Testimony of

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Opening Statement
Of
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Introduction

Good afternoon, Chairman Kyl, Ranking Member Feinstein, and distinguished members of the subcommittee. I am Vayl Oxford, the Director of the Domestic Nuclear Detection Office (DNDO), and it is my pleasure to come before you today to discuss how we are responding to the threat of nuclear or radiological terrorism. I would like to thank the committee for the opportunity to share the progress we are making at the DNDO and within the Department of Homeland Security (DHS).

Nuclear weapons in the hands of terrorists are a grave threat. The magnitude of the destruction and casualties that would ensue is unique among potential threats facing the Nation. Today, I will discuss the formation of the DNDO and the role we play in protecting the nation, DNDO accomplishments in the past year, and some of our program priorities for the upcoming years. I will specifically touch upon how we are enhancing our detection capabilities through the use of next-generation technologies and how, what we call "transformational research and development," will help us overcome key, long-term challenges in our detection architecture.

Before describing our efforts, I would like to point out that protecting the United States from nuclear threats is a job that extends beyond the work of the DNDO and I would like to thank our partners, in particular the Departments of Energy (DOE), Defense (DoD), and State, as well as the Federal Bureau of Investigation (FBI) and the Nuclear Regulatory Commission (NRC) for their tireless dedication to this mission and for their contributions to our interagency office.

DNDO Founding and Mission

Combating the threat of catastrophic destruction posed by terrorists possessing nuclear or radiological weapons is one of the most critical priorities of not only DHS, but the U.S.

Government. In order to integrate the Department's efforts against this threat under a singular direction, as well as coordinate these efforts with relevant partners across the government, the President signed a joint presidential directive NSPD-43/HSPD-14 on April 15, 2005, "Domestic Nuclear Detection," establishing the office. The DNDO was chartered to develop a global nuclear detection architecture that will form a robust layered defense for the Nation, coordinate nuclear and radiological detection technology development programs, and serve as the focal point of all radiological detection research and development collaboration between DHS, DOE, and other related Federal agencies.

It should be noted that the DNDO will not be responsible for implementing all, or even most, elements of the proposed architecture. We are responsible for implementing domestic components, but will work with other agencies, to include DOD, DOE, State, and the Department of Justice, to ensure the implementation of the entire architecture. Full-time detailees and liaisons from these agencies have provided invaluable expertise in all aspects of the DNDO mission. These detailees and liaisons enable us to maintain an open and productive dialogue with our interagency partners so that we may make strides towards the complete implementation of the proposed architecture.

Furthermore, the DNDO continues to work with partner agencies to ensure that research and development conducted by each agency is closely coordinated to avoid duplication of efforts. The DNDO supports the interagency Domestic Nuclear Defense Research and Development (DNDR&D) Working Group to develop a coordinated R&D roadmap that will enhance the breadth of domestic nuclear defense efforts to ensure a secure nation. This interagency working group addresses the coordination of: R&D strategies for domestic nuclear defense; the identification and filling of critical technology gaps, enhance efforts to develop and sustain critical capabilities through appropriate investments in the foundational science and research, interagency funding for necessary science and technology; and collaboration and exchange of vital R&D information.

DNDO Accomplishments

In the year since its founding, the DNDO has taken major steps towards achieving its stated mission. We completed the first ever global nuclear detection architecture analysis, which identified challenges and priority initiatives across Federal, State, and local governments. The architecture study was completed four months ahead of schedule and briefed to partner agencies and the White House in October and November of 2005. This architecture effort was funded and led by the DNDO, but involved considerable interagency participation, resulting in the delivery of a consensus strategy.

We have accelerated several technology development programs. The initial engineering development phase of the Advanced Spectroscopic Portal, or ASP, program is complete. This system development and acquisition program is improving current generation radiation portal monitors with the ability not only to detect the presence of radiation, but to identify the materials causing the alarms so that we can dismiss non-threatening sources. This enhanced capability will provide significant improvement for DHS Customs and Border Protection (CBP) secondary inspection operations, as well as greatly reduce secondary referral rates when operated as a means of primary inspection.

Last fall, these engineering development programs culminated in the first ever high fidelity test and evaluation campaign to measure the improvements in performance provided by these next-generation systems. The test data collected was used to support the selection of Raytheon, ThermoElectron, and Canberra to begin low-rate initial production (LRIP). We announced the ASP Contract awards on July 14th. The priority for the base year is development and testing of the fixed radiation detection portal that will become the standard installation for screening cargo containers and truck traffic. Full-rate production is expected to begin in 2007.

We have also recently begun the Cargo Advanced Automated Radiography System, or CAARS, development program to deliver imaging systems that will automatically detect, within cargo, high-density material that could be used to shield threat materials from detection by radiation portal systems like ASP. The automated image processing techniques envisioned for CAARS will also substantially improve throughput rates over current generation radiography systems. These improved throughput rates will, in turn, enable CBP and other operators to effectively scan a much higher portion of cargo. The DNDO vision is to ultimately deploy ASP and CAARS systems together to ensure our ability to detect either unshielded or shielded materials across the entire threat spectrum.

While port security remains one of our top priorities, the DNDO is also taking steps to expand detection capabilities in the aviation and maritime domain and within the domestic interior. CBP deployments of radiation detection equipment at US airports are beginning, with a first pilot deployment at Dulles, to become a total of 30 airports. When completed, this will provide radiological and nuclear detection for air cargo upon arrival in the US. We are also engaging with the Coast Guard and State and local partners to address the challenges of doing radiation detection in the maritime environment. Specifically, the DNDO is committed to providing handheld and backpack radiation detection devices that enable the Coast Guard to successfully interdict radioactive material offshore.

Within our Nation's borders, we are leveraging and strengthening existing commercial vehicle inspection programs and surveillance capabilities to make domestic detection more effective. We have launched the Southeast Transportation Corridor Pilot program to deploy radiation detectors to truck weigh stations and other sites. These deployments will be at locations agreed to by our regional partners in accordance with the domestic detection architecture developed by the DNDO. Included in the pilot program will be the necessary training, technical reachback and operational protocols to ensure that detection technology is being operated properly and that alarms are escalated as appropriate. I will speak more about this alarm escalation process shortly.

As Secretary Chertoff officially announced two weeks ago, we have launched the Securing the Cities initiative, which will enhance protection and response capabilities in and around the Nation's highest risk urban areas. Using the New York area as the initial engagement region, the DNDO and regional partners will develop analytically-based detection architectures, to include all necessary planning, equipment, training, exercises, and operational support infrastructure. As these initiatives mature, the lessons learned will be exported to other regions and cities to enhance our overall protection against nuclear and radiological threats.

The DNDO also plans to support the training of approximately 1,500 State and local operators in the use of rad/nuc detection equipment through fiscal year 2007. Working with the Office of Grants and Training allows DNDO to oversee the design, delivery, evaluation, and continual improvement of preventative rad/nuc training curriculum. Because of the varying levels of resident expertise encountered in State and local venues, the DNDO has developed a modular training curriculum that can be easily and rapidly tailored to the appropriate audience. The training modules span a range of topics, and currently include modules that cover "radiation 101," nuclear threat awareness, response protocols and specific equipment operation. As State and local operations increase, the DNDO will continue to work with the DHS Office of Grants and Training to deliver additional training options, such as "radiation detection for commercial vehicle inspection" or "radiation detection surge programs."

I had previously touched upon the concept of the alarm escalation process, and I would like to explain the importance of this function within the detection architecture. The DNDO works with Federal, State, and local partners to refine the U.S. Government's approach to alarm response and adjudication with a focus on improving technical reachback capabilities to support operations. As alarms escalate, this program provides technical expertise to operators to ensure that alarms are resolved properly or, if necessary, that alarms are elevated to the appropriate response assets. As part of this operational support activity, the DNDO is leading an effort to develop a comprehensive U.S. Government process for alarm resolution that brings our procedures in line with the drastically altered security environment that we now face. This new alarm resolution process represents the first restructuring of the Federal alarm resolution and response protocols in over a decade.

Remaining Challenges - The Need for Transformational Research and Development

Even with all of the accomplishments I have outlined, there are still key, long-term challenges and vulnerabilities in our detection architecture that require a well-supported research and development program. These challenges include detecting threat materials from greater distances, in highly cluttered backgrounds, or in the presence of shielding and masking materials.

Our transformation research and development work is being translated into next-generation technologies that will address the current limitations of deployed systems. We are launching initiatives to develop technologies to meet these architectural challenges, as well as commencing a broad basic research program across private industry, the national labs, and academia to stimulate the entire field of nuclear detection sciences.

The transformational detection technologies that we are actively pursuing include a robust Exploratory Research Program, a dedicated Academic Research Program, and several upcoming Advanced Technology Demonstrations (ATDs). In December 2005, DNDO published a Call for Proposals to the National Laboratories soliciting novel detection approaches, materials, and advanced technologies. DNDO received over 150 proposals, and ultimately selected 44 for award, resulting in nearly $40 million in research programs. Similarly, DNDO released a solicitation in March 2006 for private industry and academia proposals in the same research topics. Over 200 white papers were submitted, and we are now in the process of evaluating full proposals for additional awards. Beginning in 2007, we anticipate a third solicitation, specifically

focused on academic research. This program will provide a much needed emphasis in nuclear detection sciences, a field that has been in decline at American universities for years.

Building upon these research programs, we are launching several Advanced Technology Demonstrations, which will provide concept validation, leading to technology transitions to our Systems Development process. In April 2006, we solicited proposals for the first of these ATDs, the "Intelligent Personnel Radiation Locator." We received multiple proposals which are presently evaluating. Another technology that we are pursuing is the Stand off Detection ATD which aims to extend nuclear detection ranges beyond 100 meters. A solicitation on this topic will be released later this year. In 2007, we are hoping to solicit proposals in two additional ATD topic areas--active SNM verification and long-dwell detection in transit. We anticipate that active verification (AV) of SNM will be developed for secondary and primary screening at high throughputs to enhance detection and identification through development of gamma and neutron-based direct detection techniques. The long dwell detection in transit ATD is planned to explore our capabilities to exploit the time available during cargo transit to detect threat materials in cargo and conveyances.

Conclusion

In conclusion, the DNDO recognizes that the successful development of next-generation technologies must be done as part of a larger strategy, one that seeks to fill in gaps in our evolving architecture and extends to deployments executed by other agencies. Whether we are addressing the issue of port security and overseas screening or we are supporting the detection efforts of first responders, the systems that we put in place must be fully integrated and work within an environment that responds to information obtained from intelligence, counterterrorism, and law enforcement communities.

This concludes my prepared statement. With the committee's permission, I request my formal statement be submitted for the record. Chairman, Senator Feinstein, and Members of the Subcommittee, I thank you for your attention and will be happy to answer any questions that you may have.