Testimony of
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Chairman Hunter, Ranking Member Garamendi and distinguished Members of the Subcommittee. Thank you for the opportunity to testify with my colleagues from the Department of Homeland Security (DHS) on the Domestic Nuclear Detection Office's (DNDO) efforts to prevent and respond to the arrival of a radiological device at our Nation's maritime ports.

Radiological and nuclear terrorism remains one of the greatest threats to our Nation's security. An attack with a radiological dispersal device, also known as a "dirty bomb," at a U.S. port would have profound and prolonged impacts to our Nation and the world.

Since its inception, DNDO has built essential partnerships, developed strategies, and deployed capabilities to detect and interdict radiological and nuclear threats posed to the homeland. Additionally, DNDO, in partnership with our interagency partners from the Departments of Defense (DoD), Energy (DOE), State (DoS), Justice (DOJ), and the Office of the Director of National Intelligence (ODNI), has advanced national technical nuclear forensics to trace nuclear and other radioactive materials back to their source. My testimony today focuses on work to strengthen the operational readiness of our maritime partners and efforts to improve the technical nuclear forensics capabilities of the U.S. government (USG).

In both nuclear detection and forensics, we rely on the critical triad of intelligence, law enforcement, and technology. Thus, to maximize our Nation's ability to detect and interdict threats in the maritime domain, it is imperative that we apply detection technologies in operations driven by intelligence indicators, and place them in the hands of well-trained law enforcement and public safety officials. The USG also must ensure that information from law enforcement, intelligence, and technical nuclear forensics is synthesized to identify the origin of the material or device and the perpetrators.

DNDO was established in 2005 by presidential directive and subsequently codified in the SAFE Port Act (P.L. 109-347) amending the Homeland Security Act of 2002. DNDO is responsible for the coordination of federal efforts to detect and protect against attempts to import, possess, store, develop, or transport nuclear or other radioactive materials out of regulatory control that may be used as weapons against the Nation. Necessarily, our efforts are collaborative with federal, state, local, tribal, territorial, and international partners, as well as with academia, the national laboratories, and industry. DNDO with its interagency partners coordinates the development and enhancement of the global nuclear detection architecture, which is a framework for detecting, analyzing, and reporting on nuclear and other radioactive materials that are out of regulatory control. DNDO is responsible for implementing the domestic portion of the global nuclear detection architecture. The architecture presents a layered, multi-faceted, defense-in-depth

framework to ensure prospective terrorists face multiple obstacles. Our goal is to prevent nuclear terrorism by making it a prohibitively difficult undertaking for the adversary.

Our efforts to secure the homeland from the threat of nuclear terrorism begin overseas. A *global* nuclear detection architecture relies largely on the decisions of 195 sovereign foreign partners to develop and enhance their own national and regional detection programs. To that end, DNDO, in close cooperation with the interagency and multilateral partners such as the International Atomic Energy Agency (IAEA), the Global Initiative to Combat Nuclear Terrorism (GICNT), and INTERPOL, promotes the development of national nuclear security detection architectures.

Further, programs implemented by our interagency partners seek to secure and reduce the available material abroad as well as assist partner nations with interdicting and deterring the possession and use of illicit materials and weapons. DOE's Office of Radiological Security provides a first line of defense by securing radioactive materials used for legitimate medical, industrial, and research purposes; removing and storing disused radioactive sources; and, where feasible, encouraging the use of non-isotopic alternative technologies that cannot be used as weapons. DOE's Nuclear Smuggling Detection and Deterrence program also contributes significantly to the capacity of partner countries to deter, detect, and interdict illicit trafficking of nuclear and radiological material across international borders and through the maritime shipping network by providing partner country governments fixed and mobile detection equipment and support to indigenously advance and sustain a nuclear detection architecture. DOE's efforts in these areas complement the DHS mission to protect the homeland by preventing terrorists and other criminal groups from accessing and using radioactive materials to carry out an attack.

To assist partner nations in their nuclear security endeavors, DNDO, working through the aforementioned international organizations, develops and shares guidance, best practices, and training courses. These efforts focus on foundational elements of detection architectures, such as planning, risk assessment, strategy development, legal and regulatory frameworks, and the integration of intelligence networks and law enforcement.

In acknowledgement of the serious nature of the threat, President Obama established a series of Nuclear Security Summits, beginning in 2010, as an international forum for improving nuclear security worldwide. Consistent with commitments made at these summits, nations are improving security at nuclear and radiological facilities, enhancing abilities to counter nuclear smuggling, and removing or disposing of nuclear materials. Although less nuclear and radiological material is available for use by terrorists due to these efforts, much work remains and the threat requires our constant attention.

The 2016 Nuclear Security Summit is anticipated to continue discussions to improve nuclear security efforts to deter, detect, and disrupt attempts at nuclear terrorism. As part of the Department's endeavor to address the congressional mandate to scan 100% of U.S.-bound maritime cargo containers overseas, DHS, DOE, and other USG representatives will participate in the Nuclear Security Summit Maritime Security Workshop in November 2015, which will specifically address radiation detection in the maritime environment. Any recommendations developed will be presented at the 2016 summit.

The summits, along with the aforementioned international efforts, contribute to building a multi-faceted, multi-layered approach for detection so nuclear and other radioactive material out of regulatory control can be interdicted before it is transported to the United States.

The layered approach to countering nuclear terrorism continues at our borders. To fulfill DNDO's responsibility to implement the domestic portion of the global nuclear detection architecture we work with DHS operational colleagues to develop and deploy detection technologies and state and local agencies to establish and enhance their detection capabilities. DNDO procures large-scale fixed radiation detection systems and small mobile devices for employment at our ports of entry, along our land and maritime borders, and in the interior of the United States. As such, we collaborate with the U.S. Coast Guard (USCG), U.S. Customs & Border Protection (CBP), and the Transportation Security Administration (TSA).

To bolster detection capabilities at our maritime borders, DNDO has procured portable radiation detectors for the USCG so that all boarding teams are equipped with mobile devices to scan for the presence of radiation. To increase the probability of detecting threats posed by small vessels, DNDO has also acquired capabilities for use by USCG and CBP vessels to scan such vessels before they reach our shores. To facilitate the scanning of inbound cargo containers, DNDO, in collaboration with CBP, has also procured and deployed radiation portal monitors and radioisotope identification devices for use at the ports of entry. As a result, today, almost 100% of all incoming maritime containerized cargo is scanned for radiological and nuclear threats at our seaports.

At the same time, we continue to enhance our fielded capabilities. To improve the performance of radiation portal monitors and gain efficiency at land and maritime ports of entry, CBP and DNDO worked closely on implementing an approach to reduce the number of nuisance alarms. Radiation portal monitors routinely detect benign radioactive materials in the stream of commerce, resulting in a significant operational burden for CBP field officers who must resolve these alarms. CBP and DNDO worked closely to implement a new algorithm, reducing nuisance alarms (by 74% on average) without sacrificing detector performance against threat materials. The reduction in alarm rates and decrease in secondary security inspections has enabled officers in the field to redirect their attention to other high priority law enforcement duties.

To advance technology to detect threats, DNDO performs accelerated development, characterization, and demonstration of leading-edge technologies. One such effort is the Nuclear and Radiological Imaging Platform project, where DNDO is developing and evaluating emerging technologies to detect shielded materials while clearing benign conveyances at land and maritime ports. We are also collaborating with CBP's Laboratories and Scientific Services to use machine learning to further reduce the number of nuisance alarms in radiation portal monitors deployed to ports. In addition, we are working with the Massachusetts Port Authority, DHS Science and Technology's Border and Maritime Security Division, and the United Kingdom's Home Office to develop and evaluate the next generation non-intrusive inspection imaging equipment. The technology will be evaluated in the Port of Boston next year and, if successful, will demonstrate a next generation integrated system capable of detecting both nuclear material and contraband.

While technology is critical to detection, building operational capacity through training, exercises, and cross-jurisdictional protocols is integral to securing our maritime borders. DNDO

works with federal, state, local, tribal, and territorial agencies to build flexible, multi-layered capabilities that can be integrated into a unified response when intelligence or information indicates a credible radiological or nuclear threat.

DNDO also provides program assistance to aid maritime partners in developing radiological and nuclear detection programs based on lessons learned in the West Coast Maritime Pilot, a collaborative effort with partners from Puget Sound, WA, and the Port of San Diego, CA. Under the leadership of the Area Maritime Security Committees, the pilot successfully established efficient, risk-informed regional detection programs focused on detecting and interdicting threats posed by small vessels in the maritime pathway. Lessons from this pilot have also shaped DOE's Maritime Vectors Program, which is an element of the DOE/NNSA Defense Nuclear Nonproliferation Office of Nuclear Smuggling Detection and Deterrence that seeks to deter, detect and interdict international smuggling of nuclear materials via unregulated maritime traffic. Today, DNDO's maritime assistance program works with Area Maritime Security Committees to develop regional Concepts of Operations and Standard Operating Procedures, provides information on detection equipment needed to support the same, and provides guidance on training and exercise plans.

To further our domestic capabilities to detect and interdict nuclear and other radioactive material out of regulatory control, DNDO is currently engaged with all 50 states and 33 of the USCG's Area Maritime Security Committees. Since intelligence and information sharing is integral for our collective success, DNDO efforts are focused on bringing together federal, state, local, tribal, and territorial partners at the outset. DNDO and DHS's Office of Intelligence & Analysis, along with our federal interagency partners at the Federal Bureau of Investigation (FBI) and the National Counterterrorism Center (NCTC), ensure that state and local partners have the information and tools necessary to address evolving threats. State and major urban area fusion centers, State Emergency Control Centers, and the FBI Joint Terrorism Task Forces (JTTFs) provide the necessary information exchange pathways. In the event of an emergency, this connected system provides federal, state, local, tribal, and territorial personnel with the ability to exchange sensitive information in a timely and secure manner.

To enhance situational awareness of radiological and nuclear threats and provide technical support to operational partners, DNDO's Joint Analysis Center provides information products and technical expertise. For example, the Joint Analysis Center provides geographic information on detectors, situational awareness reports, and other overlays in a geospatial viewer. DNDO's Joint Analysis Center Collaborative Information System facilitates information sharing and provides nuclear alarm adjudication support to operational partners, including those in the maritime environment. This system is connected to the Triage system, maintained by the DOE's National Nuclear Security Administration, which enables seamless transition when national-level adjudication assistance is required.

DNDO's operational partners seek to ensure their readiness to counter the nuclear threat. To this end, DNDO brings to bear a unique "red team" that can challenge fielded capabilities using uncommon nuclear sources and scenarios. DNDO supports maritime partners by conducting overt and covert assessments of operations by intentionally introducing radiation sources and mock devices against deployed defenses to evaluate the performance of fielded technology, training, and protocols. Engagements are conducted through the Area Maritime Security

Committees or directly with the federal, state, or local maritime agency. Recent engagements have included the USCG Maritime Security Response Team and the Florida Wildlife and Conservation Commission.

An act of nuclear terrorism or the interdiction of a nuclear or radiological threat at a U.S. port would necessitate rapid, accurate attribution based on sound scientific evidence. Nuclear forensics, when coupled with intelligence and law enforcement information, supports leadership decisions. DNDO's National Technical Nuclear Forensics Center focuses on developing and improving the readiness of the overarching USG nuclear forensic capabilities, advancing our technical capabilities to perform forensic analyses on pre-detonation nuclear and other radioactive materials, and building and sustaining an expertise pipeline for nuclear forensic scientists. As with its detection mission, DNDO must closely collaborate with interagency partners, particularly those in the FBI, DoD, DOE, and the intelligence community.

The operational readiness of U.S. nuclear forensics capabilities has improved markedly in recent years, as demonstrated by increasingly realistic and complex interagency exercises. Many of the exercises, which were traditionally conducted only by federal partners, now include state and local law enforcement and the intelligence community in order to plan and synchronize the fusion of intelligence, law enforcement, and technical forensics information.

DNDO also supports various efforts to advance technical forensics capabilities related to radiological materials. We have developed, and continue to provide input to, a radiological sealed-source database hosted at Argonne National Laboratory. It is the most comprehensive database of radiological sealed-sources in the world and is used to collect and understand sealed radioactive source design types, production and distribution processes and pathways, and country of origin profiles. The database has been used during operational events by FBI and DOE. DNDO also develops and produces radiological Certified Reference Materials to ensure measurement precision that is sufficient to determine the length of time since the material was last processed.

Our Nation's ports are central to international trade and commerce. An attack on a U.S. seaport with a dirty bomb would cause disruption to the global supply chain, whether directly or indirectly. The collective international efforts to reduce the amount of available material, develop national detection architectures, and deploy detection systems to interdict illicit material, are vitally important in minimizing the risk of a weapon entering the United States. These efforts, coupled with the USG's development and enhancement of domestic defenses present adversaries with multiple obstacles as they seek to attack us using nuclear or other radioactive material. Our national nuclear forensics capabilities will ensure responsible parties are held accountable for their actions. We will continue to work with our partners to counter nuclear terrorism and we sincerely appreciate this Subcommittee's interest in and support for securing the homeland.

Thank you again for this opportunity, and I am happy to answer any questions from the Subcommittee.