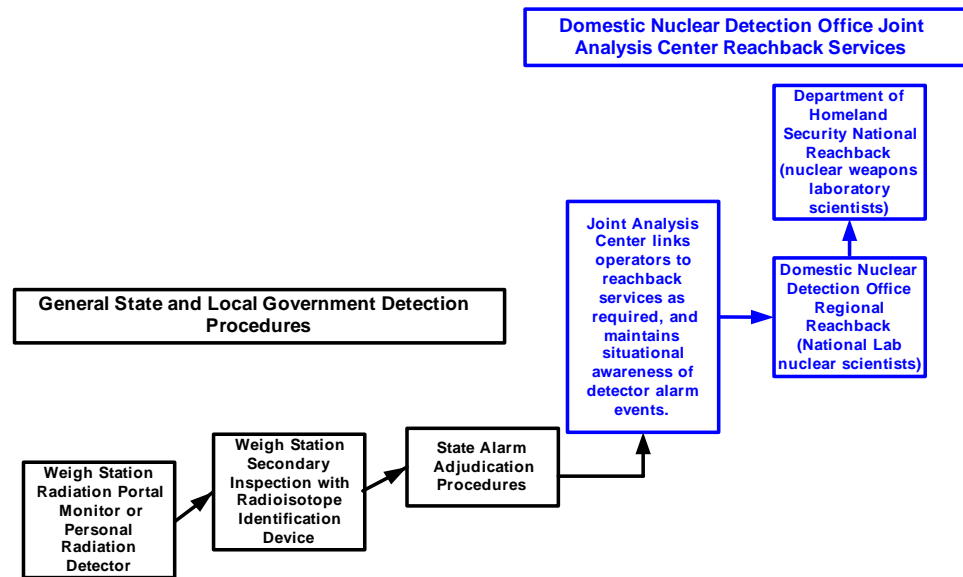
Regional Reachback is activated through the Joint Analysis Center after it receives a request, usually by a phone call, from a state or local official for technical assistance to adjudicate a detection alarm. The caller sends the radiation spectral data and event information by fax or email to the Joint Analysis Center. The Joint Analysis Center forwards the spectral data to the appropriate Regional Reachback spectroscopists for technical analysis while the Joint Analysis Center performs its own analysis on the event information. The spectroscopists will attempt to determine isotope or isotopes present and determine threat potential. The Joint Analysis Center will verify licensing data and tie relevant intelligence to the event. The Joint Analysis Center and

Regional Reachback analyses will be brought together at the Joint Analysis Center and a threat determination will be made. If the alarm is adjudicated to be a threat or there is still not enough information to make a determination, the event will be elevated up to National Reachback for further analysis, and the Joint Analysis Center will contact the state or local official to update them on the request. If the event is adjudicated to be a non-threat, the Joint Analysis Center will contact the state or local official and report that information.

National Reachback

National Reachback experts are highly trained in such technical areas as special nuclear material, the design of nuclear weapons, and nuclear smuggling and terrorism. Three national laboratories support National Reachback: Lawrence Livermore National Laboratory in California, Sandia National Laboratory in New Mexico and California, and Los Alamos National Laboratory in New Mexico. The results of technical reachback analysis from Regional and National Reachback are provided by DNDO to state or local officials to assist these officials in determining an appropriate response to the event, which may include involving other federal agencies such as the FBI. The national laboratories do not decide or recommend what action officials should take. Figure 8 depicts DNDO’s reachback support system.

Figure 8: The Domestic Nuclear Detection Office Reachback Support



Should national laboratory scientists determine that the cause of an alarm is radiological or nuclear material that could be used in a terrorist attack, the FBI is contacted to coordinate the response. Should the cause of an alarm involve the illegal transport of nuclear material without the proper license, local or

state law enforcement would handle the situation as a law enforcement and regulatory violation.

After an event concludes, the responding laboratory issues an initial report to the Joint Analysis Center, which details information such as the date and time of the event, name of the spectroscopists or scientist conducting the analysis, location of the event, reachback activation method, event summary, and analysis results. Within 36 hours of an event's conclusion, the responding laboratory provides the Joint Analysis Center's Information and Analysis team with a detailed after action report for trend analysis and archiving.

Management of DHS' Nuclear Assessment Program

Depending upon the circumstances of a detector alarm, DHS' Nuclear Assessment Program assets may also be activated to conduct a credibility assessment of a radiological or nuclear threat. For example, the Nuclear Assessment Program would conduct an assessment of a detector alarm if it involved the transport of illicit nuclear material. The Nuclear Assessment Program is coordinated through the Lawrence Livermore National Laboratory and provides a national capability to assess the credibility of communicated radiological and nuclear threats. It also monitors illicit nuclear material trafficking incidents worldwide. The Nuclear Assessment Program uses nuclear specialists and behavioral analysts to determine the credibility of a particular threat. The program is accessible to any federal or state agency and can be activated independently of a nuclear detector alarm. In FY 2006, the Nuclear Assessment Program performed 120 formal assessments.

DNDO Coordinates With State and Local Governments to Develop Preventative Radiological and Nuclear Programs

DNDO has worked closely with state and local officials to develop and improve their preventative radiological and nuclear detection capabilities. DNDO's outreach efforts include inviting states to participate in nuclear detection working groups, assisting states in developing detection programs, hosting detector equipment and technology demonstrations, and developing detector training courses. DNDO also provides technical reachback support through the Joint Analysis Center. These efforts focus on providing awareness, building on existing state radiological and nuclear detection capabilities, detection equipment training, and support for reporting and adjudicating detector alarms.

Additionally, DNDO is working with nine states and the District of Columbia, through the Southeast Transportation Corridor Pilot, to develop radiological and nuclear detection programs for interstate weigh stations. DNDO has also

developed plans to assist other states with deploying mobile and fixed radiological and nuclear detectors to commercial vehicle inspection units in all 50 states. Further, DNDO has also assisted New York City with integrating methods of preventing the transportation and use of illicit radiological and nuclear materials into current and future detection programs through the Securing the Cities initiative.

In working toward deploying domestic detection systems, DNDO reached out to state Homeland Security Advisors and Urban Area Security Initiative leads. While not all states have been responsive to its outreach efforts, DNDO officials reported they recognize some states have higher priorities and competing interests, such as preparation for hurricanes or other natural disasters. For states with competing priorities, DNDO maintains contact with state officials through presentations and working groups designed to update those officials on developing detection programs and initiatives.

Mainly through two of its components, the State and Local Affairs Office and the Operations Support directorate, DNDO reaches out and supports state government officials in developing and integrating preventative radiological and nuclear detection into current and planned detection programs. Both organizations play a role in enhancing states' preventative radiological and nuclear detection efforts through the development and implementation of outreach initiatives such as working groups, pilot projects, demonstrations, and training.

The State and Local Affairs Office

The State and Local Affairs Office is DNDO's primary component for collaboration with state officials. It develops office-wide policies for interaction and engagement with states, and it coordinates and integrates state-related DNDO efforts in order to assist states with deploying radiological and nuclear detection systems.

DNDO's State and Local Affairs Office has engaged state Homeland Security Advisors and other state officials and has informed those officials of DNDO's mission and programs. DNDO uses its State and Local Working Group as a forum to provide information to states, and for states to exchange information on best practices. DNDO also uses the working group as means to obtain information on states' detection capabilities, requirements, and future plans. The State and Local Affairs Office assists states with developing grant applications for preventative radiological and nuclear equipment and projects. Also, DNDO holds working group meetings to discuss ongoing or upcoming preventative detection initiatives.

The Operations Support Directorate

The Operations Support directorate engages states through presentations and conference calls and collaborates with the State and Local Affairs Office in working with states to develop grant applications for preventative radiological and nuclear detection programs. Operations Support staff also assist states by designing and providing exercises, identifying training requirements for detection equipment, and establishing protocols for adjudicating and reporting detector alarms.

The Domestic State and Local Integrated Product Team

DNDO's Domestic State and Local Integrated Product Team manages all DNDO activities with states to ensure outreach efforts are coordinated. The team is made up of DNDO staff from each directorate. The team identifies state requirements for preventative radiological and nuclear detection and ensures DNDO working groups, exercises, training, and technical assistance for detector deployment programs are coordinated to benefit state and local entities. The team reviews fixed and portable detectors to identify personnel, equipment, and network requirements, as well as training, exercise, and operational procedure needs.

State and Local Stakeholder Working Group

The DNDO State and Local Stakeholder Working Group works to improve concepts of operations development and to identify environments where detection equipment may be used. The group is made up of DNDO staff, and state and local officials. The group considers various factors affecting the deployment and function of detectors such as operational environments, detector capabilities, and the potential for connecting newly acquired detection equipment with existing radiological and nuclear detection systems. Through the State and Local Stakeholder Working Group, DNDO incorporates stakeholder concerns and feedback into exercise development and training opportunities to assist detector users better.

State working group participants have contributed to developing DNDO's preventative radiological and nuclear detection training and educational materials. Two major products resulting from this effort are the Preventative Radiological and Nuclear Detection Program Management Handbook and the Commercial Vehicle Inspection Radiological and Nuclear Detection Program Management Module. The handbook provides guidance to help jurisdictions build radiological and nuclear preventative detection capabilities and presents a flexible framework for jurisdictions with varying capabilities. The handbook also serves as a guide for developing and integrating preventative

detection capabilities in state and local enforcement and response operations. It covers preventative radiological and nuclear detection planning, organization, equipment, training, exercises, and operational support. State officials told us that working with DNDO on the development of the handbook was informative and that states will use the handbook as the guide for their preventative detection programs.

In addition to the program management handbook, DNDO worked with state officials and other subject matter experts to develop and deliver a guide for integrating radiological and nuclear detection into commercial vehicle inspection operations. The Commercial Vehicle Inspection Radiological and Nuclear Detection Program Management Module provides guidance on integrating a radiological and nuclear detection capability into commercial vehicle inspection operations. Similar to the program management handbook, the module provides instruction and guidance on planning, organization, equipment, training, exercises, and operational support for commercial vehicle inspection programs. This module was distributed to more than 200 emergency responders, public safety, and transportation operators.

While many states reported they already employed commercial vehicle inspection operations, states were thankful for the opportunity to work with DNDO in integrating radiological and nuclear components into their enforcement operations. State officials told us that having effective collaboration with DNDO enhanced their understanding of preventative radiological and nuclear detection. Also, state officials praised DNDO for soliciting descriptions of current operations and working with states in developing future detection programs requirements. Further, state officials reported the working group is beneficial because it provides a method for states to explore other states' radiological and nuclear detection activities. State officials said knowing what other states are doing is helpful, and allows for incorporating ideas and best practices into their own commercial vehicle inspection programs. Finally, state officials told us that DNDO provided guidance on which state agencies should be involved in planning preventative radiological and nuclear detection programs, such as state health and environmental agencies.

Southeast Transportation Corridor Pilot

In an effort to build upon existing state collaboration on transportation initiatives, DNDO has engaged states in the Southeast region through the Southeast Transportation Corridor Pilot. With this pilot, DNDO has supported Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and the District of Columbia in deploying radiological and nuclear detectors that target commercial traffic on highways and at interstate weigh stations. Through the Southeast

Transportation Corridor Pilot, DNDO assists states with developing radiological and nuclear threat detection capabilities.

Congress, in the FY 2006 DHS Appropriations Conference Report, recommended DNDO use \$4 million to deploy detection systems at interstate weigh stations. DNDO allocated the \$4 million for preventative radiological and nuclear detection training, exercises, equipment procurement, and equipment deployment to states. Also, DNDO has worked with states to develop and implement operational detection capabilities and has encouraged states to develop regional concepts of operations to include alarm reporting and adjudication protocols. In FY 2006, DNDO provided funding for radiological and nuclear detectors to Georgia, Kentucky, South Carolina, Tennessee, and Virginia, and anticipates providing similar equipment funding to Alabama, the District of Columbia, Florida, Mississippi, and North Carolina during FY 2007.

State officials participating in the Southeast Transportation Corridor Pilot have been generally satisfied with their interaction with DNDO. Some officials indicate they would not have developed preventative radiological and nuclear detection programs if DNDO had not approached them. State officials said DNDO has been responsive to their requests for assistance in understanding potential threats from radioactive and nuclear material, and developing detector deployment strategies. Some state officials told us that dealing with DNDO was the best experience they have had with a federal agency.

DNDO not only supports states with existing radiological and nuclear detection programs, it has been key in introducing and supporting preventative radiological and nuclear detection capabilities with other states in the Southeast Transportation Corridor Pilot. For example, DNDO has been instrumental in developing a preventative radiological and nuclear detection capability for Tennessee. Tennessee officials told us that prior to its work with DNDO, state efforts had focused on developing and deploying an experimental radiation detection program and equipment for responding to radiation and nuclear incidents. With DNDO's support, Tennessee is now integrating detectors into preventative missions. For example, DNDO assisted Tennessee officials with incorporating more than 700 radiological and nuclear detectors into an integrated system targeting commercial hazardous materials, rental trucks, and weigh stations. Also, DNDO assisted Tennessee with recognizing gaps in its detection protocols and procedures, helped it become aware of additional preventative detection resources, and provided a framework for Tennessee to develop a more comprehensive detection program and better alarm adjudication protocols.

Tennessee plans to use Southeast Transportation Corridor Pilot funding to purchase a radioisotope identifier, which provides users information on the type of radiological or nuclear material detected; and a mobile radiation portal monitor, which allows users to direct traffic through a detector that can be moved to different vehicle inspection locations.

In another example of DNDO's support to states with existing radiological and nuclear detection programs, Kentucky officials told us DNDO had approached them during the development of Kentucky's "Weigh Station of the 21st Century." The Kentucky weigh station has an integrated system that includes a radiation detection system, a license plate reader, an infrared brake monitoring system, an integrated user interface, and a chemical detection unit. The system allows vehicle enforcement inspectors to spot potential violations more quickly and efficiently. Kentucky transportation officials also told us that DNDO assisted them in identifying and engaging other Kentucky agencies that should be involved in their preventive detection efforts, such as the radiation division of the state's Department of Public Health.

Kentucky was awarded Southeast Transportation Corridor Pilot funds to procure radiological and nuclear detectors that indicate the type of material present during an alarm and a mobile radiation portal monitor. State officials plan to use this equipment to complement existing detectors.

A Florida Department of Transportation official told us that Florida has not deployed radiological and nuclear detectors at weigh stations. DNDO worked with Florida to determine appropriate equipment for detecting nuclear and radiological materials at weigh stations. As a result, Florida officials have requested funding for a mobile detector, for use at weigh stations throughout the state.

In another example of DNDO's support to states, a North Carolina official told us one of its state agencies possesses and uses radiation detectors, but the state's highway patrol was unable to determine how to integrate the patrol's operational requirements with existing detection capabilities of the other state agency. DNDO is currently working with North Carolina to develop an acquisition and deployment strategy for new radiological and nuclear detectors.

Finally, an Alabama official reported that without DNDO's assistance, the state would not be developing a radiological and nuclear detection program. Currently, Alabama has one weigh station and with DNDO assistance the state has applied for a grant to purchase a mobile radiation portal monitor.

Other State Activities

DNDO has not limited its engagement with states to the southeast. It has reached out to all states and has promoted the office's preventative radiological and nuclear detection mission through conferences, workshops, and individual meetings with state officials. As with states in the southeast, DNDO officials have supported the integration and deployment of radiological and nuclear detectors in other states.

For example, California Homeland Security officials told us that DNDO has greatly assisted its efforts in furthering preventative radiological and nuclear detection programs and capabilities. Officials said DNDO has helped California determine the best the way to integrate its existing radiological and nuclear detection programs, and provided guidance and technical support for developing future programs.

Also, California officials reported DNDO has been helpful in enhancing state inspection operations and with the state's understanding of various detector capabilities. For example, state officials reported that DNDO provided information on the capabilities of detectors and is working with the state to deploy an integrated statewide radiological and nuclear detection system. Furthermore, DNDO has supported California's plans to expand detection capabilities in the maritime environment by providing assistance with developing alarm adjudication procedures.

A New Mexico official praised DNDO efforts in assisting the state with integrating prevention into existing radiological response operations. State officials plan to purchase a mobile radiation portal monitor to support vehicle inspection operations. An official also told us they look forward to receiving further guidance from DNDO on the technical aspects of radiological and nuclear detectors and integrating planned systems with current radiological and nuclear detection systems. Also, the official reported New Mexico's radiological and nuclear detection capabilities would not be as advanced without DNDO's assistance.

Prior to the creation of DNDO, New Jersey received funding through DHS' Homeland Security Grant Program. New Jersey used those grant awards to purchase radiological and nuclear detectors and to develop a concept of operations plan. Since the initial acquisition of radiological and nuclear detectors, DNDO has assisted the state with understanding its detector capabilities, and DNDO has been helpful in assisting New Jersey with future detector deployment planning.

DNDO launched the Securing the Cities initiative in March 2006 to enhance radiological and nuclear protection and response capabilities in urban areas.

DNDO officials reported that it is working with New York City to identify appropriate detection equipment, develop a deployment strategy, and establish a support structure for equipment. Further, DNDO is engaged in evaluating the effectiveness of initial detector deployments. Overall, DNDO engagement with New York City is designed to leverage current detection capabilities and procedures, and provide assistance with detector alarm adjudication. DNDO plans to use lessons learned from New York City to further engage cities and states in the Northeast region.

Demonstrations, Exercises, and Guidance

DNDO assists state governments in developing and deploying preventative radiological and nuclear detection capabilities through equipment and technology demonstrations, exercises, and guidance it provides in After Action Reports and handbooks. For example, DNDO held an equipment demonstration for state and local officials from January through February 2006, to educate these officials on commercially available detector capabilities. DNDO brought together subject matter experts from the DHS, DOE, DoD, and the Department of Commerce, and demonstrated the use of handheld and mobile radiation portal monitors. After the equipment demonstration, DNDO provided the detector performance testing results to state and local officials to assist them with procurement decisions.

In addition to the equipment demonstration, DNDO conducted the New Jersey Operation Intercept Functional Exercise in September 2006 and the Southeast Transportation Corridor Pilot Technology Demonstration in November 2006. The exercise and the technology demonstration sought to identify baselines of state radiological and nuclear detection capabilities. DNDO brought together subject matter experts from national laboratories to assist states by providing an assessment of detection equipment and protocol use in operational environments.

Participants in the technology demonstration and functional exercise tested existing radiological and nuclear detection abilities to detect radiological and nuclear materials during routine operations at commercial vehicle inspection sites. The technology demonstration and exercise presented an opportunity for states to improve existing detection procedures. DNDO will build upon its initial efforts with states and is planning future exercises, demonstrations, and workshops.

State officials told us that the equipment demonstration, Southeast Transportation Corridor Pilot Technology Demonstration, New Jersey Operation Intercept Functional Exercise, and program guidance increased their understanding of detector capabilities, guided procurement decisions, and enhanced existing procedures for inspection and alarm adjudication.

Some state officials told us that if DNDO had not conducted these activities, states might have purchased equipment and use protocols that did not meet their needs.

Education and Training Opportunities

DNDO and FEMA's Office of Grant Programs have collaborated in the development and delivery of two radiological and nuclear detection courses that focus on preventing radiological and nuclear incidents. These courses target first responders and public safety officials and provide education on the use of detectors in daily operational environments. In FY 2006, more than 400 officials participated in these courses.

The Personal Radiation Detector course is designed for law enforcement, emergency medical service, fire, hazardous materials, and public works personnel. It provides fundamental information on radiological and nuclear materials relating to detection and interdiction. The course also provides training on detector operation and on-scene alarm assessment.

The Detection Equipment for Law Enforcement course specifically targets the law enforcement community. In addition to covering the fundamentals of radiological and nuclear materials and operation of detectors, it also provides further instruction on the detection, verification, assessment, and reporting of illicit attempts to possess, transport, or store radiological and nuclear materials.

DNDO is developing and funding the delivery of the Advanced Radiation Detection course. This course is planned to build on knowledge gained in the Personal Radiation Detector and Detection Equipment for Law Enforcement courses and present information on detection mission planning. DNDO reported that the course would cover detector deployment and planning for targeted detection operations.

DNDO Works Closely With Other Federal Agencies to Prevent Overlap in Nuclear Detection Systems

We analyzed the missions of federal, non-DoD nuclear and radiological detection programs that appeared to have similar or related goals. We used DNDO documentation, publicly available information, and interviews with DNDO, CBP, U.S. Coast Guard, DoD, DOE, and Department of State personnel to compare DNDO's radiological or nuclear detection program activities with these federal agencies. Unlike these federal agencies, DNDO does not operate detection equipment. Rather, it seeks to improve the

detection capabilities of other federal, state, and local agencies, through research and development, procurement, and training.

Agencies that operate detection equipment such as CBP, DOE, and state and local officials each have distinct detection programs. As DNDO does not operate this equipment, there is no overlap between the nuclear or radiological detection programs of DNDO and these agencies. However, there are programs managed by DHS and DOE, specifically the Secure Freight, Megaports, and Container Security Initiatives, which appear to have similar, potentially overlapping goals, but our analysis did not identify any overlap among those programs either. Furthermore, DNDO works closely with federal agencies to prevent overlapping research and development programs.

According to DNDO officials, it works closely with other federal agencies to identify and prevent program overlap in detection systems and acquisitions. DNDO's coordination takes place through its participation in interagency working groups. These interagency groups have a common goal to identify crosscutting program activities and to prevent overlap among the various radiological and nuclear detection programs across the federal government. DoD and DOE officials told us that these interagency meetings have been beneficial in reinforcing agencies' roles and responsibilities; providing a forum for sharing information on planned research and development activities, and are necessary to identify and prevent program overlap among federal agencies.

Congress directed DNDO "to provide a report to the Committees on Appropriations, no later November 1, 2006, on the budget crosscut of federal agencies involved in domestic nuclear detection."⁸ In April 2006, DHS components, DoD, DOE, and the Departments of Justice and State provided DNDO with agency-specific plans for implementing their respective parts of the Global Nuclear Detection Architecture. The program budget crosscut report provided a baseline assessment of the federal government investments in nuclear detection strategies, programs, and initiatives within each layer of the Global Nuclear Detection Architecture.

Three operational DHS components, CBP, TSA, and the U.S. Coast Guard, have programs or activities within the architecture. When we compared the radiation detection missions and program activities of CBP, TSA, and the U.S. Coast Guard with DNDO, we determined no overlap exists. DNDO does not operate detection equipment to scan people, vehicles, or cargo containers. For example, CBP radiation detection activities involve the use and operation of a variety of radiation detection equipment, such as personal radiation detectors, radiation portal monitors, and handheld radioisotope identification devices. In

⁸ Conference Report to accompany Public Law 109-295 (House Report 109-699).

contrast, DNDO's responsibility is the development and acquisition of detection equipment for CBP's use.

Some federal programs appear to have similar purposes, but are designed to support different functions. For example, there are three federal technical programs that can be used in detector alarm adjudication, the Regional Reachback program, the National Reachback program, and CBP's Laboratory and Scientific Services. DNDO's Regional Reachback program primarily assists state and local authorities with adjudicating detector alarms. CBP's Laboratory and Scientific Services provides technical and scientific support solely for CBP operations and activities at and between official ports of entry. The National Reachback program, which connects radiological and nuclear detector operators with scientists who specialize in nuclear weapons, adjudicates alarms that cannot be adjudicated by Regional Reachback, or CBP's Laboratory and Scientific Services.

Other programs appear to have similar goals, but are actually distinct. For example, the Secure Freight Initiative, managed jointly by DHS and DOE, and the Megaports Initiative, which is managed by DOE's National Nuclear Security Administration, both have the goal of detecting illicit radiological or nuclear material at foreign ports of departure. Also, the Container Security Initiative, which is managed by CBP, has the goal of identifying cargo-shipping containers destined for the United States that are suspected of being used by terrorists. CBP screens the cargo-shipping containers, including screening for radiation, before the containers depart the foreign port. These programs might appear to overlap one another. However, our analysis determined each is implemented differently.

Specifically, the Container Security Initiative involves sending teams of DHS employees to work at foreign ports of departure to ensure that high-risk containers are screened before they reach the United States. As of August 2007, the Container Security Initiative was operational in more than 50 ports throughout the Americas, Asia, the Caribbean, Europe, and the Middle East. The Megaports Initiative, on the other hand, seeks to improve the detection capabilities of foreign government entities that operate ports by providing equipment, training, and maintenance. Megaports is only operational at ports in the Bahamas, Greece, the Netherlands, Singapore, Spain, and Sri Lanka, however DOE is working to expand the initiative to additional ports.

Moreover, the *SAFE Port Act* of 2006 mandated that DHS and DOE test screening cargo containers in three foreign ports. In response, the departments established the Secure Freight Initiative, which builds on existing port security measures to improve the federal government's ability to screen containers. The Secure Freight Initiative is operational at six specific ports. DHS and DOE coordinate the application of the Secure Freight, Megaports,

and Container Security Initiatives closely, and we have no evidence that these programs overlap.

DNDO also supports the interagency Domestic Nuclear Defense Research and Development Working Group, and co-chairs the working group on interdiction research and development. DNDO is drafting, in partnership with other federal departments and agencies, a national research and development roadmap for domestic nuclear defense and is expected to deliver this report to Congress in October 2007.

Management Comments and OIG Analysis

We obtained technical and written comments on a draft of this report from DNDO. DNDO management agreed with the report's findings and our recommendation. Where appropriate, we made changes to the report to address the DNDO management's comments. A copy of DNDO's written comments in its entirety is included as Appendix B.

In its written response, DNDO described the self-initiated internal realignment of activities to reflect DNDO's full range of missions and customers better. DNDO said that this realignment, highlighting unique maritime, aviation, and state and local requirements, programs and activities reflects the maturing of DNDO and the changing nature of the threat. Specifically, with the realignment DNDO can give more attention to other pathways or gaps in the Global Nuclear Detection Architecture. However, this realignment took place in August 2007, after we concluded our fieldwork, and we did not discuss the realignment in our report.

In addition, DNDO suggested that we provide greater clarity for the activities of the Operations Support directorate by adding an additional paragraph to the report. We did not add this paragraph to the text of the report.

Recommendation

We recommend that the Director of the Domestic Nuclear Detection Office, in coordination with the Administrator for the Federal Emergency Management Agency, negotiate and execute a memorandum of agreement between the Domestic Nuclear Detection Office and the Federal Emergency Management Agency's Office of Grant Programs that defines funding responsibilities of each office for preventative radiological and nuclear training courses.

DNDO Response

DNDO concurred with our recommendation. DNDO has met with representatives from FEMA to discuss scope, funding, roles, and responsibilities to be included in the memorandum of agreement. Additionally, DNDO has created a working draft memorandum and is coordinating it with FEMA.

OIG Analysis

We agree that the actions DNDO is taking, and plans to take, begin to satisfy the intent of this recommendation. This recommendation is resolved, but remains open pending our receipt of the finalized memorandum of agreement between DNDO and FEMA.

Appendix A

Purpose, Scope, and Methodology

We evaluated whether DNDO programs and initiatives support the integration of domestic radiological and nuclear detection, notification, and response systems. Our objectives were to determine whether DNDO is meeting its obligations to develop and implement an integrated nuclear detection capability and response protocol system as directed by the National Security Presidential Directive–43/Homeland Security Presidential Directive–14, and whether the DNDO’s mission or programs overlap with those of other federal agencies.

Our fieldwork was conducted from December 2006 to April 2007. We interviewed DNDO staff, DHS officials from CBP, FEMA’s Office of Grant Programs, the Office of Intelligence and Analysis, and other federal agency officials from the Departments of Defense, Energy, and State, the Nuclear Regulatory Commission, and the National Counterterrorism Center. We conducted telephone interviews with homeland security, emergency management, transportation, and public safety officials, including police and highway officials from Alabama, California, Florida, Georgia, Kentucky, Maryland, Mississippi, Missouri, North Carolina, New Jersey, New Mexico, Tennessee, Virginia, and the District of Columbia. We also reviewed component records and documents such as reports to Congress on DNDO’s progress, working group and policy coordination meeting minutes, memoranda of agreement with other federal agencies, and preventative radiological and nuclear training course curricula.

This review was scheduled as part of our annual work plan. Our work was conducted under the authority of the *Inspector General Act* of 1978, as amended, and according to the *Quality Standards for Inspections* issued by the *President’s Council on Integrity and Efficiency*.

Appendix B Management Comments to the Draft Report

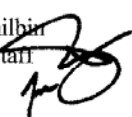
Domestic Nuclear Detection Office
U.S. Department of Homeland Security
Washington, DC 20528



Homeland Security

November 9, 2007

MEMORANDUM FOR: Marcia Hodges
Chief Inspector
Office of the Inspector General

FROM: Patrick Philbin
Chief of Staff
DNDO 

SUBJECT: DNDO response to Inspector General Report

Thank you for the opportunity to review your draft report. We find the report accurate as of the end of your data collection period, however, in August 2007, DNDO self-initiated an internal realignment of activities to better reflect its full range of missions and customers. The largest effect of this realignment was the formation of the Mission Management Directorate (MMD), which was established to ensure an effective linkage of user requirements with technology development. MMD will be responsible for the development of integrated program plans addressing each of the DNDO mission areas: ports of entry, aviation, maritime, and State and local (with a separate focus for the Securing the Cities initiative). MMD will interface directly with Federal, State, and local stakeholders to gather rad/nuc technology requirements, and will in turn provide these requirements to the transformational research and systems development activities within DNDO.

This realignment, highlighting unique maritime, aviation, and State and local requirements, programs and activities reflects the maturing of DNDO and the changing nature of the threat. Specifically, when DNDO was created, efforts were focused on developing improved passive means (radiation portal monitors) for detecting the movement of nuclear or radioactive material in maritime cargo containers, simply because the volume of the flow of containers into the U.S. is so high. As the radiation portal monitor program has advanced, more attention can be given to other pathways or gaps in the global nuclear detection architecture (GNDA). This has led to an increasing emphasis on non-intrusive inspection technology to address threats that are difficult to detect with passive means and detection technology that can be used at non-Port of Entry (non-POE) pathways (e.g., general aviation and maritime). To address these new missions, DNDO is also implementing a rapid prototyping program and efforts to improve modeling techniques to enhance and accelerate the ability to develop solutions for these emerging technical challenges.

Additionally, in regards to your recommendation:

As stated -- "We recommend that the Director of the Domestic Nuclear Detection Office, in coordination with the Administrator for the Federal Emergency Management Agency negotiate and execute a memorandum of agreement between the Domestic Nuclear Detection Office and the Federal Emergency Management Agency's Office of Grant Programs that defines funding responsibilities of each office for preventative radiological and nuclear training courses."

Appendix B

Management Comments to the Draft Report

The Domestic Nuclear Detection Office (DNDO) has initiated the development of a Memorandum of Agreement (MOA) between DNDO and the Federal Emergency Management Agency's National Preparedness Directorate (NPD). On 8/27/07 representatives from DNDO and FEMA met to discuss scope, funding, roles and responsibilities, and other items to be included in the MOA. Since that time, DNDO has created a working draft and will continue to develop it with concurrence from FEMA. Upon execution, this MOA would support continued cooperation between the two agencies in support of the Preventative Radiological/Nuclear Detection mission.

In addition, DNDO suggests that to provide greater clarity about the Operations Support Directorate's activities the following text should be added to the description of that office:

"Preventive Radiological Nuclear Detection (PRND) program development begins via meetings between DNDO and the FBI Joint Terrorism Task Force Executive Boards in area Field Offices. DNDO also meets with Urban Area Working Groups, State Administrative Agencies and the State Homeland Security Administration in a given state. These engagement meetings begin the process of PRND mission awareness and program development. City selections are prioritized using Tier I and Tier II Urban Area Security Initiatives (UASI) listings provided by DHS."

Appendix C

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