



## POLICY UPDATE | *October 2012*

### **Reported Accomplishments of Selected Threat Reduction and Nonproliferation Programs, by Agency for Fiscal Year 2011**

Benjamin Ash

This annual report summarizes the activities and accomplishments of cooperative threat reduction and nonproliferation programs conducted in the Russian Federation, other former Soviet states, and around the globe by the Departments of Defense, Energy, and State.

Progress reports issued by the aforementioned departments in their annual budget requests to Congress are the primary sources of information for this report. Updated data published in press releases, public websites, and other sources have been included when possible. Accomplishments for the Department of Homeland Security (DHS) are not included in this year's report because they were not published in DHS' FY 2013 budget request.

This paper applies only through the conclusion of fiscal year 2011 (FY 2011) in most instances. However, when information through the conclusion of calendar year 2011 and the early months of 2012 was available, it has been included.

This paper does not report on every cooperative threat reduction program, including completed or terminated programs. Previous accomplishments reports from the Partnership for Global Security (PGS) are available on the PGS website and provide background on legacy programs:

- [2010](#)
- [2009](#)
- [2008](#)
- [2007](#)
- [2006](#)
- [2005](#)
- [2004](#)
- [2003](#)
- [2002](#)
- [2001](#)

#### Table of Contents

- [Department of Defense \(Cooperative Threat Reduction\) Programs](#)
- [Department of Energy \(National Nuclear Security Administration\) Programs](#)
- [Department of State Programs](#)
- [Sources](#)

## Department of Defense (DoD) Cooperative Threat Reduction (CTR)

The DoD CTR program's overarching mission is to partner with willing countries to reduce the threat from weapons of mass destruction (WMD) and related materials, technologies, and expertise. The CTR program focuses on eliminating, securing, or consolidating WMD, related materials, and associated delivery systems and infrastructure at their source in partner countries. The CTR program also focuses on building partner capacity to prevent the proliferation of WMD materials across borders or in transit across international borders.

Destruction activities and progress in other areas are outlined in the following table:

### Nunn-Lugar Scorecard

Program	Current Cumulative Reductions to Date	Percent of 2017 Targets	2017 Targets
Warheads Deactivated	7619	82%	9265
ICBMs Destroyed	902	87%	1041
ICBM Silos Eliminated	498	76%	652
ICBM Mobile Launchers Destroyed	191	53%	359
Nuclear Carrying Submarines Destroyed	33	85%	39
Submarine Launched ICBMs Eliminated	680	93%	729
SLBM Launchers Eliminated	492	80%	612
Nuclear Air-to-Surface Missiles Destroyed	906	100%	906
Bombers Eliminated	155	100%	155
Nuclear Test Tunnels/Holes Sealed	194	100%	194
Nuclear Weapons Transport Train Shipments	567	68%	829
Nuclear Weapons Storage Site Security Upgrades	24	100%	24
Biological Monitoring Stations Built and Equipped	39	63%	62

(Numbers current as of August 2012)

## **Strategic Offensive Arms Elimination (SOAE)**

DoD CTR assists Russia in the elimination of strategic offensive arms in a manner consistent with the New START Treaty (NST). The DoD has identified nonproliferation value in assisting Russia to dismantle intercontinental ballistic missiles (ICBMs); ICBM silo launchers and road-mobile ICBM launchers; submarine-launched ballistic missiles (SLBMs), SLBM launchers, and associated strategic nuclear submarines; and infrastructure related to these systems. Separately, the DoD also assists Ukraine with the storage and elimination of rocket motors from dismantled SS-24 ICBMs.

### **Solid Propellant ICBM/SLBM and Mobile Launcher Elimination - Russia**

This project shares costs with Russia to eliminate the SS-25 Solid Propellant Missile System. Activities include operating and maintaining missile disassembly and elimination facilities, operating and maintaining mobile launcher elimination facilities, destroying treaty-limited and proliferation risk components, and transporting solid rocket motors into and out of a temporary storage facility.

### **Liquid Propellant ICBM/SLBM and Silo Elimination - Russia**

This project deactivates, dismantles, and eliminates SS-18 and SS-19 ICBM silos and associated launch control center (LCC) silos; it also destroys SS-18 ICBMs, SS-19 ICBMs, and SS-N-18 SLBMs.

### **SLBM Launcher Elimination/SSBN Dismantlement - Russia**

This project shares costs with Canada and Russia to eliminate SLBM launchers from Delta-class and Typhoon-class Russian nuclear ballistic missile submarines (SSBNs). In addition, this project provides the infrastructure required to defuel SSBNs at the Zvyozdochka and Zvezda naval facilities. The U.S. eliminates the launcher section, removes the reactor section, and places the spent nuclear fuel in casks for long-term storage; Canada defuels the reactors; and Russia destroys the bows, sterns, and sails.

### **SS-24 Missile Disassembly, Storage, and Elimination - Ukraine**

This project assists Ukraine with storing and removing propellant from SS-24 solid rocket motors. The DoD will also support the construction of the Empty Motor Case Elimination and Incineration Facility, including the procurement of an incinerator in partnership with the Department of State (DOS). This facility will permit safe, ecologically sound incineration of residual propellant and empty motor cases.

FY 2011 funds executed over three years are projected to:

- Eliminate 32 SS-18 ICBM silo launchers and launch control centers (LCC);
- Eliminate 12 SS-19 ICBMs;
- Eliminate 7 SS-25 ICBMs;
- Eliminate 9 SS-25 road-mobile launchers;
- Transport SS-24 solid rocket motors (SRM) to the propellant removal facility;
- Assist Ukraine by making payments for 30 empty SRM cases;

- Store remaining SRMs;
- Continue maintenance and repair of SRM storage facilities;
- Complete infrastructure improvements in Ukraine for incineration of excess washed-out propellant and for the delivery of SS-24 empty motor cases (EMC); and
- Provide logistical, administrative, and advisory support.

### **Chemical Weapons Destruction (CWD)**

Russia, as a State Party to the Chemical Weapons Convention, agreed to eliminate its stockpile of over 40,000 metric tons of chemical weapons. The United States, Russia, and other international partners funded construction of the Shchuch'ye Chemical Weapons Destruction Facility (CWDF) for organophosphorus (nerve) agent-filled artillery munitions. This CWDF is located near the Planovy chemical weapons storage facility, which contained approximately 47 percent of Russia's nerve agent-filled artillery munitions, estimated at 5,460 metric tons in over two million rocket and tube artillery warheads/projectiles. Russia began chemical weapons destruction operations at Shchuch'ye in March 2009 and, as of September 2011, has completed the elimination of over 2,365.2 metric tons of nerve agent. The DoD is providing technical support for the destruction operations at the Shchuch'ye CWDF.

#### **Chemical Weapons Destruction Technical Support - Russia**

This project will provide technical assistance and spare parts to two Chemical Weapons Destruction Facilities (near Shchuch'ye, Kurgan Oblast and Kizner, Udmurt Republic) for the elimination of organophosphorous (nerve) agent-filled, man-portable artillery munitions.

FY 2011 funds executed over three years are projected to:

- Provide technical support for the Shchuch'ye Chemical Weapons Destruction Facility (CWDF), responding to process and equipment failure; conducting root cause analysis and developing corrective actions; providing advice and assistance to maintain and repair equipment; procuring spares, repair parts, and materials; training operations and maintenance workforce; and
- Provide logistical, administrative, and advisory support.

### **Global Nuclear Security (GNS)**

This program area includes all DoD CTR activities related to nuclear material security, including security for nuclear warheads, weapons-usable nuclear material, and other nuclear material. These efforts provide enhanced security by maintaining physical security system upgrades, increasing inventory management capacity, enhancing security training support, improving transport security, developing emergency response capacity, and maintaining personnel reliability support for strategic and non-strategic (tactical) nuclear weapons and fissile materials. The program also improves security for at-risk nuclear material. In addition, the CTR Program assists in the secure transport of nuclear warheads and other qualifying nuclear material to dismantlement facilities, consolidated secure storage areas, or processing facilities for disposition. This program also helps establish

Centers of Excellence with partner countries to enhance training capability, consistent with international best practices, for nuclear security, material control, and inventory management. The CTR Program partners and coordinates closely with other related efforts within the U.S. Government and international governmental and non-governmental organizations.

FY 2011 funding reflects a restructured baseline that includes the formerly titled Nuclear Weapons Storage Security (NWSS) program, the formerly titled Nuclear Weapons Transportation Security (NWTs) program, and the Fissile Material Proliferation Prevention project.

#### Spent Naval Fuel/Fissile Material Disposition – Russia

The DoD provides assistance and technical expertise to improve physical security and to securely transport spent naval fuel that is potentially vulnerable and meets the International Atomic Energy Association (IAEA) definition for weapons-usable material.

#### Nuclear Security Enhancements - Russia

The DoD and Department of Energy (DOE) have provided comprehensive physical security enhancements and the ability to sustain those enhancements at Russian nuclear weapons storage sites. These sites include both national stockpile sites and operational storage sites administered by the 12th Main Directorate at the Navy, Air Force, and Strategic Rocket Forces bases as well as temporary storage locations at road-to-rail transfer points. The DoD and DOE are assisting the Russian Ministry of Defense (MOD) to sustain this installed equipment and infrastructure during a transition period while the MOD builds the capacity to assume full responsibility.

#### Automated Inventory Control and Management System - Russia

This project installs automated inventory systems at the MOD-controlled Strategic Rocket Forces sites for tracking and cataloging nuclear weapons to be eliminated.

#### Security Assessment and Training Center (SATC) - Russia

This project expands the existing DoD-provided SATC facility at Abramovo Base to serve as a regional training and sustainment center. The SATC expansion will complement the Far East Training Center (FETC) and the DOE provided Kola and Siberian Technical Centers to provide training, depot-level maintenance and repair, and spare parts storage for the Russian WMD security. Specifically the project will provide a classroom building, student dormitory, maintenance and repair workshop, warehouse, garage, and associated equipment.

#### Nuclear Weapons Transportation - Russia

This project assists Russia in transporting nuclear warheads safely and securely to consolidated secure storage and dismantlement facilities.

#### Fissile and Radioactive Material Proliferation Prevention – Kazakhstan

This project secures radiological materials.

#### Nuclear Security Centers of Excellence

This program helps establish Centers of Excellence with partner countries to enhance training capability, consistent with international best practices, for nuclear security, material control, inventory management, transport security, and other activities important to improving nuclear material security. The program will facilitate training course development and delivery, and will provide equipment to enhance nuclear security, material control, and inventory management.

FY 2011 funds executed over three years are projected to:

- Continue Russia Nuclear Security Enhancements and Sustainment Initiatives to include: vendor service contracts at rail transfer points, Small Arms Training Systems, Personnel Reliability Programs, live fire ranges, Mobile Repair Vehicles, a Centralized Maintenance Management System, a Unified Operation Center, and On-Site Repair Points;
- Transport approximately 48 trainloads of deactivated nuclear warheads (1,000 to 1,500) from deployed locations to enhanced security storage sites or dismantlement and from storage to dismantlement facilities;
- Complete the Automated Inventory Control and Management hardware and software expansion to Strategic Rocket Force (SRF) sites;
- Provide for nuclear security Centers of Excellence outside the FSU in coordination with the U.S. interagency;
- Secure spent naval fuel (SNF);
- Continue building Russian capacity to sustain security upgrades at 18 nuclear weapons storage sites, and sustainment for 5 rail transfer points and 2 regional centers (SATC and FETC) including training, maintenance, repair, and limited spare parts;
- Kazakhstan: Install additional security measures for radiological material;
- Complete construction to enhance capabilities at SATC; and
- Provide logistical, administrative, and advisory support.

### **Cooperative Biological Engagement (CBE)**

This program counters the threat of state and non-state actors acquiring biological materials and expertise that could be used to develop or deploy a biological weapon. The program destroys or secures especially dangerous pathogens (EDPs) at their source, builds partner capacity to sustain a safe, secure disease surveillance system to detect, diagnose, and report EDP outbreaks, and to work collaboratively with partner country scientists in engagements that support the ethical application of biotechnology to a better understanding of endemic EDPS and their control/prevention. The program collaborates closely with other U.S. Government departments and agencies, international partners, and the private sector. The program delivers tailored approaches that recognize, build upon, and enhance regional and partner countries' indigenous capacities. The CBE mission is achieved through the integration of three key product lines: 1) Biological Safety & Security (BS&S) capacity building, 2) Cooperative Biological Research and Engagement (CBR), and 3) Disease Surveillance, Detection, Diagnosis, Reporting, and Response (DSDDRR), formerly referred to as Threat Agent Detection and Response (TADR).

The program collaborates closely with other U.S. Government departments and agencies, international partners, and the private sector. The program delivers tailored approaches that recognize, build upon, and enhance regional and partner countries' indigenous capacities. The CBE mission is achieved through the integration of three key product lines: 1) Biological Safety & Security (BS&S) capacity building, 2) Cooperative Biological Research and Engagement (CBR), and 3) Disease Surveillance, Detection, Diagnosis, Reporting, and Response (DSDDRR), formerly referred to as Threat Agent Detection and Response (TADR).

The CBE program activities directly support the National Security Staff (NSS) directed FY 2013 policy priorities for Countering Biological Threats. The policy priorities spell out three major focus areas executed by the CBE program: 1) Improve global access to the life sciences to counter infectious disease, by focusing on international efforts to advance human and agricultural disease surveillance, strengthen human and agricultural disease laboratory capacities, and further research programs and education, in order to reduce biological risks. 2) Establish and reinforce norms against the misuse of the life sciences, by focusing on efforts to engage relevant communities on issues of biological security, biosafety, and responsible conduct and promote appropriate legislation and oversight internationally; and ensuring effective implementation of outcomes from the Biological Weapons Convention Review Conference. 3) Influence, identify, inhibit, or interdict those engaged in biological weapons proliferation or terrorism, by focusing on international and domestic programs in the following areas: securing dangerous pathogens, to include optimizing under the Select Agent Program; strengthening interagency biosurveillance and situational awareness, particularly among the health, security, and life sciences communities. All three NSS priorities are addressed in the three key CBE product lines discussed above. In addition, the CBE program executes the major tenants of Presidential Policy Directive-2 "National Strategy for Countering Biological Threats." Details on CBE activities are provided in Section IV of this document.

The CBE program is functionally organized and implements through partner countries including: Afghanistan, Armenia, Azerbaijan, Burundi, Djibouti, Georgia, India, Iraq, Kazakhstan, Kenya, Pakistan, Russia, Rwanda, South Africa, Tanzania, Uganda, Ukraine, Uzbekistan, as well as other regional engagements. The DoD's efforts in Russia and Uzbekistan are limited due to both countries reluctance to cooperate with the DoD on biological threat reduction.

FY 2011 funds executed over three years are projected to:

- Initiate bio-engagement in Afghanistan, Djibouti, India, Iraq, Kenya, Pakistan, South Africa, and Uganda;
- Initiate design for a National Public Health Laboratory (NPHL) and upgrades to a Central Public Health Laboratory (CPHL) in Afghanistan and engage in disease detection, surveillance, reporting and response;
- Initiate design of a Biological Medical Research Center (BMRC) in Pakistan;
- Initiate cooperative bilateral research projects between U.S. and Russian universities, and through the Civilian Research and Development Fund (CRDF);
- Initiate construction and equipment installation for a secure pathogen repository in Kazakhstan;

- Continue activities to include delivery, operational testing, and training of Mobile Diagnostic Units (MDUs) in Pakistan;
- Improve BS&S and capacity for disease detection, surveillance, reporting and response across the veterinary and health systems in Pakistan, in conjunction with the U.S. interagency;
- Continue cooperative bilateral research between U.S. and Pakistani universities;
- Continue to implement integrated electronic disease reporting in CBE-engaged countries, including through the Electronic Integrated Disease Surveillance System (EIDSS);
- Continue construction and equipment installation of Secured Pathogen Repositories to include: construction oversight of 1 Central Reference Laboratory (CRL) in Azerbaijan, and construction of 1 CRL in Kazakhstan;
- Continue to provide for 12 CBR projects (2 in Armenia, 2 in Azerbaijan, 2 in Georgia, 3 in Kazakhstan, and 3 in Ukraine);
- Continue to provide training in laboratory diagnostic techniques, epidemiology, clinical sample collection, outbreak surveillance, laboratory and health system management, and biosafety, biosecurity, and bioethics in CBE-engaged countries;
- Continue sustainment of 36 Diagnostic Labs (DLs) (11 in Azerbaijan, 6 in Georgia, 4 in Kazakhstan, 5 in Ukraine, and limited support for 10 in Uzbekistan), 1 Central Public Health Reference Laboratory (CPHRL) in Georgia and 1 Human CRL in Ukraine;
- Complete 16 DLs (10 in Azerbaijan, 4 in Ukraine and 2 in Uzbekistan);
- Complete biorisk assessments in select areas Asia and Africa;
- Continue to provide for bio-related conference support; and
- Continue to provide logistical, administrative, and advisory support.

### **Proliferation Prevention (PP)**

The Proliferation Prevention program enhances the capability of non-Russian FSU states and other partner countries to deter, detect, report, and interdict illicit trafficking of WMD and related materials across international borders. The DoD provides assessments, equipment, infrastructure, logistics support and related training to enhance national and regional capabilities that prevent the proliferation of WMD, its components, and related materials to terrorists, rogue states, or organized crime groups. This program is coordinated with the DoD International Counterproliferation Program and other U.S. Government border security programs, and furthers inter-agency collaborations that contribute to a holistic approach to export control, border security, and law enforcement-related capacity building efforts.

FY 2011 funding reflects the restructured baseline that consolidates the Fissile Material Proliferation Prevention project to the GNS Program.

FY 2011 funds executed over three years are projected to:

- Ukraine: Increase WMD command and control, communications, surveillance, detection and interdiction capabilities, and sustainment along the Moldova/Transnistria, Poland and

Russia borders, continue project assessments and support efforts to upgrade international and state ports of entry (POE) and inland clearing stations (ICS);

- Enhance WMD command and control, communications, surveillance, detection and interdiction capabilities, and sustainment on the Black Sea and Sea of Azov maritime borders;
- Azerbaijan: Enhance WMD command and control, communications, surveillance, detection and interdiction capabilities, and sustainment on the Caspian Sea maritime border;
- Armenia: Increase WMD command and control, communications, surveillance, detection and interdiction capabilities, and sustainment along the Georgia border, continue project assessments and support efforts to upgrade international and state ports of entry (POE) and inland clearing stations (ICS);
- Moldova: Begin initial engagement to increase WMD command and control, communications, surveillance, detection and interdiction capabilities, and sustainment;
- Georgia: Initiate enhancement of WMD interdiction, and sustainment capabilities on the Black Sea maritime border;
- Southeast Asia: Begin initial engagement to assess and derive requirements for WMD command and control, communications, surveillance, detection and interdiction capabilities, and sustainment along the Strait of Malacca and in other regional waters; and
- Provide logistical and operational support.

### **Threat Reduction Engagement (TRE)**

This program, previously titled “Defense Military Contracts,” supports relationship-building engagements intended to advance the CTR mission. The name change is intended to reflect increased program support for engagement with civilian agencies and entities, important for building relationships in key areas like countering biological threats and border security.

Engagements will continue with the FSU states, but will also include new geographic areas to support the CTR Program expansion, in accordance with existing authorities and determinations. The TRE program supports the following WMD related activities: non-proliferation or counter-proliferation symposia or workshops; bilateral or regional CTR-related symposia; high level exchanges or planning activities; and tabletop exercises.

FY 2011 funds executed over three years are projected to:

- Continue to support specific relationship-building opportunities with existing FSU countries while also shifting towards engagements with partners in new geographical areas including cooperation and coordination with cognizant Unified Combatant Commands (UCCs).

## **Department of Energy (DOE) National Nuclear Security Administration (NNSA)**

### **Global Threat Reduction Initiative (GTRI)**

The Global Threat Reduction Initiative (GTRI) program reduces and protects vulnerable nuclear and radiological materials located at civilian sites worldwide. GTRI activities directly support DOE Strategic Plan Goal 3 by enhancing nuclear security and reducing global nuclear dangers through efforts to improve nuclear and radiological material security.

Through September 2011, GTRI accomplished multiple threat reduction efforts, which include:

- Verifying or converting the shutdown of a cumulative 76 research reactors from use of Highly Enriched Uranium (HEU) fuel to Low-Enriched Uranium (LEU) fuel;
- Removing a cumulative 3,125 kilograms of HEU and plutonium, enough material to make over 120 nuclear bombs;
- Removing a cumulative 28,743 excess and unwanted radiological sources in the United States, containing more than 818,000 curies;
- Protecting a cumulative 1,187 nuclear and radiological vulnerable buildings worldwide with high-priority nuclear and radiological materials.

GTRI's three key subprogram's – Convert, Remove, and Protect, provide a comprehensive approach to achieving GTRI's mission and denying terrorists access to nuclear and radiological materials:

#### HEU Reactor Conversion

The GTRI's Convert subprogram supports the conversion of domestic and international civilian research reactors and isotope production facilities from HEU to LEU. These efforts result in permanent threat reduction by minimizing and, to the extent possible, eliminating use of HEU in civilian applications. This includes working with Molybdenum-99 (Mo-99) producers to convert their existing operations to use LEU targets and developing new non-HEU-based Mo-99 production capabilities in the United States.

FY 2011 accomplishments of this subprogram include:

- Converted, or verified as shutdown, an additional 4 HEU research reactors, bringing the cumulative total to 76. This includes HEU research reactors in the Czech Republic, two in Russia and one in China.
- Continued efforts required to design, test and qualify the new high-density LEU fuel needed to convert the 27 HEU research reactors around the world that cannot convert with existing LEU fuel. The conversion of these 27 high performance reactors will result in HEU avoidance of an additional 520 kilograms per year.
- Provided technical and financial support to the U.S. private sector to accelerate the establishment of a reliable domestic production capability for the critical medical isotope Mo-99 without the use of HEU.

### Nuclear and Radiological Material Removal Protection

GTRI's Remove subprogram supports the removal and disposal of excess nuclear and radiological material from civilian sites worldwide. The Remove subprogram meets the GTRI mission because each kilogram or curie of this dangerous material that is removed reduces the risk of a terrorist acquiring the materials necessary for a bomb.

FY 2011 accomplishments of this subprogram include:

- Returned to Russia and/or disposed of an additional 228 kilograms of Russian-origin HEU from facilities located in Belarus, Kazakhstan, Serbia, Ukraine, and Poland, resulting in a cumulative total of 1,623 kilograms of HEU removed; enough material for over 60 nuclear bombs. Funds were also used for preparatory activities for removals planned for 2012.
- Returned to the United States an additional 8 kilograms of U.S.-origin HEU primarily from South Africa resulting in a cumulative total of 1,250 kilograms of HEU removed, enough material for over 45 nuclear bombs. Funds were also used for preparatory activities for removals planned for 2012.
- Removed or facilitated the disposition of an additional 36 kilograms of Gap HEU and plutonium from several countries resulting in a cumulative total of 252 kilograms of HEU and plutonium removed; enough material for over 5 nuclear bombs. Funds will also be used for preparatory activities for removals planned for 2012.
- Prepared for a mock deployment at the Nevada National Security Site to test all systems (Mobile Plutonium and Mobile Uranium Facilities) and personnel to ensure they are ready to deploy to any identified countries of concern to eliminate nuclear weapons materials.
- Completed the removal of an additional 64 radioisotopic thermoelectric generators (RTGs), resulting in a cumulative total of 396 RTGs removed by GTRI through direct funding and international contributions (e.g., Canada). Attesting to the cooperative nature of these tasks, our international partners (e.g., Russia, Norway, and France) have funded the recovery of an additional cumulative 299 RTGs for a grand total of 695 of the 851 RTGs being completed.
- Funds were used to recover and dispose of orphaned radioactive sources in other countries.
- Removed an additional 2,571 excess and unwanted sealed sources from locations in the United States, resulting in a cumulative total of 28,743 excess sealed sources removed.

### Nuclear and Radiological Material Removal Protection

GTRI's Protect subprogram supports the securing of high priority nuclear and radiological material worldwide from theft and sabotage. These efforts result in threat reduction by improving security on the bomb material remaining at civilian sites.

FY 2011 accomplishments of this subprogram include:

- The BN-350 shipments were completed in November 2010; minimal funds support the project close out activities and verify all security systems are fully operational.

- Completed security upgrades at an additional 123 research reactor and radiological buildings, resulting in a cumulative total of 852 international buildings secured. Efforts also include working with the International Atomic Energy Agency (IAEA), foreign regulators, and sites to support the sustainability of previously installed security upgrades at 729 buildings in over 70 countries.
- Complete security upgrades at an additional 50 research reactor and radiological buildings, resulting in a cumulative total of 955 international buildings secured. Efforts also include working with the IAEA, foreign regulators, and sites to support the sustainability of previously installed security upgrades at 905 buildings in over 70 countries.
- Completed security upgrades at an additional 93 research reactor and radiological buildings, resulting in a cumulative total of 335 domestic buildings secured. Worked with Federal, State, and local authorities and the sites to support the sustainability of previously installed security upgrades at 242 buildings and conducted 18 Alarm Response Training sessions for over 720 first responders.

### **International Nuclear Materials Protection and Cooperation (INMPC)**

The International Nuclear Materials Protection and Cooperation (INMPC) program supports the Secretary's goal of enhancing nuclear security through defense, nonproliferation, and environmental efforts by significantly increasing the security of vulnerable stockpiles of nuclear weapons and weapons-usable nuclear materials worldwide, preventing the loss of such material, and significantly improving the ability to deter, detect, and interdict their illicit trafficking.

The INMPC works cooperatively with partner countries to implement security upgrades at nuclear facilities under the Material Protection Control and Accounting (MPC&A) Program. MPC&A teams work to provide a suite of upgraded physical security systems and nuclear material control and accounting upgrades. To complement efforts to secure materials at their source, INMPC supports the consolidation of nuclear materials into smaller, more defensible and more sustainable locations. Consolidation not only reduces the risk to materials in multiple unsecured locations; it also reduces the overall financial burden of storing the materials. Similarly, INMPC is helping its partners to reduce their overall holding of nuclear materials by down-blending civilian highly enriched uranium (HEU) to low-enriched uranium (LEU).

In FY 2011, INMPC accomplished three significant milestones in program management and/or program development. Such accomplishments include:

- Completed deployments of SLD radiation detection systems at all 383 Federal Customs Service of Russia crossing points (airports, seaports, and land crossings);
- Completed MPC&A security upgrades to 218 buildings containing weapons usable material;
- Downblended 13.7 metric tons of HEU to LEU.

Within INMPC, seven subprograms make unique contributions which support the international effort to secure all vulnerable nuclear material:

### Navy Complex

This subprogram was established to improve security of Russian Navy warhead and weapons exploitable material by installing improved security systems at Russian Navy nuclear warhead sites, Russian Navy highly enriched uranium (HEU) fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These sites include a total of 47 sites: 39 Russian Navy nuclear warhead sites and 8 Russian Navy fuel and other nuclear material storage sites.

FY 2011 accomplishments of this subprogram include:

- Provided sustainability and training efforts to help ensure that the equipment provided is effective in protecting the material at 4 fuel sites and 12 nuclear warhead sites.
- Retrofitted MPC&A equipment at the end of its service life at 1 site.
- Upgrades to address insider threats completed at 1 site.
- Completed security upgrades at 1 checkpoint.
- Provided sustainability support to 1 previously upgraded checkpoint.
- Provided support for the RF MOD Personnel Reliability Program.
- Replaced outdated security equipment at 4 sites.

### Strategic Rocket Forces/12<sup>th</sup> Main Directorate

This subprogram improves security of Russian warheads by installing improved MPC&A systems at Russian Federation Strategic Rocket Forces and 12th Main Directorate nuclear warhead sites. These sites, which include 25 SRF sites (at 11 bases) and nine 12th Main Directorate sites, have been approved by the U.S. Government for MPC&A upgrades. The process for working with the SRF and the 12th Main Directorate is based upon the refined process developed for working with the Russian Navy, which includes: (1) upgrades to designs driven by vulnerability assessments (VAs), (2) a rapid upgrades and/or a comprehensive upgrades phase, and (3) a sustainability program, which assures the systems will remain effective after the installation of upgrades is complete.

FY 2011 accomplishments of this subprogram include:

- Provided sustainability support at: 23 SRF sites and 3 12th Main Directorate sites.
- Built/supported 3 training and maintenance centers to ensure sustainability of security system upgrades installed at nuclear weapons sites.
- Provided additional MPC&A upgrades to other SRF sites that will provide additional protection from theft and/or diversion of warheads from these sites.

### Weapons Material Protection

This subprogram, formerly known as the Rosatom Weapons Complex, primarily focuses on nuclear material security upgrades at seven large nuclear sites located within Russian closed cities. These sites include nuclear weapons design facilities, component handling, and material production and reprocessing facilities with many nuclear material storage and handling locations. The goal of this joint cooperative program is to provide financial and technical assistance to improve the protection of nuclear materials from internal and external theft

scenarios through security system and procedural upgrades. Sustainability assistance is also provided with the aim of ensuring that systems continue to operate effectively over time and that sites have the infrastructure elements in place to manage them. Where necessary, the program will also finance the replacement of systems that were upgraded earlier in the cooperation that are at the end of their operational lifecycles.

This program element also supports continued MPC&A activities outside of Russia, including sustainability activities at nine sites in Kazakhstan, Ukraine, Belarus, and Uzbekistan, and engagement with the International Atomic Energy Agency (IAEA) to promote best practices related to nuclear material control, accounting, and sustainability. Funding will also be allocated to continuing efforts to establish a best practices exchange on nuclear material security topics with India.

FY 2011 accomplishments of this subprogram include:

- Insider-related upgrades were funded at two of the largest bulk processing facilities in Russia.
- A new perimeter was funded at one guarded area with 9 buildings that have weapons-usable nuclear material at one of the primary weapons design facilities in Russia.
- A new perimeter was completed around a guarded area with 15 buildings that have weapons-usable nuclear material at one of the primary weapons design facilities in Russia.
- Comprehensive physical protection upgrades were completed at 2 buildings at one of the primary weapons design facilities in Russia.
- A commuter rail platform was completed at a large bulk processing facility in Russia.
- Waste stream screening upgrades were funded at six Russian nuclear sites.
- Continued to support selective MPC&A activities in Kazakhstan, Ukraine, Belarus, and Uzbekistan, consistent with the removal of attractive nuclear materials by the DOE/NNSA Global Threat Reduction Initiative.
- Supported engagement with the International Atomic Energy Agency to promote best practices related to nuclear material control, accounting, and sustainability.
- Continued engagement with India on nuclear material security best practices.

#### Civilian Nuclear Sites

This subprogram improves security at 18 civilian nuclear sites in Russia, supports Nuclear Security Culture programs in Russia and many other countries globally, and provides Nuclear Security Best Practices support to China. The basic MPC&A upgrade objective is to employ a cost-effective, graded approach with an initial focus on installing upgrades for the most highly proliferant-attractive nuclear material at each site. Rapid MPC&A upgrades are installed to mitigate the immediate risk of theft and diversion, until long term, more comprehensive MPC&A upgrades are designed, installed, and placed into operation. Following the completion of initial rapid and comprehensive site upgrades, U.S. funding will continue at a reduced level to: (1) help foster site capabilities to operate and maintain installed security systems, and (2) support replacement of equipment and possible additional security enhancements, e.g.,

perimeter upgrades, as warranted. This program element will also continue to support those sites with completed MPC&A comprehensive upgrades.

FY 2011 accomplishments of this subprogram include:

- Provided sustainability support to 18 civilian nuclear sites with completed MPC&A upgrades including support for training, procedures, maintenance, equipment repair, critical spare parts, performance testing, and other activities at these sites, in order to ensure the sustainability of those upgrades and support additional MPC&A upgrades focused on addressing outsider and insider threats within the Civilian Nuclear sites.
- Continued cooperation with countries outside of Russia and the Former Soviet States in order to increase MPC&A awareness and to provide assistance to protect weapons exploitable materials, including 5 best practices workshops on topics ranging from secure transportation to nuclear security culture.
- Initiated procurement of long-lead time Material Control and Accountability (MC&A) training equipment for the China Center of Excellence (COE).
- Completed activities included training, technical exchanges, and consultations to improve security at nuclear material locations.

#### Material Consolidation and Conversion (MCC)

This subprogram reduces the complexity and the long-term costs of securing weapons exploitable nuclear material. The MCC project is designed to significantly reduce the proliferation risk associated with weapons exploitable nuclear materials by consolidating excess, weapons-useable HEU and plutonium into fewer, more secure locations.

This approach can decrease the number of proliferant-attractive theft targets and the equipment and personnel costs associated with securing such material. The MCC also converts weapons exploitable special nuclear material (SNM) to a less proliferation-attractive form. By the end of FY 2015, it is planned that the MCC project will convert approximately 17 MTs of HEU to LEU.

FY 2011 accomplishments of this subprogram include:

- Continued to implement the MPC&A strategy to simplify the nuclear security situation in Russia by converting attractive SNM to a less proliferant-attractive form (e.g., HEU to LEU) and to consolidate material to fewer sites and fewer buildings where possible. The program was successful in converting an additional 0.9 MTs of the total 17 MTs of HEU to LEU, (for a cumulative total converted of 13.5 MTs).

#### National Infrastructure and Sustainability Program

This subprogram, formerly known as the National Programs and Sustainability, assists Russia and other partner countries in developing and maintaining a nation-wide MPC&A infrastructure, thereby ensuring that U.S.-funded security upgrades and an effective infrastructure can be sustained. Projects include developing and revising regulations, developing inspection capabilities, training, education and regional support, site sustainability planning,

secure transportation upgrades, protective force improvements, developing and revising nuclear material measurement methodologies, and maintaining material control and accounting measurement capabilities. These projects develop the necessary MPC&A infrastructure for sustaining long-term MPC&A operations in Russia and other partner countries as well as the conditions by which U.S. technical and financial support can be transitioned to the partner countries.

FY 2011 accomplishments of this subprogram include:

- Worked to develop or revise MPC&A regulations for Russian and Ukraine to support sustainable MPC&A operations. 207 MPC&A regulations are currently in the development phase for Russia and FSU countries, while 59 regulations have been completed by the Russian Federation MOD.
- Supported 6 Rostekhnadzor Advanced MPC&A Inspection Exercises and Rosatom completed 16 MPC&A inspections.
- Worked with Rosatom to sustain existing secure railcars and trucks.
- Supported a sustainable and effective measurement-based Material Control and Accountability (MC&A) program by supporting the development or revision of measurement methodologies (MM) and provide reference material (RM) for measurements calibration and operation.
- Sustained protective force equipment at 26 Russian sites and continued work to provide updated command and control communications systems at Rosatom sites to improve response times of protective forces to potential threats.
- Supported 92 courses at Russian training facilities on physical protection, material control and accounting, and protective force with approximately 1,410 participants. Approximately 15 students will graduate with an Engineering Degree from both National Research Nuclear University (MEPhI) and Tomsk Polytechnic University (TPU).

### Second Line of Defense (SLD)

The Second Line of Defense (SLD) subprogram strengthens the capability of foreign governments to deter, detect, and interdict illicit trafficking in nuclear and other radioactive materials across international borders and through the global maritime shipping system. The SLD Program also provides training in the use of the equipment to appropriate law enforcement officials and initial system sustainability support and maintenance as the host government assumes full operational responsibility for the equipment. Implementation of the SLD Program in any given country is contingent upon the agreement/invitation of the government in that country.

### SLD Core Program

The Core subprogram has signed agreements with 24 countries for the provision of fixed and mobile radiation detection systems, as well as integrating fixed sites and mobile systems into National Communications Centers. Core has completed over 421 priority sites and has deployed 27 mobile systems to nine countries. Due to the volume of work in each country and the number of countries, the Core program works in many locations simultaneously.

Core has completed all agreed upon RPM installations in Russia, Greece, Georgia, Estonia, Latvia, and Armenia although our on-going cooperation in these countries includes limited support to site configuration changes as well as integrating these sites into National Communications Centers. The FY 2012 appropriation will allow the Core program to continue to work toward meeting our commitments to provide fixed and mobile equipment to key locations, and continue to ensure the effective use and transition to full sustainment of the deployed equipment by Partner Countries. The budget in FY 2013 provides for installation of fixed equipment including discreet installations, increased scope for mobile detection and exercises, and sufficient funding to ensure the effective use and transition to full sustainment of the deployed equipment by Partner Countries. In FY 2014 and beyond, funding exists for mobile detection for law enforcement, exercises, national communications integration, and sustainability. The scope of the Core Program is being reviewed to determine the appropriate level of funding to meet nonproliferation objectives.

FY 2011 accomplishments of this program include:

- Installed radiation detection equipment at an additional 55 foreign sites in Russia, Estonia, Kazakhstan, Azerbaijan, Latvia, Romania, Bulgaria, Ukraine, Kyrgyzstan, Poland, Mongolia, Croatia, and Armenia, increasing the total sites with completed installations to 421 Installed National Communications Systems in 2 more countries. Continued Russia communications network activities.
- Training was provided in equipment maintenance and alarm response to law enforcement personnel in these countries Estonia, Kazakhstan, Lithuania, Latvia, Romania, Bulgaria, Ukraine, Kyrgyzstan, Poland, Mongolia, Croatia, and Mexico.
- Continued to provide mobile detection capability at points internal to borders to Slovakia, Hungary, Croatia, Bulgaria, and Jordan.
- Provided sustainability and transition support in the form of maintenance and/or repair of equipment, training, and/or technical collaboration and support for radiation detection systems for over 421 sites in countries where the SLD Core Program has installed such equipment.
- Continued to maintain equipment installed by the U.S. Department of Defense in Uzbekistan. In addition to ongoing activities to implement the SLD Core program in countries of strategic importance, efforts to deploy radiation detection technologies at key land border crossings, airports, and seaports in support of United Nations Security Council Resolutions and interagency priorities continued.

#### SLD Megaports Initiative

The SLD Megaports Initiative has signed agreements with 35 countries and The American Institute for Taiwan to install radiation detection systems to scan cargo containers for nuclear and other radioactive materials regardless of the container destination or point of origin. To date, Megaports has completed equipment installation at 40 international seaports and is working towards implementation at an additional 5 ports in FY 2012. Funding in FY 2013 and beyond will ensure the effective use and transition to full sustainment of the deployed equipment by Partner Countries, but does not include funding for additional

Megaports deployments. The scope of the Megaports program is being reviewed to determine the appropriate level of funding to meet nonproliferation objectives.

FY 2011 accomplishments of this program include:

- Completed installations at five additional Megaports (increasing the number of completed ports to 39). This involved providing site surveys, engineering assessments, radiation detection equipment design procurement and installation.
- Developed a simplified deployment and equipment approach for lower volume, yet strategic ports in lower income countries.
- Continued deployments of technologies to address the challenge of scanning transhipped containers, including deployment of a Radiation Detection Straddle Carrier (RDSC) to Jamaica and the production of the first of the second-generation Mobile Radiation Detection and Identification System (MRDIS) units, which will be used to scan containers at key transshipment ports around the world.
- Continued outreach to new potential partner countries.
- Provided sustainability and transition support in the form of maintenance and/or repair of equipment, training, and/or technical collaboration, and support for radiation detection systems in countries where the SLD Megaports Initiative has installed such equipment.

### **Nonproliferation and International Security (NIS)**

This program directly contributes to meeting the Secretarial goal of “Securing our Nation,” and plays a critical role in meeting the following objectives as detailed in the DOE Strategic Plan: enhance nuclear security through defense, nonproliferation, and environmental efforts; reduce global nuclear dangers; enhance nonproliferation efforts and the security of nuclear materials; and support the President’s arms control and nonproliferation agendas. NIS supports NNSA efforts to prevent and counter the proliferation or use of WMD, including materials, technology, and expertise, by state and nonstate actors. NIS focuses on strengthening the nonproliferation regime in order to reduce proliferation and terrorism risks by applying its unique expertise to safeguard nuclear material and strengthen its physical security; control the spread of WMD-related material, equipment, technology, and expertise; verify nuclear reductions and compliance with nonproliferation treaties and agreements; and develop and implement crosscutting DOE/NNSA nonproliferation and arms control policy. NIS pursues these objectives through four programs: (1) Nuclear Safeguards and Security; (2) Nuclear Controls; (3) Nuclear Verification; and (4) Nonproliferation Policy.

#### **Nuclear Safeguards and Security (NSS)**

The NSS subprogram strengthens the nuclear nonproliferation and nuclear security regimes. NSS manages the Next Generation Safeguards Initiative (NGSI), oversees support for the U.S. Support Program (USSP) to IAEA Safeguards, collaborates with the IAEA and other partners to enhance the application of physical protection and safeguards norms and best practices, and is

responsible for the implementation of U.S. Additional Protocol (AP) and Voluntary Offer Agreement (VOA) Safeguards activities at DOE/NNSA sites and facilities.

FY 2011 accomplishments of this subprogram include:

- Led U.S. Government and international efforts to revise international guidelines on the physical protection of nuclear material and nuclear facilities (International Atomic Energy Agency INFCIRC/225/Rev.5);
- Provided technical support to Nuclear Security Centers of Excellence in South Korea and Japan, fulfilling two Nuclear Security Summit commitments;
- Working with industry and international partners, developed recommendations to the IAEA for the development of guidance documents for Safeguards-by-Design at four facility types;
- Delivered five safeguards technologies to international partners for use in international safeguards systems;
- Trained over 400 foreign nationals on safeguards methods, practices, and technologies and funded over 100 interns and post-doctoral candidates to work on safeguards issues within the DOE complex.

#### Nuclear Controls (NC)

This subprogram builds global capacity to prevent the spread of WMD materials, knowledge and expertise by: strengthening foreign partner WMD export control systems at the governmental and industry level; providing technical support to enhance U.S. Government capacity to detect and prevent illicit WMD-related commodity technology transfers to foreign programs of concern; mitigating the risk of expertise proliferation through science & technology (S&T) collaboration and partnerships; and supporting regime compliance through regional technical collaborations in priority areas, such as nonproliferation nuclear forensics and seismic monitoring. This subprogram consists of the following engagement activities: International Nonproliferation Export Control Program (INECP); Global Security through Science Partnerships (GSSP) a (formerly known as Global Initiatives for Proliferation Prevention (GIPP)); Confidence Building Measures (CBM); Export Control Review and Compliance; and Weapons of Mass Destruction Interdiction.

FY 2011 accomplishments of this subprogram include:

- Initiated, in coordination with other DOE/NNSA offices, a comprehensive nuclear forensics engagement program, including projects with nine partners that emphasize international capacity-building and information-sharing to improve attribution and responses to counter illicit nuclear trafficking, directly supporting the Nuclear Security Summit Work Plan and advancing the nuclear security goals of the Global Initiative to Combat Nuclear Terrorism;
- Conducted 7,600 statutorily mandated reviews of U.S. export license applications, DOE projects with foreign nationals, and nuclear software code requests in order to control the spread of WMD-related material, equipment, technology, and expertise;

- Trained over 2,500 frontline enforcement officers, licensing officials, and manufacturers in preventing proliferators from acquiring WMD-sensitive goods for a cumulative total of over 15,000 personnel trained since 9/11;
- Worked with regional and multilateral organizations to promote controls on WMD-related commodities, including regional multi-country events in East and West Africa, as well as Northern and Southeast Europe.

#### Nuclear Verification (NV)

This subprogram reduces or eliminates proliferation concerns by promoting transparent arms reductions, including negotiating, implementing and strengthening U.S. nonproliferation and arms control treaties and agreements, and developing the required verification technologies and approaches and associated transparency-monitoring tools. This subprogram is responsible for the following activities: U.S.-Russian Federation Plutonium Production Reactor Agreement (PPRA); U.S.-Russian Federation Highly Enriched Uranium (HEU) Purchase Agreement; the Chemical Weapons Convention (CWC); nuclear testing limitations; U.S.-Russian Federation New START Treaty, including participation in the consultative commission; future nonproliferation initiatives, including in countries of proliferation concern; ad hoc denuclearization and monitoring agreements; and activities to develop advanced verification equipment and technologies for the U.S. Government and in coordination with the IAEA. This subprogram will design and develop for use new verification tools, equipment, and methods for implementing arms control and nonproliferation treaties and agreements.

FY 2011 accomplishments of this subprogram include:

- Represented NNSA throughout the New START ratification process and since its entry-into-force, including through: support for U.S. implementation of the Treaty; participation during the Treaty's Bilateral Consultative Commission; and support for the 30-day technical evaluation of Russian radiation detection equipment and interagency coordination regarding the acceptance of this equipment for use during Type One inspections in the United States;
- Conducted 24 Special Monitoring Visits to Russian highly enriched uranium (HEU) processing facilities under the U.S.-Russia HEU Transparency Program, and monitored the downblending of 30 metric tons of Russian weapons-origin HEU under the U.S.-Russia HEU Transparency Program;
- Improved the Uranium Sourcing database tool by delivering a more efficient and robust version of the statistical query tool (iDAVE2) and analyzing an additional 165 uranium samples;
- Transferred the reactor core sampling capability from the United Kingdom to the United States, established appropriate storage, maintenance, and training facilities for the tool, and trained and certified a U.S. team that is now ready for deployment;
- Further developed and maintained existing capabilities to verify declarations about key elements of the plutonium nuclear fuel cycle in countries of concern.

#### Nonproliferation Policy (NP)

This subprogram develops and implements DOE/NNSA nonproliferation and arms control policy. The subprogram's activities support implementation of bilateral and multilateral, Presidential-directed, or Congressionally-mandated nonproliferation and international security requirements stemming from high-level nonproliferation initiatives, agreements, and treaties. Specifically, the NP subprogram conducts policy and technical analysis on urgent national security issues, proliferation trends in regions and countries of concern, and options to strengthen international regimes and mechanisms for preventing proliferation; develops policy and provides program oversight on nonproliferation and international security issues; supports the development and negotiation of nuclear treaties and agreements; provides DOE/NNSA nonproliferation policy guidance on nuclear fuel cycle issues; and undertakes activities to improve and update multilateral nuclear supplier arrangements and identify supplier vulnerabilities and potential gaps in supplier arrangements. The NP subprogram is responsible for the following elements: Global Regimes, Regional Analysis and Engagements, and Multilateral Supplier Policy.

FY 2011 accomplishments of this subprogram include:

- Strengthened Nuclear Suppliers Group (NSG) guidelines restricting the transfer of sensitive enrichment and reprocessing technology;
- Supported U.S. Government efforts to secure a ten-year extension of the mandate of the 1540 Committee, an integral part of the international framework to prevent the proliferation of nuclear, chemical, and biological weapons and their means of delivery and helped extend the G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction;
- Facilitated entry into force of the U.S.-Russia Agreement for Cooperation in the Field of Peaceful Uses of Nuclear Energy (123 Agreement);
- Advanced several initiatives to assure the supply of nuclear fuel, including achieving IAEA Board of Governors approval of the IAEA low enriched uranium (LEU) Reserve, to which the United States contributed \$50 million, and the inauguration of the American Assured Fuel Supply, a 230 MT reserve of LEU.

### **Fissile Materials Disposition (FMD) Program**

The FMD program supports the Secretary's goal of enhancing nuclear security through defense, nonproliferation, and environmental efforts by eliminating surplus Russian weapon-grade plutonium and surplus United States (U.S.) weapon-grade plutonium and highly enriched uranium.

FY 2011 accomplishments of this program include:

- Amended U.S.-Russia Plutonium Management and Disposition Agreement (PMDA), which commits each country to dispose of no less than 34 metric tons of excess weapon-grade plutonium (enough combined material for approximately 17,000 nuclear weapons), was ratified by the Russian Duma and entered into force when the U.S. and Russia exchanged diplomatic notes in July 2011.

- To implement the PMDA, FMD has made considerable progress on the construction of the U.S. Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF), while achieving over five million safe work hours.
- More than 98,000 cubic yards of reinforced concrete and 17,000 tons of rebar have been installed, and construction on the Technical Support Building started (the 12th of a total of 16 separate buildings supporting the MOX program).
- Completed civil structural construction of the Waste Solidification Building (WSB) and eliminated a cumulative 124 metric tons (MT) of U.S. surplus highly enriched uranium (enough for more the 2,600 nuclear weapons) by down-blending it to low-enriched uranium (LEU) for peaceful use as fuel in power and research reactors.

#### U.S. Surplus Fissile Materials Disposition - U.S. Plutonium Disposition

The goal of the U.S. Plutonium Disposition subprogram is to dispose of at least 34 metric tons (MT) of surplus U.S. weapon-grade plutonium in accordance with long-standing U.S. policy and the amended U.S. - Russia Plutonium Management and Disposition Agreement (PMDA). Three key U.S. facilities/capabilities in various stages of design and/or construction are needed to accomplish this goal: a Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) to fabricate plutonium oxide into MOX fuel for irradiation in domestic reactors; a pit disassembly and conversion capability to disassemble nuclear weapon pits and convert the resulting plutonium metal to a powder form suitable for MOX fuel; and a Waste Solidification Building (WSB) to handle waste from the MFFF and pit disassembly operations. The MFFF, at the Savannah River Site (SRS), is scheduled to start operations to produce MOX fuel in October 2016. The WSB, also at SRS, is scheduled to begin operations in September 2013 to support MFFF cold start-up activities. FMD has identified approximately 10 MT of plutonium feed material that can be used as early feedstock for MFFF in advance of a pit disassembly and conversion capability that will provide steady state feedstock.

FY 2011 accomplishments of this subprogram include:

- Supported MOX fuel qualification and irradiation; studies of potential MOX fuel use in up to five Tennessee Valley Authority (TVA) reactors; obtaining plutonium and depleted uranium oxide feedstock; storage of feed materials; development of transportation infrastructure; completion of Post Irradiation Examinations (PIE) of irradiated MOX fuel lead test assemblies; and Los Alamos National Laboratory (LANL) disassembly of nuclear weapon pits and conversion of the resulting plutonium metal into oxide using the Advanced Recovery and Integrated Extraction System (ARIES) process as part of the campaign to produce 2 MT of plutonium feedstock for initial operation of the MFFF. Other ongoing activities include: further characterization of non-pit feed materials for MFFF; storage and surveillance of surplus plutonium at Pantex and LANL; packaging of surplus pits for shipment from Pantex to LANL for ARIES conversion activities; and development of MOX fresh fuel shipping containers for boiling water reactor and pressurized water reactor MOX fuels. New containers were procured and fabricated to transport pits from Pantex to SRS and LANL, and to transport plutonium oxide from LANL and PDC to MFFF. Packaging and loading equipment development continued.

- Supported continuing management oversight and licensing activities as well as planning for start-up and operation of the MFFF; design and testing support of the aqueous polishing process, environmental permitting, and the monitoring and support for the NRC review of the possession and use license application.
- Supported activities, including planning and support, for hot start-up testing and operations of the MFFF, as well as, efforts to support contract proposal review for Early Option 2 in support of NNSA.
- Supported planning for facility operations (development of operating procedures and training program), program development activities (start-up testing, spare parts, emergency preparedness), waste management planning (development of waste compliance plans), interface management, and use of the Smart Plant foundation database.
- Supported Critical Decision package development and activities needed to support project management, risk management, design authority, design oversight and reviews, planning for facility operations (development of operating procedures and training program), program development activities (start-up testing, planning spare parts, and emergency preparedness), waste management planning (development of waste compliance plans), interface management, and use of the Smart Plant foundation database (a software relationship management tool that provides the capability to transition engineering/project documents from design/construction/testing to eventual operations while maintaining requirements and configuration control).
- LANL continued demonstration and testing of equipment.
- Supported the integration of the MFFF, WSB, and pit disassembly and conversion activities to ensure that plutonium disposition is successful and implemented in a manner that supports the program's objectives. This included the development of an integrated program plan and schedule and a risk management plan to manage risk and uncertainty within the program. Funds also supported the development and maintenance of infrastructure activities that are required to support the interrelated plutonium disposition construction projects. In addition, funding supported the development of an alternatives study for a pit disassembly and conversion capability. The study considered technical approach, cost (project costs, lifecycle facility operational costs, security costs, and transportation costs), schedule, authorization basis changes, environmental authorizations, safeguards and security, impacts to other programs and missions, and risks.

### U.S. Uranium Disposition

This subprogram supports the disposition of surplus U.S. HEU by down-blending it to LEU. Several disposition activities are ongoing and additional projects are being considered as HEU becomes available from planned weapon dismantlements.

FY 2011 accomplishments of this subprogram include:

- Supported packaging and shipping HEU at Y-12 for delivery to Savannah River Site for inclusion in the off-specification HEU project with Tennessee Valley Authority (TVA), and reimbursement of certain TVA HEU processing costs; continue down-blending of HEU to LEU for use as fuel for foreign research reactors as part of the Global Threat

Reduction Initiative; complete HEU shipments to Nuclear Fuel Services for the MOX Backup LEU Inventory Project; and prepare plans to process, characterize, and package additional surplus HEU for down-blending and ultimate disposition.

#### Russian Surplus Fissile Materials Disposition

Under the amended U.S.-Russian PMDA each side is committed to dispose of at least 34 MT of surplus weapon-grade plutonium. The PMDA commits the U.S. to provide \$400 million, subject to the availability of appropriated funds and the U.S. budgetary review process. Russia will contribute the approximately over \$2 billion necessary to complete the program. Russia has made considerable progress towards meeting its commitments under the PMDA: Russia hosted a U.S./IAEA delegation visit to its plutonium disposition reactor site, irradiated a number of MOX fuel test assemblies made from surplus weapons plutonium in one of its disposition reactors, is close to reaching an agreement with the U.S. and the IAEA on verifying plutonium disposition in each country, and ratified the PMDA and exchanged diplomatic notes with the U.S. to bring the PMDA into force. In addition, Russia, with its own funds, is designing a MOX fuel fabrication facility and is more than 35% complete in the construction of a reactor to be used for plutonium disposition. We expect to reach agreement with Russia on a detailed Milestone Plan covering the U.S. contribution in 2012. Plutonium disposition is targeted to begin in both countries in 2018.

FY 2011 accomplishments of this subprogram include:

- Uncosted balances supported U.S. technical oversight of work in Russia associated with the disposition of surplus Russian weapon-grade plutonium in the BN-600 and BN-800 fast reactors as well as the research and development of the GT-MHR technology. These balances also supported interactions with the International Atomic Energy Agency (IAEA) in developing a Monitoring and Inspection (M&I) Regime in the US and in Russia to verify that both countries are disposing of 34 MT of surplus weapon-grade plutonium.
- Uncosted balances supported the research and development (R&D) of the GT-MHR in Russia including fabrication and testing of particle nuclear fuels and testing of vertical turbo machine components. Funds used for the GT-MHR are not part of the \$400 million U.S. contribution.

#### Construction

In order to dispose of surplus weapon-grade plutonium in accordance with the U.S.-Russia PMDA and existing public law (P.L. 107-314), the NNSA is developing three unique facilities/capabilities: a MOX MFFF, a capability to disassemble nuclear weapons pits and convert the resulting plutonium into a form suitable to be made into MOX fuel, and a WSB to handle the waste resulting from a pit disassembly and conversion capability and MOX operations at the Savannah River Site (SRS). Approximately 75 percent of surplus plutonium to be dispositioned is in pit or metal form and must be disassembled and the plutonium converted to an oxide form useable as feedstock for the MFFF. The WSB will receive liquid waste streams from the MOX facility and pit disassembly and conversion operations, where it will be chemically treated and solidified for ultimate disposal. The WSB is a reinforced concrete facility that will contain storage tanks, evaporators, cementation equipment, and will include an

adjacent storage area for drums awaiting transfer to SRS packaging facilities. Construction of the WSB began in FY 2009, and is scheduled to be completed in FY 2013. The MFFF will fabricate plutonium oxide into MOX fuel for subsequent use in commercial nuclear reactors. The facility will contain the following key areas: shipping and receiving, storage, chemical processing, pellet manufacturing, fuel rod loading, fuel bundle assembly, fuel bundle storage, and an analytical laboratory. Key supporting facilities include: an administration building, material receipt warehouse, technical support building, emergency and diesel standby generator buildings, and a chemical reagent building.

FY 2011 accomplishments of this subprogram include:

- 99-D-141-01, Pit Disassembly and Conversion
  - Supported the development of a conceptual design report along with NEPA and other documentation and activities to support Critical Decision package development, and subsequent critical decisions. The plutonium glovebox and process design activities common to all alternatives continued along with Technology Maturity Evaluations and update of the Technology Demonstration Plan. LANL continued the associated Demonstration and Testing (D&T) scope of the PDC technology, along with completion and delivery of the GFE Grippers.
- 99-D-141-02, Waste Solidification Building)
  - Supported planned activities including testing/site acceptance of the cementation equipment, continuing installation of “trapped” equipment, completion of the process building concrete walls and roof, installation of mechanical and electrical process systems, and start of system turnovers.
- 99-D-143, MOX Fuel Fabrication Facility
  - Supported the continuation for design, procurement, testing, and installation of process equipment, instruments and controls, and operating plant software. MOX Services licensing and regulatory activities continued along with project management and oversight activities in the areas of nuclear safety, project controls, quality assurance, and information technology. Also, major electrical equipment procurement and fabrication, cable and raceway deliveries, conduit and cable tray installation continued, HVAC fabrication and installation began this year. Tank installation and coatings continued. Permanent underground utility installation continued, including domestic water, electrical, fire protection, and sanitary sewer, along with installation of the radioactive liquid waste transfer lines. MFFF building concrete construction progress, piping fabrication and installation, and construction of the Technical Support Building continued. On site assembly of gloveboxes continued along with in-advance testing. Design activities for the Reagent Building and the Emergency Diesel Generator Building were completed this year.

### **Nonproliferation and Verification Research and Development Program**

In support of the Secretary’s Strategic Goal to enhance nuclear security through defense, nonproliferation, and environmental efforts, the Defense Nuclear Nonproliferation, Nonproliferation and Verification Research and Development (DNN R&D) program drives the

innovation of unilateral and multi-lateral technical capabilities to detect, identify, and characterize foreign: 1) nuclear weapons programs, 2) illicit diversion of special nuclear materials, and 3) nuclear detonations. In FY 2013, this program will also support domestic uranium enrichment RD&D.

To meet national and Departmental nuclear security requirements, R&D leverages the unique facilities and scientific skills of the NNSA nuclear security enterprise, other DOE national laboratories, academia, and industry for the performance of research, conduct of technology demonstrations, and development of prototypes for integration into operational systems.

FY 2011 accomplishments of this program include:

- Established and demonstrated a reusable conventional explosive source physics test bed for the conduct of experiments to test new capabilities to detect and identify extremely low nuclear detonations at increasing levels of confidence;
- Established a joint program with the Defense Threat Reduction Agency to detect signatures and identify observable phenomenology of proliferant activities;
- Established the Nuclear Science and Security Consortium (NSSC) in academia to develop NNSA laboratory partnerships with academia and increase NNSA's use of university research in nuclear nonproliferation;
- Jointly with DoD, instituted a major review of the nation's space-based nuclear detonation detection system.

Within DNN R&D, three subprograms supplement the DNN R&D's efforts to enhance nuclear security through defense, nonproliferation, and environmental efforts: Proliferation Detection, Nuclear Detonation Detection, and Domestic Uranium Enrichment Research, Development, and Demonstration (RD&D).

#### Proliferation Detection

The Proliferation Detection (PD) subprogram develops technologies to detect foreign nuclear weapons programs; supports nuclear arms control treaties verification and monitoring for compliance; and supports national nuclear security. The PD efforts are aligned along five functional areas. Fissile Material Production and Weapons Development Detection efforts are targeted towards the detection of foreign weapons programs. Radiation Sensing and Warhead Monitoring supports the development of nuclear security and nuclear arms control treaty monitoring and verification tools and applications and supports operational interdiction and nuclear security efforts across NNSA. Nonproliferation Enabling Technologies supports a broad base to bring new, cross-cutting technologies to multiuse applications in NNSA and the interagency community. The National Center for Nuclear Security (NCNS) is the fourth functional area and is an integrating function located at the Nevada National Security Site. The NCNS studies and tests the application of technology in support of the Nation's treaty verification and monitoring needs. Finally, PD includes university research and the Nuclear Science and Security Consortium (NSSC), which supports nuclear nonproliferation-related research by university graduate and postgraduate technical talent in a way that efficiently links university and Laboratory research in nonproliferation technology development.

FY 2011 accomplishments of this program include:

- Fissile Material Production and Weapons Development Detection – provided technical expertise and leadership in the development of next generation nuclear detection technologies, focused on advanced technologies and approaches for detecting foreign proliferant activities, including fissile material and weapon production facilities, equipment, and processes.
- Radiation Sensing and Warhead Monitoring – provided technical expertise and leadership in addressing the most challenging problems related to detection, localization, and characterization of Special Nuclear Material, conducted research necessary to demonstrate next-generation detection capabilities for warhead monitoring, SNM detection, chain-of-custody, and the illicit diversion of SNM.
- Nonproliferation Enabling Technologies - developed and validated cross-cutting models, algorithms, methods, and operational capabilities that are key to this and other Defense Nuclear Nonproliferation programs and programs within the interagency community with synergistic national and homeland security missions.
- National Center for Nuclear Security – operational demonstrations and research that supported U.S. capabilities to monitor and verify international treaties and cooperative agreements. Established two test beds to focus spiraled research and development efforts, for production detection and for seismic source physics.
- University Program – supported university research that complements laboratory research. Established the National Science and Security Consortium (NSSC) for research in nuclear science and security that complements Lab research projects.

#### Nuclear Detonation Detection

This subprogram develops and builds space sensors for the Nation's operational nuclear test treaty monitoring and Integrated Threat Warning/Attack Assessment capabilities; conducts R&D to advance analytic forensic capabilities related to nuclear detonations; and produces and updates the regional geophysical datasets and analytical understanding to enable operation of the Nation's ground-based nuclear detonation monitoring networks.

FY 2011 accomplishments of this program include:

- Surface, Atmospheric, and Space Detonation Detection (using Satellite-Based systems) - built the Global Burst Detector (GBD) and Space and Atmospheric Burst Reporting System (SABRS) payloads for detecting and reporting nuclear detonations. Supported the integration, initialization, and operation of these payloads. Supported the research, development, and engineering efforts to prepare next generation sensors. Delivered GBD for GPS IIF #10, conducted delta-Critical Design Reviews (CDRs) for two key subsystems for the GBDs for GPS III #1-8, delivered two GBD simulators to Air Force GPS III satellite vendor, delivered SABRS #1, and conducted SABRS #2 Preliminary Design Review (PDR).
- Nuclear Forensics Research - conducted research, technology development, and related science to improve post-detonation technical nuclear forensic capabilities.

- Underground, Underwater, and Atmospheric Detonation Detection (using Ground-Based systems) - provided research products, with appropriate testing, demonstration, verification, and technical support for use in the U.S. National Data Center and U.S. Atomic Energy Detection System.

#### Domestic Uranium Enrichment RD&D

Domestic uranium enrichment RD&D supports increased understanding of uranium enrichment technologies for enhanced efficiency. The project is designed to focus on meeting the following performance objectives: overall plant availability; consistency in manufacturing; material stress; and redundancy and resiliency in plant support systems.

No funding requests for this program were made in FY 2011.

#### **Elimination of Weapons Grade Plutonium Production (EWGPP)**

Upon completion of this program in FY2011, it was canceled to offset funding requirements elsewhere within DOE.

## Department of State

### Nonproliferation, Anti-Terrorism, Demining and Related Programs (NADR)

NADR provides funding for security programs which work to reduce regional and transnational threats. There are three programs within NADR that deal with nonproliferation and global security of WMD material and expertise. Along with the programs outlined below, NADR also makes a voluntary contribution to the IAEA (in FY 2009 totaling \$61 million), and provides funding to the Comprehensive Nuclear Test Ban Treaty International Monitoring System (totaling \$25 million in FY 2009).

#### Nonproliferation and Disarmament Fund

The Nonproliferation and Disarmament Fund (NDF) works to halt the spread of WMDs and their delivery systems, and advanced conventional weapons to terrorists and others. Projects are designed to deal with unanticipated threats may, and also to destroy existing weapons. Funding for NDF in FY 2011 totaled \$53.263 million.

NDF's mandate emphasizes maintaining readiness for fast and flexible responses to dangerous situations. For this reason, NDF resources are not committed to any project or region in advance, unlike traditional State Department or other U.S. nonproliferation assistance programs.

Its mission includes efforts to:

- Halt the proliferation of nuclear, biological, and chemical weapons and their delivery systems;
- Destroy or neutralize existing WMDs, and their delivery systems;
- Facilitate the detection and interdiction of WMD by tracking, controlling, and securing dangerous materials;
- Limit the spread of advanced conventional weapons; and
- Buttress U.S. diplomatic efforts to promote disarmament activities.

The NDF's chief accomplishment in FY 2011 was in assisting the Ministry of Defense of Ukraine in safely eliminating the SCUD missile system in Ukraine. SCUDs are a Soviet-era short range, tactical ballistic surface-to-surface missile categorized by the Missile Technology Control Regime as a Category I system. The project was concluded on April 11, 2011. Over 185 SCUD missile airframes and 50 transporter-erector-launchers (TELs) were destroyed or demilitarized. Support equipment was also eliminated, including refueling trucks, warhead transport vans, command and control trucks, and other items associated with the SCUD system. In addition, 1441 tons of SCUD missile liquid oxidizer fuel that posed an environmental and safety threat to Ukraine's population also is being eliminated as part of this cooperative U.S. and Ukraine.

#### Weapons of Mass Destruction Terrorism Program

The Weapons of Mass Destruction Terrorism (WMDT) program, first authorized in FY 2009, continued to improve international capabilities to prevent, prepare for, and respond to a WMD

terrorist attack. In FY2011, WMDT funding continued at \$ 2 million. The WMDT Program seeks to improve international capabilities to prevent, prepare for, and respond to a WMD terrorist attack, including by supporting the Global Initiative to Combat Nuclear Terrorism (GICNT).

The GICNT is a voluntary partnership designed to strengthen global capacity to prevent, detect, and respond to nuclear terrorism. In FY2011, the GICNT had 82 partner nations and four official observers. Through multilateral activities and exercises, the GICNT shares best practices and lessons learned to strengthen the plans, policies, procedures, and interoperability of partner nations.

As a Co-Chair of the GICNT, the U.S. played a leadership role in a variety of GICNT activities (i.e., meetings, workshops, seminars, table top exercises, or field exercises) throughout FY2011 that assisted partner nations with implementing their commitments to the GICNT Statement of Principles. Highlights from FY2011 include:

#### Preventing Nuclear Smuggling Program

The Preventing Nuclear Smuggling Program (PNSP) addresses critical gaps in the capabilities of partner nations to combat smuggling in nuclear and radioactive materials. This program targets countries where significant smuggling events have occurred, or that may be particularly vulnerable to such smuggling. PNSP has two components: one focuses on outreach through the Nuclear Smuggling Outreach Initiative and the other focuses on promoting effective responses to smuggling incidents.

Key accomplishments for PNSP in 2011 included:

- Completed three country assessments;
- Funded a project to secure vulnerable radiological sources in Ukraine;
- Funded projects to improve green border monitoring in Armenia and Kazakhstan;
- Funded a project to provide means to coordinate and communicate securely on illicit trafficking cases within Georgia;
- Secured funding for three additional anti-nuclear smuggling projects;
- Conducted a successful workshop to review illicit trafficking provisions in Georgia's criminal code;
- Hosted a donor's conference to support Georgian anti-nuclear smuggling projects;
- Secured funding from other donors for eight anti-nuclear smuggling projects;
- Completed national response plan planning meetings and workshops in Ukraine, Armenia, and Azerbaijan;
- Funded attendance by representatives of ten countries at the 16th Annual Nuclear Forensics International Technical Working Group (ITWG) meeting;
- Held a workshop for ITWG experts on how National Nuclear Forensics Libraries function;
- Furthered development of nuclear forensics law enforcement training; and
- Developed one nuclear forensics project and began preparation on a second.

### Export Control and Related Border Security Program

The focus of the Export Control and Related Border Security (EXBS) Program is to prevent the proliferation of WMD and their delivery systems, as well as illicit and irresponsible transfers of advanced conventional weapons, by helping to build effective strategic control systems in countries that possess, produce, or supply strategic items, and in countries through which these items are likely to transit. The EXBS program assesses countries' strategic control systems and provides a wide range of assistance in five core areas: laws and regulations, licensing, enforcement, government-industry cooperation, and international cooperation/interagency coordination. The program draws on the expertise and cooperation of U.S. Government agencies, the private sector, and non-governmental organizations to provide tailored technical consultations, training and equipment. EXBS currently has twenty-three advisors stationed globally to help implement and coordinate assistance activities in over sixty countries. In FY 2011, the program was funded at \$59.98 million.

The program works to strengthen partner countries' national legal and regulatory frameworks, including through adoption of control lists and guidelines consistent with the multilateral export control regimens, in order to prevent the authorization of transfers to end-uses and end-users of proliferation to concern. In order to improve partner countries capabilities to deter, detect, interdict, and prosecute illicit transfers of items of proliferation concern, EXBS provides enforcement training. The program also helps partners meet their obligations and commitments pursuant to U.S. and international nonproliferation initiatives, such as U.N. Security Council Resolution 1540 and Proliferation Security Initiative.

Key accomplishments in 2011 include:

- In 2011, EXBS conducted over 500 capacity-building activities to strengthen strategic trade control legal frameworks, licensing and enforcement systems, and industry outreach mechanisms in 65 key countries in Europe and Eurasia, South and Southeast Asia, North and East Africa, Latin America, and the Middle East. These efforts led to measurable results in EXBS core areas of assistance.
- In June 2011, having made substantial progress in developing its strategic control system with EXBS legal-regulatory assistance, Mexico applied to join the Wassenaar Arrangement.
- In 2011, Malaysia implemented a comprehensive strategic trade control act, while Morocco, Mongolia and the Philippines began drafting comprehensive national strategic trade control laws.
- During 2011, the Government of Kosovo, with EXBS support, drafted implementing directives for the country's first strategic trade control law, passed in November 2010 with EXBS assistance. EXBS continues to assist the Government of Kosovo with improving the implementing directives, establishing a national licensing agency, and creating an interagency mechanism to review license applications for controlled items.
- In 2011, the Government of Thailand made a decision to adopt the EU control list and is in the process of working on the adoption and implementation of strategic trade/dual use licensing practices.

- In 2011, EXBS led interagency efforts to develop the U.S.-India Roadmap for export control cooperation, which aims to prepare India for membership in several international export control regimes.
- During 2011, EXBS deployed the latest version of its Tracker automated licensing system in Armenia. This capability has improved Armenia's interagency cooperation, facilitated compliance with national strategic trade control legislation, and institutionalized the licensing of commodities of nonproliferation concern.
- EXBS funded development of additional tools to strengthen its partners' national strategic trade control licensing systems, including a handbook on controls over missile technology and translations into several different languages of essential control lists.
- In summer 2011, the Croatian Government enhanced its industry outreach to strategic enterprises through deployment of a new "shippers" module of the internal compliance program (ICP), administered by the Ministry of Economy, Labor and Entrepreneurship. The module covers Croatian companies involved in trade transport at seaports, airports, and on land.
- In Spring 2011, using behavioral analysis techniques that EXBS had presented in several events, the Azerbaijan State Customs Committee identified six drug smugglers crossing the Iranian border, the first time that the SCC had used behavioral analysis to make such seizures (as all previous seizures had been made based solely on advance intelligence).
- As a result of the training provided by the EXBS Program, Indonesia established a National Targeting Center modeled on the U.S. National Targeting Center-Cargo.
- EXBS-sponsored training contributed to a seizure of uranium in Moldova in summer 2011.
- Taiwan increased administrative and criminal penalties for strategic trade control violations.
- In 2011, EXBS hosted two international conferences. The 12th International Export Control Conference, co-hosted with the European Union and the Government of Singapore in May 2011, was attended by 300 representatives from 76 countries, as well as international and nongovernmental organizations. The Global Transshipment Seminar, co-hosted with the Government of the United Arab Emirates in March 2011, was attended by over 150 representatives from 27 countries, as well as international and nongovernmental organizations.
- In 2011, to leverage U.S. Government-funded assistance, EXBS launched the Mentoring Initiative, which pairs EXBS partner countries that adopted best practices in strategic trade control management (Graduate Partners) with those EXBS partner countries whose strategic trade control systems do not yet meet international standards. EXBS worked with six Graduate Partners to conduct eight mentoring activities in 2011.

#### Global Threat Reduction Program

The Global Threat Reduction Program (GTR) seeks to combat proliferation of WMD-applicable expertise, materials, and equipment by:

- Engaging WMD-skilled scientists, engineers and technicians;
- Improving the security of potentially-hazardous biological or chemical agents;

- Promoting nuclear security best practices; and
- Preventing nuclear smuggling.

The program received \$70 million in funding in FY 2011. Multiple areas that deal with the engagement and redirection of expertise are funded under this program.

#### Science Centers

The International Science and Technology Center (ISTC) in Moscow and the Science and Technology Center in Ukraine (STCU) in Kiev engage researchers with nuclear, missile, chemical and biological weapons-applicable expertise. Projects include collaboration with Western counterparts and seek to achieve long-term nonproliferation impact through scientist engagement and assisting priority institutions in developing means to become self-sustainable.

Key 2011 accomplishments for the Science Centers include:

- Funded 20 projects with a total value of \$1,396,362. Fifteen of these projects received some level of co-funding from the recipient states.
- In August 2010, Russian President Medvedev issued a decree signaling the Russian Federation's intent to withdraw from the ISTC. In 2011, the ISTC Funding Parties made progress on transitioning the center by agreeing to establish a new main office in Kazakhstan and by accelerating close out of ISTC activities in Russia.

#### Chemical Security Engagement Program

The Chemical Security Engagement Program (CSP) seeks to reduce the threat of chemical terrorism by preventing terrorist access to chemical weapons, their precursors, toxic industrial chemicals, and dual-use infrastructure and expertise. CSP fulfills this mission by raising awareness about the multi-use nature of chemicals, promoting laboratory best practices, and preventing intentional sabotage or an accidental release at an industrial facility.

Key 2011 accomplishments for CSP include:

- Conducted chemical security trainings for academic and industrial chemical professionals from Iraq, the United Arab Emirates, Morocco, and several Southeast Asian countries.
- Launched new engagements to enhance a partner state's ability to adopt law-enforcement strategies and regulatory frameworks for the prevention of chemical terrorism.
- Collaborated with the Government of Australia to convene a conference aimed at advancing Indonesia's efforts to establish of a comprehensive national chemical law.
- Funded the Organization for the Prohibition of Chemical Weapons (OPCW) to conduct workshops on chemical safety and security in the Middle East, Southeast Asia, and South Asia.

### Biosecurity Engagement Program

The mission of the Biosecurity Engagement Program (BEP) is to institutionalize bio-risk management practices and secure institutions and pathogens in priority regions, decrease the risk that scientists with dual-use expertise misuse pathogens, and assure adoption of and compliance with comprehensive international frameworks that advance U.S. biological nonproliferation objectives. BEP accomplishes its mission by funding projects and activities that increase laboratory biosecurity; strengthen the capacity for public and veterinary health systems to detect, report, and control infectious disease outbreaks; and engage life scientists to foster safe, secure, and sustainable bioscience capacity.

Key 2011 accomplishments of BEP included:

#### Bio-Chem Redirect Program

The Bio-Chem Redirect (BCR) program continues to transition biological and chemical weapons scientists and experts from states in the former Soviet Union (FSU) to peaceful research projects dealing with global public health, crop and livestock health, and environmental monitoring.

#### Bio Industry Initiative

The Bio Industry Initiative (BII) continues to reconfigure former biological weapons production facilities in the FSU into peaceful, commercial facilities and to engage former weapons scientists in projects such as accelerated drug and vaccine production designed to combat both regional and global diseases.

#### Biotechnology Engagement Program

The BioTechnology Engagement Program (BTEP) continues to engage and redirect former biological and chemical -weapons personnel s in the Russian Federation and the other Commonwealth of Independent States (CIS) through collaborative research on applied, high-priority public-health problems.

### Partnership for Nuclear Security

The Partnership for Nuclear Security (PNS) aims to establish cooperative partnerships related to the peaceful use of nuclear energy in support of global nuclear security and related nonproliferation objectives. PNS establishes sustainable linkages between nuclear technical professionals and their U.S. counterparts; engages nuclear scientists, engineers, and technicians in collaborative research projects; and provides opportunities for training to nuclear technical professionals through workshops, conferences, travel and exchange programs, and related activities.

Key 2011 accomplishments for PNS include:

- Provided support for 29 grantees from PNS partner countries to attend the 52nd Annual Institute for Nuclear Materials Management (INMM) Meeting in Palm Desert, California. PNS sponsored a number of side events to coincide with the INMM meeting, further promoting nuclear security culture and global best practices.

- Cosponsored the 6th annual Radiation Measurements Cross Calibration workshop to foster integration and collaboration among the technical community residing in PNS partner countries in the Middle East and North Africa (MENA) region.
- Organized numerous workshops in the MENA region, one of which was in collaboration with the World Institute for Nuclear Security (WINS), and facilitated visiting scientists and scholars programs at U.S. National Laboratories.
- Continued to co-sponsor the Gulf Nuclear Energy Infrastructure Institute (GNEII), a regional nuclear energy safety, safeguards, and security institute for scientists and engineers from PNS partner states in the MENA region.

## **Sources**

### **Department of Defense**

Defense Threat Reduction Agency, Fiscal Year 2013 Budget Estimates: Cooperative Threat Reduction Program, February 2012. Available at [http://comptroller.defense.gov/defbudget/fy2013/budget\\_justification/pdfs/01\\_Operation\\_and\\_Maintenance/O\\_M\\_VOL\\_1\\_PARTS/O\\_M\\_VOL\\_1\\_BASE\\_PARTS/CTR\\_OP-5.pdf](http://comptroller.defense.gov/defbudget/fy2013/budget_justification/pdfs/01_Operation_and_Maintenance/O_M_VOL_1_PARTS/O_M_VOL_1_BASE_PARTS/CTR_OP-5.pdf)

Lugar, Richard G., The Nunn-Lugar Scorecard, updated August 2012. Available at <http://lugar.senate.gov/nunnlugar/scorecard.html>

Press Release of Senator Lugar, “Lugar Announces Elimination of Weapons of Mass Destruction through Nunn-Lugar,” June 5, 2012. Available at <http://lugar.senate.gov/news/record.cfm?id=336938&&>.

### **Department of Energy**

Department of Energy, Fiscal Year 2013 Congressional Budget Request: National Nuclear Security Administration, February 2012. Available at <http://www.cfo.doe.gov/budget/13budget/Content/Volume1.pdf>

### **Department of State**

Department of State, Congressional Budget Justification, Foreign Operations Fiscal Year 2012. Available at <http://www.state.gov/documents/organization/158267.pdf>

Communications with State Department officials, July & August 2012.