



U.S. DEPARTMENT OF HOMELAND SECURITY

FISCAL YEAR 2009

HOMELAND SECURITY GRANT PROGRAM

**SUPPLEMENTAL RESOURCE: DOMESTIC NUCLEAR
DETECTION OFFICE OVERVIEW**

November 2008



U.S. DEPARTMENT OF HOMELAND SECURITY

DOMESTIC NUCLEAR DETECTION OFFICE OVERVIEW

A. DNDO Background and Mission

The Domestic Nuclear Detection Office (DNDO) was established in the Department of Homeland Security (DHS) by Presidential Directive on April 15, 2005. DNDO plays an essential role in developing and implementing a defensive strategy, with domestic and international programs, to protect the Nation from a nuclear or radiological terrorist attack. Because no single layer within the strategy is capable of providing one hundred percent effectiveness in detecting and interdicting radiological and nuclear (rad/nuc) materials for illicit use, DNDO is adopting a multi-layered strategy.

The DNDO is the primary agency within the U.S. Government responsible for developing the global nuclear detection architecture, acquiring and supporting the deployment of the domestic detection system to detect and reporting attempts to import or transport a nuclear device or fissile or radiological material, intended for illicit use. Grantees are encouraged to work closely with DNDO when developing or enhancing preventative rad/nuc detection (PRND) programs to ensure that programs are efficiently integrated into current and future Federal capabilities, as well as meet certain identified performance requirements.

The DNDO is conducting both evolutionary (near-term) and transformational (long-term,) research, development, test, and evaluation (RDT&E) programs to improve the Nation's capabilities for detection, identification, and reporting of rad/nuc materials. By integrating RDT&E programs with operational support responsibilities, DNDO will ensure technologies are appropriately deployed, with training materials and well-developed operational response protocols. Working with Federal, State, local, and tribal partners, DNDO has piloted initial training programs and developed detection alarm protocols that can be customized for specific operational missions.

B. Federal, State, Local, and Tribal Partnerships

DHS values the importance that effective sharing and use of nuclear detection-related information, intelligence, and systems play in strengthening our Nation's security. DNDO will integrate crucial overseas detection programs with domestic nuclear detection systems and other nuclear detection efforts undertaken by Federal, State, local, and tribal governments and the private sector. To facilitate an effective partnership with State and local entities that are involved in preventive rad/nuc detection activities, DNDO will continue to pursue through active engagements a coordinated delivery of DNDO products, programs, and services to expand State, local and tribal preventive rad/nuc detection capabilities.

C. Building Capabilities

DNDO encourages States and regions to implement comprehensive PRND programs in support of, and in concert with, the domestic portion of the global nuclear detection architecture. DNDO believes that implementation of a comprehensive program will take several years, and require substantial interstate and federal coordination. As such, DNDO strives to partner with State, local, and tribal agencies choosing to develop, enhance, and implement nuclear detection systems with regard to architecture design, subsystem configuration, upgrades and coordinated operations, communications, and interoperability.

The DNDO believes that a layered defense incorporating a variety of detection capabilities ensures the greatest probability of detection for radioactive substances entering and transported within the country. This layered detection strategy should include detection equipment and facilities that are specifically chosen based on the local operating environment. This equipment can range in size and levels of complexity from human portable radiation detection systems such as personal radiation detectors (PRDs), hand-held, or back-pack based systems, to large, permanently installed detection facilities. Boat or vehicle mounted systems can also add an additional detection layer.

The following information is provided to help illustrate the types of equipment that can be used to form the various layers in this defensive strategy:

- **Personal Radiation Detector (PRD):** Fielded as a basic capability for individual officers and inspection teams, PRDs detect gamma-ray and neutron emissions and serve as “tripwire” detectors to alert and protect personnel. These devices have a limited detection range and can also be used to localize a source detected with a wide-area detection device (see below). Most of these devices do not have the capability to identify specific isotopes.
- **Wide-area Radiation Detector:** These devices, usually backpack-based or vehicle-mounted devices, detect both gamma and neutron emissions. Generally these devices do not identify isotopes, but this capability could be useful in wide-area radiation detection equipment. Wide-area radiation detectors may also be employed based on either general or targeted intelligence, during special events that require heightened security or when conducting large area searches. Due to the large detection range and lack of directionality, a smaller device (such as a PRD or RIID) should be used to localize sources detected by wide-area devices.
- **Radio-Isotope Identifying Device (RIID):** These devices detect both gamma and neutron emissions. They are designed to identify the specific source of any radioactivity detected based on the type of radiation being emitted and the energy (or strength) of the emissions. This equipment is normally capable of recording and downloading radiation spectra for electronic transmittal to designated experts for their interpretation.

While these technologies are a critical tool to combat terrorism, the nuclear threat is not one that can be effectively countered by technology alone. Accordingly, DNDO supports the development of comprehensive PRND capabilities across State, local and tribal entities by developing the necessary training, exercise support, equipment test reports, information sharing capabilities, and program tools to create a fully integrated operating environment. These resources include: providing technical reachback support to Federal, State, local and tribal operators; development of standardized training curricula and response protocols; conducting comprehensive assessments of existing technologies to inform application and acquisition; providing program development tools and guidance for immediate application by policy makers and operators; and the development of a robust national situational awareness and analysis capability through the Joint Analysis Center. Such resources can be used by State, local and tribal entities to build or enhance a comprehensive PRND program, or to develop specific PRND capabilities in areas such as commercial vehicle inspection, special events screening, small maritime craft monitoring, and fixed infrastructure protection.

Funding from the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), Buffer Zone Protection Program (BZPP), Transit Security Grant Program (TSGP), Port Security Grant Program (PSGP), and Intercity Bus Security Grant Program (IBSGP) can be used to enhance existing or establish new PRND programs. However, grantees are encouraged to contact DNDO prior to initiating program activities and provide a point of contact for each detection program to which DNDO can provide program guidance, tools, resources and updates. Please contact DNDO with this information at DNDO.SLA@dhs.gov.

D. Allowable Costs and Available Resources

DNDO is working in close coordination with Federal, State, local, and tribal entities to develop technical assistance (TA) programs for the enhancement and development of preventive rad/nuc detection programs that support the planning, organization, equipment, training, exercise activities, and operational support systems (POETE/Ops framework) as explained in Table 1. This POETE/Ops framework aligns with the National Preparedness Goal, State Homeland Security Strategies, and all reporting requirements for DHS grant programs.

Table 1 – TA for Preventive Rad/Nuc Detection Programs

Planning	DNDO will provide assistance with planning and development of protocols and programs.
Organization	DNDO will provide guidance for organizational structures to support successful PRND programs.
Equipment	DNDO will evaluate equipment and provide guidance on integrated sets of equipment to meet detection and alarm resolution mission priorities.
Training	DNDO will help states develop and implement training guidelines and programs.
Exercises	DNDO will provide assistance with enhancing and developing exercise guidelines and support.

Operational Support	DNDO is establishing technical reachback support systems and other 24/7 information sharing systems.
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State, local, and tribal grantees are encouraged to work closely with DNDO as they develop PRND programs in order to ensure consistency with National program guidance and to ensure that national operational support systems are effectively coordinated with their programs.

During FY 2008, DNDO strengthened the breadth and effectiveness of its programs and TA offerings in cooperation with the Department of Energy, the Department of Defense, Customs and Border Protection, the Federal Bureau of Investigation, State, territorial, tribal and local governments, related national associations, and the private sector. The available products and TA currently available to State, local, and tribal grantees that wish to develop or enhance preventative rad/nuc detection programs include:

- **Preventive Rad/Nuc Detection Program Management Handbook with Commercial Vehicle Inspection and Maritime Operations Modules**—DNDO has developed a Preventative Rad/Nuc Program Management Handbook with a Commercial Vehicle Inspection (CVI) Rad/Nuc Module in concert with State and local stakeholders. The Handbook and module is designed to assist State, local, and tribal Partners seeking to develop or enhance domestic rad/nuc detection programs. This Handbook provides comprehensive guidance (POETE/Ops framework) for administration of a domestic PRND program and is intended to assist program development and implementation at both senior policy making and operational levels. The CVI Module provides a commercial commerce focus to the concepts and guidelines called out in the Handbook. DNDO anticipates completion of a second focused module in late 2008 addressing maritime operations.
- **Planning and Protocols**—DNDO partnered with a national stakeholders group of State, local, and national association representatives as well as the Federal Interagency to establish alarm resolution and response protocols. State, local and tribal public safety agencies and State-level radiation safety and health authorities are an integral part of radiation detection alarm adjudication and resolution protocols. DNDO is establishing a technical reachback training course to educate all involved entities on alarm adjudication protocols and the technical tools and techniques available to supplement existing regional knowledge and capabilities. For additional information please email DNDO.SLA@dhs.gov.
- **Equipment Test Results**—DNDO has made available an initial round of equipment test results to evaluate the effectiveness of detection systems in multiple performance areas and inform State, local, and tribal entities making procurement decisions. The Anole Test Campaign Report (which includes test results for handheld, backpack, and mobile systems) is available at www.rkb.us, Responder Knowledge Base (RKB). The second round of test results (Bobcat Test

Campaign Report) includes Commercial-off-the-Shelf (COTS) and prototype PRDs, and is also available on the RKB website.

In 2008, DNDO also initiated the Graduated Rad/Nuc Detector Evaluation and Reporting (GRaDER) Program. The GRaDER program provides a continuing means of independently testing and assessing commercially available rad/nuc detection equipment against ANSI N42 performance standards to ensure that government procurement and grant programs are applied to the most effective radiation detection capabilities available. GRaDER will provide performance and operationally relevant technical information on these systems to DHS components and other Federal Departments, as well as State, local and tribal government law enforcement and first responders. Equipment testing is anticipated to begin following certification of qualified testing facilities in late 2008. Results will be posted on applicable DHS websites associated with grant allowable equipment lists, providing guidance for procurement decisions.

- **Training**—DNDO has piloted several training program offerings that can be tailored from awareness to operations level needs for a variety of public safety disciplines. Working with the National Preparedness Directorate, DNDO subject matter experts are reshaping the PRND training curriculum to meet the growing need for advanced techniques and tactics, required to operate the next generation detector systems and to deal with multi-jurisdictional operating environments. A major element in this effort is the Counter Terrorism Operations Support (CTOS) program, which delivers a series of WMD awareness and radiation detection courses that eligible jurisdictions can leverage to improve their radiation detection and WMD prevention activities. More information is available on the CTOS website www.nv.doe.gov/combatingterrorism or the DNDO website at http://www.dhs.gov/xabout/structure/gc_1192453550101.shtm.
- **Exercises**—DNDO will provide assistance with developing, designing and conducting exercises in compliance with Homeland Security Exercise and Evaluation Program (HSEEP) methodology. The purpose of the DNDO Exercises support is to test equipment, training, polices and procedures. These exercises will also provide valuable hands-on experience for personnel performing the radiation detection mission, as well as assist decision makers to see how PRND mission is integrated in their daily operations.
- **Operational Support** – DNDO has partnered with national laboratories to provide specialized technical analysis necessary to resolve radiation detection alarms by identifying and distinguishing special nuclear material and suspicious or unidentified radioactive materials from radioactive materials that are naturally occurring, used in industry, used in medical treatments, or found in commercial products. This support is delivered through Regional Reachback Centers, available 24/7 to support State, local, and tribal authorities through the DNDO Joint Analysis Center (JAC) via 1-877-DNDO-JAC (877-363-6522) and DNDO.JAC@dhs.gov.

During FY 2009, DNDO will continue to refine and expand program offerings and Technical Assistance, as well as expand its State, local and tribal stakeholder partnerships to coordinate the delivery of DNDO products, programs and services to enhance the global nuclear detection architecture and enhance nationwide PRND capabilities.