United States Government Accountability Office

GAO

Report to the Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives

December 2011

NUCLEAR NONPROLIFERATION

Action Needed to Address NNSA's Program Management and Coordination Challenges

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GAO Highlights

Accountability * Integrity * Reliability

Highlights of GAO-12-71, a report to the Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives

Why GAO Did This Study

GAO has issued numerous reports on the effectiveness of the National Nuclear Security Administration's (NNSA) Defense Nuclear Nonproliferation (DNN) programs. For this report GAO was asked to assess (1) the extent of annual DNN uncosted, or unexpended, balances; (2) the level of financial support from foreign donor and recipient governments to the DNN programs; (3) the effectiveness of DNN program performance measures; and (4) the coordination of DNN and other agency nonproliferation programs. GAO analyzed NNSA financial data and other pertinent documents, and interviewed officials from multiple agencies.

What GAO Recommends

GAO suggests that Congress consider extending the time frame allowing DNN programs to receive and use foreign contributions. GAO recommends that NNSA, among other things, (1) justify in its reports to Congress why uncommitted DNN program balances over threshold should not be rescinded, redirected, or used to offset future budget requests; (2) better track foreign cost sharing; and (3) improve performance measurement reporting. GAO also recommends that the National Security Council (NSC) review U.S. programs working to prevent nuclear smuggling overseas to reduce fragmentation and potential overlap. NNSA neither agreed nor disagreed with and NSC did not comment on the recommendations. NNSA raised concerns with GAO's analysis of DNN financial and performance information. GAO addressed NNSA's concerns as appropriate.

View GAO-12-71. For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov

What GAO Found

From fiscal years 2006 through 2010, only about half of the total annual funds available to the DNN programs were costed, or expended, each year. This resulted in uncosted carryover balances of more than $1.5 billion on average from one fiscal year to the next. During this time, the total uncosted DNN operating program balances exceeded thresholds established by the Department of Energy by hundreds of millions of dollars every year. However, much of the annual uncosted DNN-wide funding balances were committed for future expenditure, and total uncommitted uncosted DNN operating program balances were under the thresholds. Nevertheless, three DNN programs had uncommitted balances that frequently exceeded thresholds during this time. NNSA provides semiannual reports to Congress on DNN uncommitted balances. However, these reports do not specify the amounts by which program balances exceeded the thresholds or explain why the excess balances should not be rescinded, redirected, or used to offset future budget requests.

GAO identified four DNN programs authorized by Congress to receive and use contributions from foreign donors, and these authorities expire from 2011 through 2015. Three of these programs received approximately $47.1 million from fiscal years 2006 through 2010 from seven countries. This amount represents about 1 percent of the total funding from annual appropriations acts directed to the four programs over the same period. Extending these authorities would give NNSA more time to obtain foreign contributions. In addition, NNSA has pursued greater cost sharing with foreign countries where DNN programs are implemented, but the extent of cost sharing is unclear because NNSA does not systematically track or maintain such data.

Some DNN program performance measures do not satisfy key attributes that GAO has identified in previous work, namely measures that are clear, reliable, and balanced. For example, one program measure—securing nuclear material facilities in Russia and the former Soviet Union—is unclear, because NNSA counts buildings with security upgrades as completed although NNSA may undertake additional upgrades at some of these sites. In addition, the results of some DNN programs in fiscal year 2010 appear overstated because DNN measured performance against different targets in the end of fiscal year performance report than the ones presented in the budget request to Congress. Moreover, NNSA has dropped one long-standing measure used by the Global Initiatives for Proliferation Prevention program to track reemployment of former Soviet weapons scientists rather than improve the measure as GAO previously recommended and NNSA agreed to revise.

Existing strategies and plans for coordinating federal efforts to combat nuclear smuggling overseas do not incorporate all of the key characteristics of effective national strategies that GAO has identified in previous studies. In addition, there are concerns of potential fragmentation and overlap among some programs working to counter nuclear smuggling overseas, especially those providing equipment and training. Furthermore, there is no single recognized federal agency responsible for leading and directing efforts to combat nuclear smuggling overseas. However, the NSC oversees interagency coordination of these efforts.

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Abbreviations

CBP	U.S. Customs and Border Protection
CBSP	Cooperative Border Security Program
CPI	Office of Counterproliferation Initiatives
CSI	Container Security Initiative
CTR	Cooperative Threat Reduction program
DHS	U.S. Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
DNN	Defense Nuclear Nonproliferation
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DTRA	Defense Threat Reduction Agency
EWGPP	Elimination of Weapons-Grade Plutonium Production program
EXBS	Export Control and Related Border Security program
FBI	Federal Bureau of Investigation
GIPP	Global Initiatives for Proliferation Prevention program
GNDA	Global Nuclear Detection Architecture
GTRI	Global Threat Reduction Initiative
HEU	highly enriched uranium
IAEA	International Atomic Energy Agency
ICITAP	International Criminal Investigative Training and Assistance Program
ICP	International Counterproliferation Program
INECP	International Nonproliferation Export Control Program
INMPC	International Nuclear Materials Protection and Cooperation program
IPC	interagency policy committee
IPP	Initiatives for Proliferation Prevention program

IWG	interagency working group
Justice	U.S. Department of Justice
LEU	low-enriched uranium
M&O	management and operating
MOX	mixed oxide
MPC&A	Material Protection, Control, and Accounting program
MT	metric tons
NDF	Nonproliferation and Disarmament Fund
NGSI	Next Generation Safeguards Initiative
NIAG	Nuclear Interdiction Action Group
NNSA	National Nuclear Security Administration
NRC	U.S. Nuclear Regulatory Commission
NSC	U.S. National Security Council
NSOI	Nuclear Smuggling Outreach Initiative
NTRG	Nuclear Trafficking Response Group
OMB	Office of Management and Budget
OPDAT	Office of Overseas Prosecutorial Development, Assistance, and Training
PDCF	Pit Disassembly and Conversion Facility
PNSP	Preventing Nuclear Smuggling Program
RCP	Regional Combating WMD Program
R&D	research and development
SFI	Secure Freight Initiative
SLD	Second Line of Defense program
State	U.S. Department of State
UN	United Nations
USG	United States Government
WMD	weapons of mass destruction
WMD-PPP	WMD Proliferation Prevention Program

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United States Government Accountability Office
Washington, DC 20548

December 14, 2011

The Honorable Rodney P. Frelinghuysen
Chairman
The Honorable Peter J. Visclosky
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
House of Representatives

The threat of nuclear proliferation poses one of the most important challenges to U.S. and international security. This threat includes the possibilities that terrorist organizations could steal nuclear weapon-usable materials from poorly secured stockpiles in various locations around the world or that other nations could divert nuclear material intended for peaceful purposes to the development of nuclear weapons.[1] As little as 25 kilograms of weapon-grade highly enriched uranium (HEU) or 8 kilograms of plutonium could be used to make a nuclear weapon.

To address these and related nuclear proliferation threats, the Department of Energy's (DOE) National Nuclear Security Administration (NNSA) implements more than 20 nonproliferation programs worldwide under its Office of Defense Nuclear Nonproliferation (DNN).[2] These programs include efforts to secure nuclear warheads; protect, consolidate, and dispose of weapon-usable nuclear materials and radiological sources;[3] reduce the risks of nuclear smuggling; research and develop nonproliferation technologies; transition weapons of mass destruction (WMD) expertise and infrastructure in partner countries to

[1]Weapon-usable nuclear materials are highly enriched uranium, uranium-233, and any plutonium containing less than 80 percent of the isotope plutonium-238. Such materials are also often referred to as fissile materials or strategic special nuclear materials.

[2]NNSA was created by the National Defense Authorization Act for Fiscal Year 2000, Pub. L. No. 106-65 (1999). It is a separate semiautonomous agency within DOE, with responsibility for the nation's nuclear weapons, nonproliferation, and naval reactors programs.

[3]Radiological sources include radioactive material, such as cobalt-60, cesium-137, and strontium-90. While these materials cannot be used to create a nuclear weapon, they could be fabricated into a so-called dirty bomb or device to disperse radioactive materials.

peaceful purposes; and enhance international export controls and International Atomic Energy Agency (IAEA) nuclear safeguards.[4]

Many DNN programs originated in the early 1990s, following the dissolution of the Soviet Union, and have focused principally on improving nuclear security in Russia. Increasingly, these programs have focused attention on the security of weapon-usable nuclear materials in countries beyond Russia and the former Soviet states. DNN programs have engaged more than 100 countries and are seeking to increase nuclear security work with several countries where there has been limited prior cooperation, such as China and India. In addition to NNSA, other U.S. government agencies—including the Departments of Defense (DOD), State, and Homeland Security (DHS)—support programs and activities to reduce proliferation concerns around the world.

NNSA's nuclear nonproliferation budget has grown significantly over the past decade, from approximately $874 million appropriated for DNN in fiscal year 2001, to approximately $2.3 billion appropriated for DNN in fiscal year 2011. Funding appropriated for DNN activities is generally available for obligation[5] until expended and is known as "no year" funding.[6] Typically, NNSA obligates funds when it contracts with a management and operating (M&O) contractor, such as a DOE national laboratory, to execute certain program functions. The obligation is

[4]IAEA is an independent international organization based in Vienna, Austria, that is affiliated with the United Nations and has the dual mission of promoting the peaceful uses of nuclear energy and verifying that nuclear technologies and materials intended for peaceful purposes are not diverted to weapons development efforts. Safeguards allow IAEA to independently verify that nuclear material and other specified items are not diverted from peaceful nuclear uses by, among other things, inspecting all facilities and locations containing nuclear material declared by countries to verify its peaceful use. For more information, see GAO, *Nuclear Nonproliferation: IAEA Has Strengthened Its Safeguards and Nuclear Security Programs, but Weaknesses Need to Be Addressed*, GAO-06-93 (Washington, D.C.: Oct. 7, 2005).

[5]An obligation is a definite commitment that creates a legal liability of the government for the payment of goods and services ordered or received, or a legal duty on the part of the United States that could mature into a legal liability by virtue of actions on the part of the other party beyond the control of the United States.

[6]For more information on DOE's no-year funding, see GAO, *DOE's No-Year Funding*, GAO/RCED-95-91R (Washington, D.C.: Mar. 8, 1995).

"costed" when goods and services are received, and, for practical purposes, DNN considers funds to be expended when costed.[7]

Not all DNN obligations are costed during a given fiscal year, and, because of the no-year nature of the funding, NNSA carries these balances of uncosted obligations over to the next fiscal year. As a result, uncosted obligations can accumulate from one fiscal year to the next. In addition, uncosted obligations consist of balances that are either "committed" or "uncommitted." Generally, uncosted obligations are committed when the M&O contractors enter into legally enforceable agreements, such as purchase orders or contracts.[8] Uncommitted uncosted obligations are balances that have not yet been committed by the contractors and may be available to reduce future NNSA budget requests.[9] Furthermore, besides domestic sources of funding, some DNN programs have been authorized by Congress to receive and use contributions from other foreign governments interested in supporting nuclear nonproliferation efforts.

This report responds in part to your request that we conduct a review of U.S. nuclear nonproliferation strategies.[10] Specifically, our objectives were to assess (1) the extent of annual DNN uncosted, or unexpended,

[7]The terms "costed" and "expended" are often used interchangeably by NNSA and used interchangeably in instances in this report, but there are minor technical differences between them. Specifically, DNN funds are costed after the invoice for work has been received, the work has been completed to government satisfaction, and the invoice is approved for payment. Expenditures, or outlays, refer to when an obligation is actually liquidated through issuance of a check, electronic transfer of funds, or disbursement of cash.

[8]The NNSA definition of a commitment is the outstanding contractor encumbrances by the M&O contractors—such as the national laboratories—plus the full amount of uncosted obligations for direct contracts awarded to non-M&O contractors. The "outstanding contractor encumbrances" include the uncosted balances under contracts awarded by the M&O contractor and can consist of, among other things, uncosted balances on contracts or subcontracts awarded or purchase orders issued by the M&O contractor.

[9]For more information on DOE's funding process and carryover balances, see GAO, *DOE Management: DOE Needs to Improve Its Analysis of Carryover Balances*, GAO/RCED-96-57 (Washington, D.C.: Apr. 12, 1996).

[10]In September 2010, we issued a classified report to you on the results of our work on U.S. efforts to secure nuclear materials worldwide, and issued an unclassified version of that report in December 2010. See GAO, *Nuclear Nonproliferation: Comprehensive U.S. Planning and Better Foreign Cooperation Needed to Secure Vulnerable Nuclear Materials Worldwide*, GAO-11-227 (Washington, D.C.: Dec. 15, 2010).

balances; (2) the level of financial contributions from foreign donor and recipient governments to the DNN programs; (3) the effectiveness of DNN program performance measures; and (4) the effectiveness of interagency strategies and plans for coordinating NNSA and other agency nuclear nonproliferation programs, especially those working to prevent and detect nuclear smuggling overseas. This report focuses on the management and coordination challenges facing the DNN programs, but does not evaluate the effectiveness of the programs. In previous reports, we have evaluated the effectiveness of various individual DNN programs.[11]

To assess the extent of DNN uncosted balances, we obtained and analyzed financial data generated from NNSA's official financial management system on uncosted and uncommitted DNN funding from fiscal years 2006 through 2010. We interviewed knowledgeable NNSA officials to assess the reliability of the data from this system, including on issues such as data entry, access, quality control procedures, and the accuracy and completeness of the data. We determined that the data were of sufficient reliability for our purposes. To assess financial contributions made by foreign donor governments to the DNN programs, we analyzed data in the most recent DOE report to Congress on the receipt and utilization of international contributions for nonproliferation and threat reduction work. Regarding cost sharing by host governments receiving DNN assistance, NNSA officials provided us with data estimating the dollar amount of foreign cost sharing for relevant programs, and provided us with examples of cost-sharing activity. We interviewed NNSA officials on the policies, methods, and systems for collecting, estimating, and maintaining foreign cost-sharing information. Unless otherwise noted, all dollar figures in this report are presented in nominal amounts—that is, they have not been adjusted for inflation. To assess the effectiveness of DNN performance measures, we evaluated the DNN program performance measures presented by NNSA in its

[11]For example, see GAO, *Nuclear Nonproliferation: DOE Needs to Address Uncertainties with and Strengthen Independent Safety Oversight of Its Plutonium Disposition Program*, GAO-10-378 (Washington, D.C.: Mar. 26, 2010); *Nuclear Nonproliferation: National Nuclear Security Administration Has Improved the Security of Reactors in its Global Research Reactor Program, but Action Is Needed to Address Remaining Concerns*, GAO-09-949 (Washington, D.C.: Sept. 17, 2009); *Nuclear Nonproliferation: DOE's Program to Assist Weapons Scientists in Russia and Other Countries Needs to Be Reassessed*, GAO-08-189 (Washington, D.C.: Dec. 12, 2007); and *Nuclear Nonproliferation: Progress Made in Improving Security at Russian Nuclear Sites, but the Long-term Sustainability of U.S.-Funded Security Upgrades Is Uncertain*, GAO-07-404 (Washington, D.C.: Feb. 28, 2007).

annual budget requests to Congress from fiscal years 2006 through 2010. Specifically, for each DNN program, we: reviewed the performance measures in each budget request to assess how the measures changed over time; compared performance measures in each budget request against the measures described in DOE annual performance reports produced at the end of each fiscal year; and evaluated the DNN performance measures against criteria we developed previously on the key attributes of effective performance measures. To assess the effectiveness of interagency strategies for coordinating NNSA and other agency nuclear nonproliferation programs, especially those working to prevent and detect nuclear smuggling overseas, we reviewed relevant interagency strategies and coordinating guidance. We evaluated these strategies against characteristics and attributes of effective national strategies for complex interagency undertakings that we have developed previously. To assess coordination between NNSA and other agencies' nonproliferation programs, we focused on 21 programs across five federal agencies that are involved in preventing and detecting nuclear smuggling overseas. We submitted a standard set of questions to and/or interviewed officials representing the 21 programs on a range of issues, including scope of program missions and activities, types of interactions with other federal programs, and their views on the coordination and integration of similar programs across the government. We used the responses to our questions and information from our interviews with officials from these agencies to evaluate similarities in missions, functions, and activities between programs, and obtain official perspectives on the effectiveness of coordinating mechanisms and guidance. Additional details on our scope and methodology can be found in appendix I.

We conducted this performance audit from January 2011 to December 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The President requests funds from Congress each fiscal year for NNSA to execute DNN programs. When Congress appropriates funds for DNN, it generally recommends that NNSA direct specific amounts of that appropriation to each of the programs funded from that appropriation. In fiscal year 2010, there were seven operating programs funded from NNSA's DNN appropriation managed by six DNN program offices.

Table 1 lists these programs by office and describes major program and subprogram functions and activities in fiscal year 2010. Appendix II lists some of our prior reports on DNN programs and activities.

Table 1: DNN Operating Programs and Major Program and Subprogram Functions and Activities, by DNN Program Office in Fiscal Year 2010

DNN program office	Programs	Major program and subprogram functions and activities
(1) Office of Global Threat Reduction	(1) Global Threat Reduction Initiative (GTRI)	GTRI subprograms work in the United States and internationally to convert research reactors and medical isotope production processes from use of HEU, remove and dispose of excess nuclear and radiological materials, and protect high-priority nuclear and radiological sources from theft.
(2) Office of Nonproliferation Research and Development (R&D)	(2) Nonproliferation and Verification R&D program	Nonproliferation and Verification R&D subprograms support long-term basic and applied research, development, and testing of new technologies to improve U.S. capabilities to detect and monitor nuclear weapons production, proliferation of nuclear weapon-usable materials, and nuclear explosions worldwide.
(3) Office of Nonproliferation and International Security	(3) Nonproliferation and International Security program	Nonproliferation and International Security subprograms provide a range of policy and technical support to implement and monitor WMD reductions; revitalize the safeguards technology and human capital base at the U.S. national laboratories to help strengthen the international safeguards system; strengthen nuclear material security and export control systems; transition WMD expertise and infrastructure in partner countries to peaceful purposes; and improve international nuclear nonproliferation regimes, agreements, and arrangements.
(4) Office of International Material Protection and Cooperation	(4) International Nuclear Materials Protection and Cooperation (INMPC) program	INMPC consists of two major subprograms: the nuclear Material Protection, Control, and Accounting (MPC&A) program and the Second Line of Defense (SLD) program. The MPC&A program works to improve the security of nuclear warheads and materials at sites in Russia and at nuclear material sites in other countries; consolidate and convert weapon-usable nuclear material stocks; and enable Russia and other countries to sustain MPC&A upgrades over the long term without continued U.S. support.[a] The SLD program seeks to strengthen the capability of foreign governments to deter, detect, and interdict illicit nuclear and radioactive material trafficking. The SLD program is divided into an SLD "core" program that installs radiation detection equipment at key foreign land borders, airports, and ports, and a Megaports Initiative that is designed to enhance radiation screening of cargo containers at major foreign seaports.
(5) Office of Fissile Materials Disposition	(5) U.S. Surplus Materials Disposition program (6) Russian Surplus Materials Disposition program	The U.S. Surplus Materials Disposition program—also referred to as the U.S. Surplus Fissile Materials Disposition program—supports the downblending of HEU that is excess to U.S. defense needs and efforts to fabricate 34 metric tons of U.S. excess plutonium into mixed oxide fuel, which will be irradiated in commercial reactors. The Russian Surplus Materials Disposition program—also referred to as the Russian Surplus Fissile Materials Disposition program or the Russian plutonium disposition program—is planning to assist Russia in modifying reactors in that country, which will dispose of an equivalent amount of Russian weapon-grade plutonium.

DNN program office	Programs	Major program and subprogram functions and activities
(6) Office of Nuclear Risk Reduction[b]	(7) Elimination of Weapons-Grade Plutonium Production (EWGPP) program	The EWGPP program has facilitated shutdown of Russia's plutonium production reactors by constructing replacement sources of heat and electricity. It is expected to complete all programmatic activities in calendar year 2011.

Source: NNSA.

[a]There is a geographic division of labor between MPC&A and GTRI program efforts to secure and protect nuclear materials in foreign locations. The MPC&A program provides security upgrades to sites in foreign countries including Russia, Belarus, Kazakhstan, Ukraine, Uzbekistan, China, and India. GTRI addresses security at civilian research reactors and related facilities utilizing nuclear weapon-usable materials in all other countries that are not considered high-income.

[b]In fiscal year 2011, this office ceased to exist, and responsibility for administering closeout activities under the EWGPP program was transferred to the Office of Fissile Materials Disposition.

In April 1996, we reported that DOE did not have a standard, effective approach for identifying carryover balances that may be available to reduce future budget requests, but instead relied on broad estimates of potentially excess balances in individual programs.[12] As a result, we reported that DOE could not be sure whether the amount of carryover balances by its programs was appropriate.[13] Based on our prior work and recommendations, and congressional interest in uncosted balances, DOE developed benchmarks, or "thresholds"—beyond which uncosted balances carried over at the end of a fiscal year should be given greater scrutiny—to assess the extent to which carryover balances are appropriate. These thresholds are typically expressed as a percentage of the total funds available to a program to cost, or expend, in any given fiscal year, depending on the types of activities the program is conducting. The thresholds give NNSA a tool for evaluating DNN program performance based on the variance between target thresholds and actual uncosted, or unexpended, carryover balances. The thresholds for DNN operating programs generally range from 14 to 17 percent of the total program funding available to cost in a given fiscal year.[14]

[12]GAO/RCED-96-57.

[13]For instance, in our 1996 report, we identified almost $500 million in uncosted obligations over 3 prior years that were classified as necessary to meet the requirements of DOE's programs when they should have been categorized as available to reduce DOE's budget request.

[14]For example, in fiscal year 2010, the International Nuclear Materials Protection and Cooperation program threshold was 14 percent, while the Elimination of Weapons-Grade Plutonium Production program threshold was 17 percent.

These thresholds also provide Congress with a way of overseeing NNSA's financial management. In 1992, Congress began requiring DOE to submit an annual report on the status of its uncosted obligations.[15] In these reports, DOE evaluates uncosted balances against thresholds representing standard costing levels for various types of funding, such as operating and capital equipment costs. In 2003, Congress required NNSA to provide a semiannual report on DNN uncommitted, unobligated, and unexpended balances.[16]

Congress has given specific authority over the past decade to several DNN programs to receive and retain contributions from foreign sources for program purposes, in addition to funding received from domestic sources. We identified four programs that are currently authorized to receive and use foreign contributions:[17] the Elimination of Weapons-Grade Plutonium Production (EWGPP) program, the International Nuclear Materials Protection and Cooperation program (INMPC) program, the Global Threat Reduction Initiative (GTRI), and the Russian plutonium disposition program.[18]

Furthermore, other key U.S. government agencies—including DOD, State, and DHS—pursue international efforts to reduce nuclear proliferation risks. Specifically:

- DOD administers the Cooperative Threat Reduction (CTR) program, which has provided assistance to (1) facilitate the removal of nuclear weapons from Ukraine, Belarus, and Kazakhstan; (2) help Russia and Ukraine eliminate strategic delivery systems; (3) secure Russian nuclear warheads; (4) destroy the Russian chemical weapons stockpile; (5) reduce biological proliferation risks across the former Soviet Union; and (6) combat WMD smuggling in the region. The CTR program has expanded its geographic scope in recent years, including

[15]42 U.S.C. § 13526 (2006).

[16]50 U.S.C. § 2454 (2006).

[17]The United States can receive donations without any particular statutory authority. An agency, however, must have statutory authority to receive and use those donations.

[18]The law providing the authorization refers specifically to the "Russian plutonium disposition program"; however, in NNSA budget documents this program is generally formally identified as the Russian Surplus Materials or the Russian Surplus Fissile Materials Disposition program. In this report, we use the program names interchangeably.

pursuing nuclear security cooperation with India and China in cooperation with NNSA. The CTR Policy Office within the Office of the Secretary of Defense provides strategic guidance and policy oversight, conducts long range planning, and negotiates implementing agreements and arrangements for the CTR program. The Deputy Assistant Secretary of Defense for Threat Reduction and Arms Control oversees acquisition, implementation, and other management issues for the program. CTR program activities are implemented through the Defense Threat Reduction Agency (DTRA), which manages all aspects of CTR's programming, contracting, and funding.[19] DTRA also implements international WMD threat reduction activities separate from the CTR program.

- State manages its own nonproliferation programs, provides support to NNSA and other U.S. agency nuclear nonproliferation programs working overseas, and conducts bilateral and multilateral diplomacy to address proliferation threats under the Bureau of International Security and Nonproliferation.[20] State's nuclear nonproliferation programs include efforts to enhance international export controls and border security; counter nuclear smuggling; redirect WMD expertise in Iraq, Libya, and other countries to peaceful research; and sustain a Nonproliferation and Disarmament Fund that provides funding to address nonproliferation contingencies and other urgent threat reduction efforts.

- In 2002 Congress established DHS and authorized it to, among other things, develop and deploy technologies to detect, prevent, and interdict nuclear materials smuggled into the United States. In 2005, the Domestic Nuclear Detection Office (DNDO) was established within DHS to enhance national capabilities to prevent nuclear and

[19]DTRA is DOD's official combat support agency for countering weapons of mass destruction.

[20]The Bureau of International Security and Nonproliferation was formed as a result of a 2005 State reorganization that combined nonproliferation and arms control issues under one bureau. For more information on this reorganization, see GAO, *State Department: Key Transformation Practices Could Have Helped in Restructuring Arms Control and Nonproliferation Bureaus*, GAO-09-738 (Washington, D.C.: July 15, 2009).

radiological attacks.[21] Part of DNDO's mission is to coordinate the development of a Global Nuclear Detection Architecture (GNDA)—which DNDO describes as a worldwide network of sensors, telecommunications, and personnel, with supporting information exchanges, programs, and protocols, to detect, analyze, and report on nuclear and radiological materials outside of regulatory control.[22] DNDO also works with other agency programs involved in detecting and preventing nuclear smuggling abroad by, among other things, developing standards and practices for testing and evaluating radiation detection systems and strategies to implement national level detection architectures. In addition to DNDO, U.S. Customs and Border Protection (CBP) within DHS created the Container Security Initiative to identify and screen U.S.-bound maritime cargo containers at foreign seaports to prevent and deter terrorist use of maritime containers and to request foreign inspection of those containers identified as high risk for the possibility they are carrying nuclear or radiological weapons or materials. CBP also manages the Secure Freight Initiative—a joint DHS, DOE, and State effort—to deploy non-intrusive imaging and radiation detection equipment for the scanning of all U.S.-bound maritime cargo containers at foreign seaports.[23]

National Security Council (NSC) staff have the principal role in coordinating the implementation of NNSA, DOD, State, and other agency nonproliferation programs. NSC oversees the development of general

[21]For information on DNDO, see GAO, *Combating Nuclear Smuggling: DHS Improved Testing of Advanced Radiation Detection Portal Monitors, but Preliminary Results Show Limits of the New Technology*, GAO-09-655 (Washington, D.C.: May 21, 2009); and *Nuclear Detection: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities*, GAO-09-257 (Washington, D.C.: Jan. 29, 2009).

[22]For information on the global nuclear detection architecture, see GAO, *Combating Nuclear Smuggling: DHS Has Made Some Progress but Not Yet Completed a Strategic Plan for Its Global Nuclear Detection Efforts or Closed Identified Gaps*, GAO-10-883T (Washington, D.C.: June 30, 2010); and *Combating Nuclear Smuggling: DHS has Developed a Strategic Plan for its Global Nuclear Detection Architecture, but Gaps Remain*, GAO-11-869T (Washington, D.C.: July 26, 2011).

[23]For further information on the Container Security Initiative and the Secure Freight Initiative, see GAO, *Supply Chain Security: CBP Works with International Entities to Promote Global Customs Security Standards and Initiatives, but Challenges Remain*, GAO-08-538 (Washington, D.C.: Aug. 15, 2008); and *Supply Chain Security: Feasibility and Cost-Benefit Analysis Would Assist DHS and Congress in Assessing and Implementing the Requirement to Scan 100 Percent of U.S.-Bound Containers*, GAO-10-12 (Washington, D.C.: Oct. 30, 2009).

policy and establishes guidelines for U.S. nonproliferation programs but does not implement programs or control their budgets.

Some DNN Programs Have Had Difficulty Reducing Uncommitted Uncosted Balances

From fiscal years 2006 through 2010, only about half of the total annual funds available to the DNN programs were costed each year. Furthermore, total uncosted DNN operating program balances exceeded the thresholds established by DOE by hundreds of millions of dollars every year during this time, including some individual DNN programs with large uncosted balances over threshold. However, much of the annual uncosted DNN-wide funding balances were committed for future expenditure, and the total uncommitted uncosted DNN operating program balances were under acceptable thresholds. Nevertheless, three individual DNN programs had uncommitted balances that frequently exceeded thresholds during this time, raising questions about the ability of those programs to utilize the funding available to them.

About Half of DNN Annual Funding Is Uncosted but Most Is Committed for Future Expenditure

From fiscal years 2006 through 2010, only about half of the total annual DNN funding available to cost was costed at the end of each fiscal year. As a percentage of the total annual funding available to cost, the annual DNN-wide uncosted balances ranged from approximately 47 percent at the end of fiscal year 2009 to approximately 51 percent at the end of fiscal year 2007. In dollar terms, these annual DNN-wide uncosted balances have resulted in carryover balances of more than $1.5 billion on average from one fiscal year to the next. For instance, in fiscal year 2010—the most recent fiscal year in the scope of our review—DNN programs costed a total of approximately $1.8 billion of approximately $3.6 billion available, leaving about $1.8 billion in uncosted balances at the end of the fiscal year. See table 2 for more detail on DNN-wide costed and uncosted balances, including committed and uncommitted uncosted balances, from fiscal years 2006 through 2010.

Table 2: DNN-wide Costed and Uncosted Balances, Including Committed and Uncommitted Uncosted Balances from Fiscal Years 2006 through 2010

Dollars in millions						
	Fiscal year 2006	**Fiscal year 2007**	**Fiscal year 2008**	**Fiscal year 2009**	**Fiscal year 2010**	**5-year average**
Total funds available to cost	$2,689.5	$3,169.1	$3,355.4	$3,103.1	$3,576.0	$3,178.6
Total funds costed	$1,373.6	$1,556.0	$1,758.8	$1,633.2	$1,770.5	$1,618.4
Total funds uncosted	$1,315.9	$1,613.1	$1,596.6	$1,469.8	$1,805.4	$1,560.2
Total uncosted funds committed	$971.2	$1,213.6	$1,206.9	$1,127.4	$1,443.7	$1,192.6
Total funds committed and costed	$2,344.8	$2,769.6	$2,965.7	$2,760.7	$3,214.2	$2,811.0
Total uncosted funds uncommitted	$344.7	$399.5	$389.7	$342.4	$361.8	$367.6
Total uncosted as a percentage of total funds available to cost	48.9%	50.9%	47.6%	47.4%	50.5%	49.1%
Total uncommitted uncosted as a percentage of total funds available to cost	12.8%	12.6%	11.6%	11.0%	10.1%	11.6%

Source: GAO analysis of NNSA data.

Notes: All data and calculations are in nominal dollars. Amounts may not total due to rounding.

Furthermore, total uncosted DNN operating program balances exceeded DOE thresholds every year by hundreds of millions of dollars during this time. For instance, the total uncosted DNN operating program balances exceeded the DOE threshold by nearly $800 million in fiscal year 2010. See table 3 for more information on the thresholds and total DNN operating program uncosted balances compared against these thresholds for fiscal years 2006 through 2010.

Table 3: Total DNN Operating Program Uncosted and Uncommitted Uncosted Balances over/under DOE Thresholds, from Fiscal Years 2006 through 2010

Dollars in millions

	Threshold as percentage of total funds available to cost	Threshold as dollars	Uncosted balances	Uncosted balances over/under threshold	Uncommitted uncosted balances	Uncommitted uncosted balances over/under threshold
Fiscal Year 2006						
Total DNN Operating	16.4%	$363.8	$1,044.2	$680.4	$313.7	-$50.2
Fiscal Year 2007						
Total DNN Operating	16.0%	$412.4	$1,244.3	$831.9	$360.7	-$51.7
Fiscal Year 2008						
Total DNN Operating	16.0%	$456.4	$1,395.2	$938.8	$371.7	-$84.6
Fiscal Year 2009						
Total DNN Operating	16.0%	$462.6	$1,288.0	$825.4	$323.2	-$139.3
Fiscal Year 2010						
Total DNN Operating	15.3%	$430.6	$1,226.2	$795.6	$327.3	-$103.3

Source: GAO analysis of NNSA data.

Notes: All data and calculations are in nominal dollars. Totals include balances for some older DNN programs to which Congress previously directed funding from DNN appropriations, but do not include uncosted and uncommitted uncosted balances associated with appropriations identified by NNSA as time-limited funds to DNN operating programs. The negative values indicate the amount by which balances were under thresholds. The positive values indicate the amount by which balances were over thresholds. Amounts may not total due to rounding.

At the program level, we examined the uncosted balances for the seven current DNN operating programs against the DOE thresholds from fiscal years 2006 through 2010. In nearly all cases we found that these individual programs each had large uncosted balances over DOE thresholds at the end of each fiscal year during this time period, ranging from approximately $21 million to $490 million. One of these programs—the Nonproliferation and Verification R&D program—had annual uncosted balances below threshold twice during this time. See table 4 for more information on the amounts by which individual DNN program uncosted balances were over or under DOE threshold during this time.

Table 4: Uncosted Funding Balances over/under DOE Thresholds, Selected DNN Operating Programs, from Fiscal Years 2006 through 2010

Dollars in millions	Amount of uncosted balances over or under threshold				
	Fiscal year 2006	Fiscal year 2007	Fiscal year 2008	Fiscal year 2009	Fiscal year 2010
Global Threat Reduction Initiative	$27.1	$71.9	$60.0	$156.6	$104.4
Nonproliferation and Verification R&D	-$0.9	-$10.3	$40.4	$48.9	$29.2
Elimination of Weapons-Grade Plutonium Production	$141.6	$127.1	$188.2	$115.5	$29.8
Nonproliferation and International Security	$36.8	$38.3	$45.0	$51.3	$53.5
International Nuclear Materials Protection and Cooperation	$317.8	$464.2	$490.2	$411.1	$444.8
U.S. Surplus Materials Disposition	$64.8	$61.5	$30.8	$21.2	$100.8
Russian Surplus Materials Disposition	$59.0	$62.7	$43.9	$35.0	$33.5

Source: GAO analysis of NNSA data.

Notes: All data and calculations are in nominal dollars. The negative values indicate the amount by which uncosted balances were under DOE uncosted thresholds. The positive values indicate the amount by which uncosted balances were over thresholds.

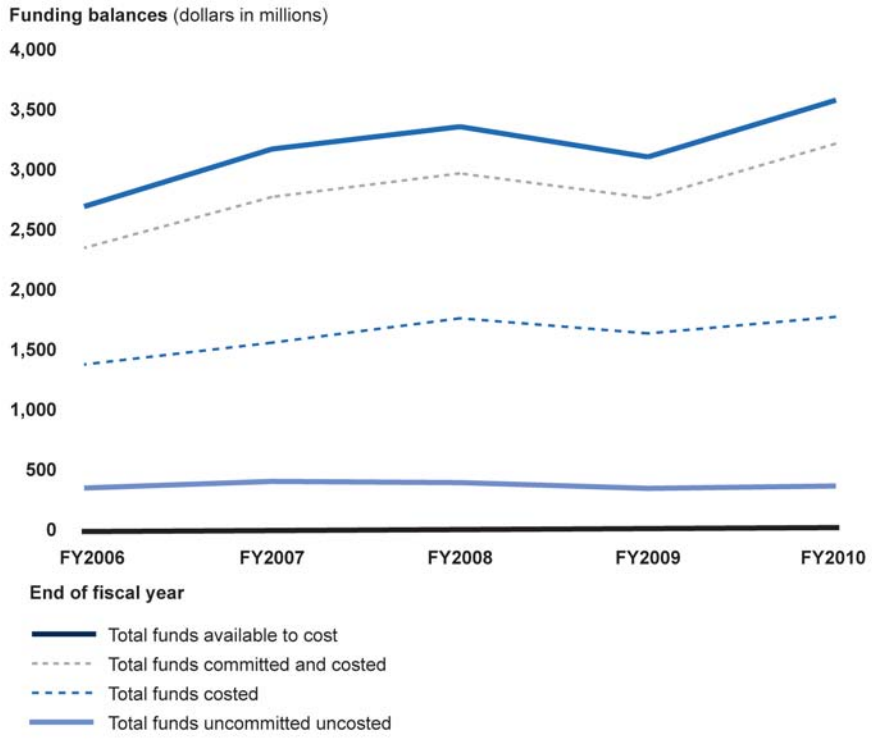
NNSA has acknowledged that uncosted DNN program funding balances have often exceeded the thresholds in reports to Congress. However, NNSA has stated that evaluating DNN programs on the basis of their uncosted balances alone is unwarranted and that, in addition, balances that are uncosted but committed should be considered when reviewing the financial status of the programs. NNSA officials told us that committed balances represent funds that have been placed on contracts, often for long-lead procurements, the work of which must be validated by project teams and NNSA headquarters before being costed. According to NNSA officials, because committed funding is tied to signed contracts, it is not available for other purposes. According to NNSA officials, the only way to fully cost funding in a fiscal year is to provide full funding at the contract signing, which would limit NNSA's ability to govern the execution of DNN projects in foreign countries.

In addition, NNSA officials told us, and NNSA reports to Congress stated, that a significant amount of DNN work is conducted in foreign countries, notably Russia. In these countries, business transactions, including contract negotiations and subsequent accounting of these transactions,

do not follow the normal obligation and costing patterns for funds costed domestically. For instance, funds are obligated upfront to the U.S. contractor handling the negotiations with the foreign entity, but costs are not reported until the work has been completed, which may take years after work orders are placed. NNSA officials told us that this situation can cause a lag between when program funds are committed and costed, because project payments are not made until after the work is verified as completed in these countries.

We found that much of the annual DNN-wide uncosted balances had been committed for future expenditure. For instance, of the $1.8 billion in total DNN funding that was uncosted at the end of fiscal year 2010, approximately $1.4 billion was committed, leaving a total DNN uncommitted uncosted funding balance of approximately $361.8 million. This fiscal year 2010 uncommitted uncosted balance was also the smallest—as a percentage of total funding available to cost—over the 5-year period of our review, having decreased from 12.8 percent in fiscal year 2006 to 10.1 percent in fiscal year 2010. On average during this period, the annual DNN-wide uncommitted uncosted balance was approximately $367.6 million, or 11.6 percent of total annual funding available to cost. See table 2, above, and figure 1 for more information on committed and uncommitted uncosted balances DNN-wide from fiscal years 2006 through 2010.

Figure 1: Trends in Total DNN Costed, Committed, and Uncommitted Funding Balances from Fiscal Years 2006 through 2010



Source: GAO analysis of NNSA data.

Note: All data and calculations are in nominal dollars.

Moreover, the total uncommitted uncosted DNN operating program balances were below threshold at the end of every fiscal year during the 5-year period we reviewed, from $50.2 million below threshold at the end of fiscal year 2006 to approximately $103.3 million below threshold at the end of fiscal year 2010. (See table 3, above, for more information on total uncommitted uncosted DNN operating program balances compared to DOE uncosted thresholds for fiscal years 2006 through 2010.)

Uncommitted Uncosted Balances of Four DNN Programs Were Under Annual Thresholds, but Balances of Three Programs Frequently Exceeded Them

Four of the seven DNN operating programs we reviewed—GTRI, Nonproliferation and Verification R&D, EWGPP, and the International Nuclear Materials Protection and Cooperation programs—had uncommitted uncosted balances below threshold for 4 or all 5 of the fiscal years from fiscal years 2006 through 2010. However, the other three DNN operating programs—Nonproliferation and International Security, U.S. Surplus Materials Disposition, and Russian Surplus Materials Disposition—had uncommitted uncosted balances that exceeded DOE thresholds at the end of 4 or all 5 of the fiscal years. In our view, this raises questions about whether these programs are effectively utilizing their funding, and whether uncommitted uncosted carryover balances could be directed to other NNSA programs or be used to reduce future DNN budget requests. See table 5 for more information on the amounts by which individual DNN program uncommitted uncosted balances were over or under DOE thresholds during this time.

Table 5: Uncommitted Uncosted Funding Balances over/under DOE Thresholds, Selected DNN Operating Programs, from Fiscal Years 2006 through 2010

Dollars in millions

	Amount of uncommitted uncosted funding over or under threshold				
	Fiscal year 2006	**Fiscal year 2007**	**Fiscal year 2008**	**Fiscal year 2009**	**Fiscal year 2010**
Global Threat Reduction Initiative	$2.3	-$5.9	-$18.0	-$30.6	-$41.7
Nonproliferation and Verification R&D	-$47.5	-$42.0	-$11.8	-$5.4	-$18.5
Elimination of Weapons-Grade Plutonium Production	-$48.1	-$70.9	-$61.5	-$57.7	-$29.4
Nonproliferation and International Security	$1.5	$15.1	$25.1	$28.4	$21.5
International Nuclear Materials Protection and Cooperation	-$14.5	$5.4	-$17.5	-$74.7	-$65.0
U.S. Surplus Materials Disposition	$7.7	$5.8	-$2.9	$3.3	$16.0
Russian Surplus Materials Disposition	$33.9	$34.3	$21.1	$19.0	$16.7

Source: GAO analysis of NNSA data.

Notes: All data and calculations are in nominal dollars. The negative values indicate the amount by which uncommitted uncosted balances were under DOE uncosted thresholds. The positive values indicate the amount by which uncommitted uncosted balances were over thresholds.

Specifically, the uncommitted uncosted balances for the U.S. Surplus Materials Disposition program exceeded the DOE thresholds for 4 of the

5 fiscal years in our review. In addition, the uncommitted uncosted balances for the Nonproliferation and International Security and Russian Surplus Materials Disposition programs exceeded thresholds in all 5 fiscal years. On average, the Nonproliferation and International Security program's uncommitted uncosted balance exceeded its threshold by approximately $18.3 million each year. The uncommitted uncosted balances for the Russian disposition program exceeded threshold on average by approximately $25 million per year.

NNSA provides semiannual reports to Congress on DNN uncommitted, unobligated, and unexpended balances. These reports include information on the extent to which DNN program uncosted obligations consist either of committed or uncommitted funds. For instance, in the most recent end-of-year report we reviewed—for fiscal year 2010—NNSA identifies uncommitted funding by DNN program in dollar amounts and as a percentage of its uncosted obligated funding. The report also includes brief explanations for the uncommitted balances by program at the end of the fiscal year. However, this report does not identify the amount of uncommitted funding in excess of the DOE thresholds by program, or why such excess balances should not be rescinded, redirected to other NNSA programs, or used to offset future DNN budget requests. This makes it difficult to evaluate whether such balances are appropriate on a program-by-program basis.

In general, NNSA officials told us that uncertainties associated with the congressional appropriations process explain in part why DNN uncommitted uncosted balances often exceed DOE thresholds. Specifically, the DNN programs have usually operated under a series of continuing resolutions for the first few months of the fiscal year until the regular DNN appropriation for that fiscal year is approved by Congress. Under continuing resolutions, DNN operates on a conservative basis, limiting commitment and costing of program funds, due to uncertainty concerning when the regular appropriation will be approved by Congress. According to NNSA officials, when the annual DNN appropriation is delayed months into the fiscal year, the programs face difficulty in fully committing and costing available funds before the end of the fiscal year because of the shorter period in which to execute the regular appropriation.

In addition, NNSA officials provided us with the following explanations for why the three programs frequently had uncommitted uncosted balances exceeding DOE thresholds from fiscal years 2006 through 2010.

Nonproliferation and International Security

NNSA officials provided several explanations for the Nonproliferation and International Security program's frequent over threshold uncommitted uncosted balances during this period. First, they noted that several program activities occur at the beginning of each fiscal year as required under certain international agreements, and funds must be available at the beginning of the fiscal year to enable these activities to be conducted. According to these officials, because DNN in most years operates under a continuing resolution at the beginning of a fiscal year, the program is forced to carry over balances above the threshold to ensure adequate funding for these activities. Second, the officials said that export control and other training courses supported by the program often occur early in the fiscal year to meet schedules of international partners. Full funding is needed to execute those training courses, which requires holding money from the previous fiscal year in reserve to ensure that they can be executed. Third, NNSA officials noted that some program activities are conducted at the discretion of foreign partners and, because the program cannot control events overseas, this may lead to delays in previously agreed-to activities.

In response to these explanations, we asked NNSA officials to address three concerns: (1) reasons why Nonproliferation and International Security program funding would not at least be sufficiently committed to contracts or subcontracts to be under threshold at the end of a fiscal year; (2) why the program's overseas activities could lead to uncommitted balances, when other DNN programs with larger work scope overseas are able to maintain uncommitted balances under threshold; and (3) whether the program has sought to increase the threshold or defer time frames for some activities from earlier to later in the fiscal year.

With respect to the first two concerns, accounting definitions and the unique nature of Nonproliferation and International Security program work limit the program in recording uncosted program funding as committed, according to NNSA officials. Specifically, they told us that the program relies on technical expertise of DOE's national laboratories to accomplish the majority of its mission. According to these officials, under NNSA's accounting definition of committed funds, DNN program funding that is contracted to a national laboratory for personnel expenses associated with laboratory technical experts is never counted as committed before being costed. Such funding goes from uncosted to costed as actual costs are incurred. NNSA officials representing the Nonproliferation and International Security program explained that the majority of other DNN programs—including those implementing a more extensive range of overseas activities—execute their programs by contracting with the

private sector or through subcontracts via the national laboratories. In those cases, commitment of DNN funding is tracked, which allows those programs to have comparatively smaller uncommitted balances at the end of a fiscal year.

Regarding the third concern, NNSA officials said that they believed the threshold for the Nonproliferation and International Security program is inadequate, given the circumstances described above, but that NNSA has not decided whether to pursue a formal exception or threshold increase. Regarding the possibility of delaying some program activities to later in the fiscal year, the officials told us that in some cases the program must defer to the host country on the timing of activities.

Russian Surplus Materials Disposition

NNSA officials told us that the uncommitted uncosted balances in this program over this period are due largely to the lack of a milestone plan from Russia indicating how it would propose using $400 million pledged by the United States to support the Russian materials disposition effort under the terms of the U.S.-Russia Plutonium Management and Disposition Agreement. According to NNSA officials, once the Russian State Corporation for Atomic Energy submits this plan, the program will be able to commit and cost funds that are currently uncommitted and uncosted. The United States and Russia have been negotiating the milestone plan since a new protocol to the agreement was signed in April 2010. NNSA officials said that they expect to receive the milestone plan from Russia in fiscal year 2012 and begin committing and costing program funds at that time.

U.S. Surplus Materials Disposition

The uncommitted balances that we identified as being over threshold for this program pertain to operating funding for the overall effort to dispose of surplus U.S. plutonium. This mission also includes construction of three facilities in the United States, which DNN budgets separately from operating funds. In general, NNSA officials noted that when there has been a change in a construction project, such as a reduction in the construction budget or change in work scope, expenses for some activities that were originally planned to be incurred in one quarter can be deferred to another, or from one fiscal year to the next, resulting in uncommitted uncosted carryover. Therefore, according to NNSA, programmatic or budgetary changes related to the construction of a facility can have a domino effect, resulting in the accumulation of uncommitted uncosted balances for operating funding associated with the project since some of the operating funds are tied to facility construction time lines and milestones.

Foreign Contributions to DNN Programs Have Been Limited, and Foreign Cost-Sharing Data Are Not Systematically Tracked or Maintained by NNSA

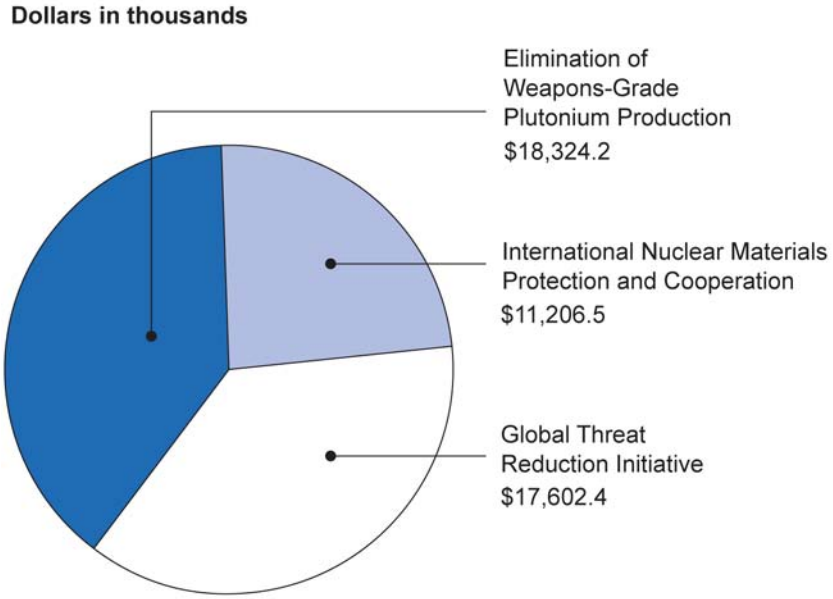
Three of the four DNN programs we identified that have been authorized by Congress to receive and use contributions from foreign donor governments were provided a total of approximately $47.1 million from fiscal years 2006 through 2010, by seven different countries, equaling about 1 percent of the total funding from annual appropriations acts directed to these programs over the same period. In addition to contributions made directly to DNN programs by foreign donor governments, NNSA has pursued greater cost sharing on the part of governments in foreign countries where DNN programs are implemented. Cost sharing includes financial and nonfinancial contributions such as in-kind assistance. However, the extent of such cost sharing is unclear because there is no systematic effort by NNSA to track and maintain this data.

Foreign Governments Contributed Approximately $47.1 Million to Three DNN Programs, from Fiscal Years 2006 through 2010

From fiscal years 2006 through 2010, three of four DNN programs authorized by Congress to receive and use foreign contributions—the EGWPP program, INMPC program, and GTRI—received a total of approximately $47.1 million, donated by seven countries. These countries were Canada, Finland, the Netherlands, New Zealand, Norway, South Korea, and the United Kingdom.[24] Most of these contributions were made to the EWGPP program, which received a total of approximately $18.3 million, or about 39 percent of the total funds contributed. The INMPC program received approximately $11.2 million (or about 24 percent of the total foreign contributions), while GTRI received approximately $17.6 million (or about 37 percent of the total foreign contributions). A fourth program authorized by Congress—the Russian plutonium disposition program—received no foreign financial contributions from fiscal years 2006 through 2010. See figure 2 and appendix III for more information on the foreign contributions by recipient DNN program from fiscal years 2006 through 2010.

[24]Two prior foreign contributions, outside the time frame of our review, were made in fiscal year 2005—contributions of $7.3 million by Canada and $5.5 million by the United Kingdom to the EWGPP program.

Figure 2: Total Foreign Contributions Received by DNN Program from Fiscal Years 2006 through 2010



Source: GAO analysis of NNSA data.

Note: All data and calculations are in nominal dollars.

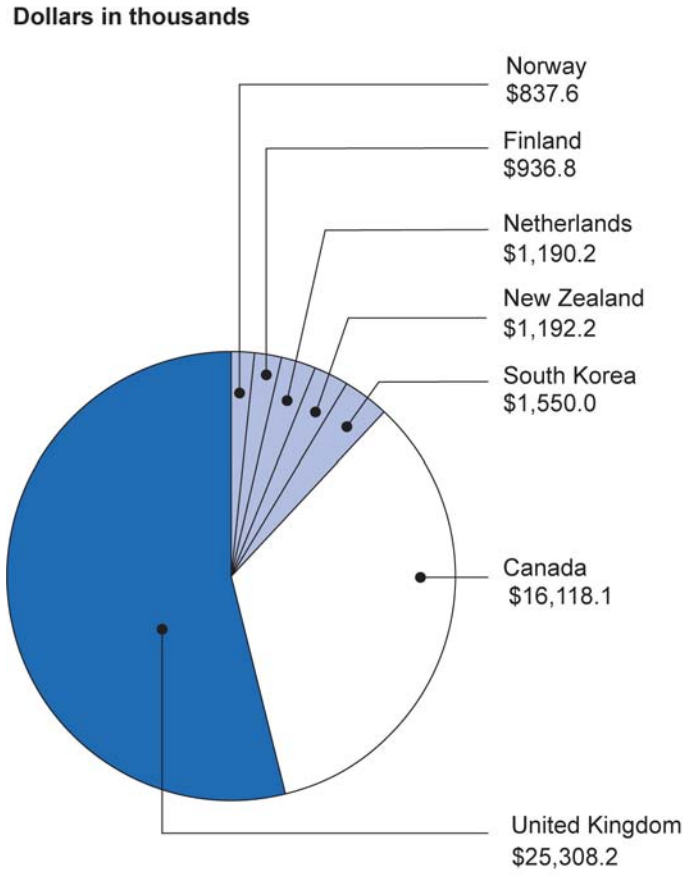
NNSA has put these foreign contributions, varying from $140,000 to over $10 million, toward a variety of program uses, including (1) assisting the overall U.S. effort to facilitate the shutdown of Russia's three remaining plutonium production reactors under the EWGPP program, (2) supporting physical security upgrades at a nuclear material site in Russia and providing radiation detection equipment on borders in the former Soviet Union under the INMPC program, and (3) promoting GTRI efforts to remove and secure radiological sources in countries in the former Soviet Union. Each authorized DNN program must use the foreign contributions within 5 years of receiving them or return them to the contributing nations, and none of these programs is permanently authorized to accept contributions. EWGPP is authorized to accept contributions through December 31, 2011; for GTRI, the expiration date is December 31, 2013; and for INMPC and the Russian plutonium disposition program, the expiration date is December 31, 2015. The GTRI, INMPC, and Russian plutonium disposition programs all anticipate conducting program activities beyond the time frames under which they are currently authorized to accept foreign contributions. For instance, the GTRI

program is planning to continue its efforts to convert or verify the shutdown of 200 research reactors utilizing HEU until 2022.

State officials told us that State's efforts resulted in a significant share of the $47.1 million in foreign donations provided to the DNN programs. Specifically, they said that its Nuclear Smuggling Outreach Initiative (NSOI) has facilitated approximately $17.6 million in foreign contributions to the SLD and GTRI programs through July 2011. However, data provided by State did not specify dates of the foreign donations, and we did not determine what percentage of the $47.1 million in foreign contributions DOE reported receiving from fiscal years 2006 through 2010 was the result of NSOI program efforts.

The United Kingdom and Canada accounted for approximately 88 percent of the total foreign contributions during this time, with the United Kingdom providing approximately $25.3 million (or about 54 percent of the total contributions), and Canada providing approximately $16.1 million (or about 34 percent of the total contributions). See figure 3 and appendix IV for more information on the foreign contributions to DNN programs by country.

Figure 3: Foreign Contributions to DNN Programs by Country from Fiscal Years 2006 through 2010



Source: GAO analysis of NNSA data.
Note: All data and calculations are in nominal dollars.

According to NNSA and State officials, some countries have made contributions to DNN programs to fulfill their national commitments made under the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.[25] Some foreign governments that have

[25]Under the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, which was announced by the G-8 nations (Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States) at their 2002 summit, the G-8 member countries agreed to raise $20 billion over 10 years for nonproliferation-related assistance. The United States agreed to provide $10 billion, or half of the total funding.

made financial commitments to promoting nuclear nonproliferation and security in the context of the Global Partnership do not have well-established nonproliferation programs or the capacity to undertake nonproliferation activities in other countries. As a result, some countries have chosen to fulfill some of their Global Partnership pledges by contributing funding to the DNN programs. In May 2011, the G-8 leaders agreed to extend the Global Partnership beyond the original 2012 expiration date, which may allow for additional foreign donations to the DNN programs in the future.

Contributions made by foreign nations remain small, however, compared to the total funding from annual appropriations acts directed to the four DNN programs we identified that were authorized to receive foreign contributions. Altogether, the foreign contributions represent approximately 1.1 percent of approximately $4.4 billion in total funding from annual appropriations acts directed to these programs from fiscal years 2006 through 2010. The foreign contributions to the EWGPP program have been most significant, representing about 2.5 percent of the total program funding from annual appropriations acts directed to this program over this period. For more information comparing the foreign contributions to the four DNN programs with total funding from annual appropriations acts directed to these programs, see appendix V.

According to NNSA officials, foreign contributions have been important in augmenting and accelerating DNN programs. However, for at least one program, we have concerns about how effectively NNSA took the availability of foreign contributions into consideration as potential offsets into future program budget requests to Congress. Specifically, in the fiscal year 2006 budget request, NNSA stated that foreign contributions to the EWGPP program were critical to the program's success in facilitating the shutdown of the last remaining plutonium production reactor in the Russian city of Zheleznogorsk. However, at the end of fiscal year 2010, the EWGPP program had accumulated an unobligated funding balance of approximately $75.9 million. In fiscal year 2011, $45 million was rescinded from NNSA's unobligated balances, approximately $41.1 million of which was allocated to the EWGPP program. These circumstances raise questions about whether the foreign contributions were essential to the EWGPP program, and the extent to which NNSA factored the contributions as offsets into its future budget requests to Congress.

NNSA officials told us that the agency could not anticipate the timing or amounts of foreign contributions when preparing budget requests to

Congress. Furthermore, they noted that foreign contributions were applied immediately to the EWGPP project in Zheleznogorsk and that they were helpful in allowing the program to be completed within a reasonable schedule and below total project cost.

DNN Programs Are Not Systematically Tracking or Maintaining Data on Cost Sharing by Foreign Countries

In addition to allowing the DNN programs to accept contributions from foreign donor governments, Congress has encouraged the pursuit of greater cost sharing by foreign countries where some DNN and other agency nonproliferation programs are implemented. Cost sharing includes financial and nonfinancial contributions such as in-kind assistance. We have also recommended greater foreign cost sharing for some DNN programs in prior reports. In addition, as we reported in December 2010, the President's 4-year initiative to secure all vulnerable nuclear material around the world is predicated on other countries providing assistance and engaging in cost sharing with the United States to implement cooperative nuclear security programs.[26] According to NNSA officials, NNSA is increasing its cost-sharing efforts with other countries for DNN programs as a "force multiplier" to address high-priority international nuclear security and nonproliferation objectives and the programs are pursuing cost sharing as part of their project management practices. NNSA officials identified three main DNN programs conducting work overseas where cost sharing may be applicable: the International Nuclear Materials Protection and Cooperation (INMPC) program (including both the MPC&A and SLD subprograms), the Global Threat Reduction Initiative (GTRI), and the Nonproliferation and International Security program's Global Initiatives for Proliferation Prevention (GIPP).

According to NNSA officials, these three programs have all made efforts to develop cost-sharing relationships with international partners, and some have established goals or requirements with respect to foreign cost matching. The GIPP program, for instance, has set a goal of 25 percent cost sharing for projects taking place in Russia and seeks cost sharing on projects in all other former Soviet countries on a case-by-case basis. According to NNSA officials, while the GTRI program does not specify a minimum cost-sharing threshold, for some types of projects the program has established specific cost sharing requirements for foreign partners,

[26]GAO, *Nuclear Nonproliferation: Comprehensive U.S. Planning and Better Foreign Cooperation Needed to Secure Vulnerable Nuclear Materials Worldwide*, GAO-11-227 (Washington, D.C.: Dec. 15, 2010).

especially high-income countries. For instance, for HEU reactor conversions in high-income countries, GTRI will provide technical support, while the country where the reactor is located is expected to pay for the large expenses associated with the conversion, such as purchasing low-enriched uranium replacement fuel. NNSA officials stated that INMPC has not formulated specific cost-sharing requirements, but where possible the program has included cost-sharing arrangements in specific MPC&A program contracts, agreements, and transition plans. For SLD Core program and Megaports Initiative projects, NNSA officials indicated that in general there is a cost sharing division of labor in which the programs provide radiation detection equipment, training, and other support, while the partner country assumes responsibility for all construction costs and, in some cases, equipment installation and personnel costs.

These three programs have adopted different approaches and methodologies for how they collect data on or estimate cost sharing. Under the GIPP program, for example, project agreements are completed between the recipient foreign institute and one of several non-governmental entities—the International Science and Technology Center, Science and Technology Center Ukraine, and the Civilian Research and Development Foundation—that manage and transmit funding to project participants. According to NNSA officials, these agreements include a detailed breakdown of foreign cost sharing in conjunction with the breakdown of tasks under the agreement. GTRI has developed a methodology combining actual known costs and independent estimates performed by project managers to estimate cost sharing. In some countries, where the INMPC program can obtain cost information from foreign counterparts, it uses those data to develop cost-sharing estimates. In cases where foreign cost information is less transparent, the program identifies the amount of work scope completed by the foreign partner and then it estimates the likely cost of that activity if the U.S. side were to have completed those tasks.

None of these programs are yet systematically tracking and maintaining this information that would allow for reporting of foreign cost sharing DNN-wide. For instance, INMPC officials told us that while projects with foreign partners are evaluated to ensure that work is completed, foreign cost sharing-amounts are generally collected on an ad hoc basis, and the program does not systematically assess or report cost-sharing data. GTRI officials stated that the program is developing a process to estimate cost sharing in every foreign GTRI project, which will be integrated into GTRI's project management information system, but did not indicate when these

changes would be incorporated into the system. GIPP officials stated that while project agreements with foreign institutes include detailed cost sharing amounts, program officials were unaware of an NNSA system where such data could be entered, recorded, and used for reporting. As a result, NNSA is currently unable to provide comprehensive information to Congress—in the annual budget requests or in other reports—on the extent to which DNN efforts in foreign countries are being supported by financial or in-kind assistance from the host governments.

Notwithstanding these limitations, DNN program officials were able to provide us with some estimates and examples of foreign cost sharing. The GTRI program estimated a total of over $225 million in foreign cost sharing across all of its activity areas from fiscal years 2005 through 2010. The Nonproliferation and International Security program estimated approximately $1.8 million in foreign cost sharing for the GIPP program in fiscal year 2008, based on the responses to a questionnaire by institutes in the former Soviet Union involved in the program. For fiscal years 2008 and 2009, INMPC estimated a total of $60.8 million in foreign cost sharing under the SLD program.

In addition, NNSA officials provided a range of examples—particularly for the INMPC and GTRI programs—where they believe some foreign cost sharing has occurred. For instance, according to NNSA officials:

- In Russia, NNSA and the Russian Customs Service have equipped 383 international border crossing sites with radiation detection equipment through cooperation under the SLD Core program. NNSA and the Russian Customs Service divided responsibility by splitting the number of sites between both parties, with 124 sites funded solely by NNSA, 123 funded solely by Russia, and 136 sites that were jointly funded. NNSA estimates that the total expenditure by the Russian Customs Service in equipping sites for which it was responsible is at least $71 million. The joint U.S.-Russian effort to equip these sites was completed in September 2011.

- According to information provided by NNSA, some of the Russian sites involved in the MPC&A program have used their own funding to support security improvements at their facilities, including paying for procurement and installation of certain security equipment. For example, according to information provided by NNSA, one Russian nuclear material site agreed to contribute $190,000 toward replacing

equipment at two entry control points, while another site agreed to pay for increasing the "clear zone" around the external perimeter of the site, which NNSA estimated would cost $473,000.

- For HEU reactor conversions in high income countries, the GTRI program maintains a policy of providing technical support while the country in which the reactor is located pays for the large expenses associated with the conversion, such as purchasing low-enriched uranium replacement fuel.[27] According to NNSA officials, non-high-income countries also share in some conversion costs. In cases where HEU reactors are shut down, both high-income and non-high-income countries have paid for all reactor shutdown costs. From fiscal years 2005 through 2010, 11 countries paid for some or all the costs of reactor conversions and shutdowns. GTRI officials estimated that the value of this foreign support from fiscal years 2005 through 2010 was approximately $128.5 million.

Nevertheless, DNN programs are unable to audit cost sharing by foreign partners to validate these estimates, and NNSA officials stressed the difficulty in obtaining information from foreign governments that would allow DNN programs to validate cost sharing amounts. INMPC and GTRI officials told us that their programs can verify that foreign partners have completed their tasks in accordance with project agreements, but that the agreements with foreign countries do not include rights to audit the costs or financial contributions incurred by foreign counterparts. GIPP officials told us that under the terms of the project agreements with foreign institutes, all tasks are subject to routine audit and monitoring. However, these officials said that they doubted that these audits could include a review of individual institute or host government financial records.

[27]The GTRI program determination of high-income and non-high-income countries is based on World Bank categories.

Some DNN Program Performance Measures Lack Key Attributes and Have Led to Overstated Results

Some DNN program performance measures do not satisfy key attributes of effective measures that we have identified in previous work, including clarity, reliability, and balance. In addition, some of NNSA's performance measures for its nuclear nonproliferation programs changed from fiscal years 2006 through 2010, making it difficult to evaluate progress over this period. Furthermore, for fiscal year 2010, some DNN program accomplishments appear overstated because NNSA used different performance targets in its end of year fiscal performance report from the ones presented in the budget request to Congress. Moreover, rather than updating a critical performance measure for the GIPP program—as we recommended and as NNSA officials reported previously they would do—NNSA has dropped this measure altogether.

Some DNN Performance Measures Lack Key Attributes of Successful Measures

Some DNN program performance measures we reviewed did not have key attributes of successful performance measures that we have identified in our previous work. We have reported that agencies successfully measure performance when they use measures that satisfy four general characteristics—(1) they demonstrate results, (2) are limited to the vital few, (3) cover multiple program priorities, and (4) provide useful information for decision making.[28] To assess whether program performance measures satisfy these general characteristics, we developed nine key specific attributes of successful measures, including whether the measures are clear, measurable, reliable, objective, and balanced.[29]

We identified clarity concerns in the performance measures for two DNN programs. Several of the Nonproliferation and Verification R&D program's performance measures assess progress using unspecified criteria and milestones from a classified R&D requirements document. Because these performance measures are linked to an unstated secondary set of criteria, it is difficult for a third party, unfamiliar with the classified requirements, to interpret the measure and discern whether the criteria are appropriate, sufficient, and up-to-date for tracking progress. In addition, for the MPC&A program, NNSA measures progress by the cumulative number of

[28]GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-118 (Washington, D.C.: June 1, 1996).

[29]GAO, *Tax Administration: IRS Needs to Further Refine Its Tax Filing Season Performance Measures*, GAO-03-143 (Washington, D.C.: Nov. 22, 2002).

buildings with weapon-usable nuclear materials in Russia and the former Soviet states with completed MPC&A upgrades.[30] However, we found this measure to be unclear and potentially misleading because, among other reasons, it does not provide information about the quantities of materials being secured by the program and the total number of buildings completed is not adjusted to account for any new upgrade work that may be pursued at those locations.

We also identified reliability concerns in the performance measures for two DNN programs. For the disposition of HEU that the United States has declared surplus to defense needs, the U.S. Surplus Fissile Materials Disposition program has an endpoint goal of downblending 217 metric tons of HEU by 2050.[31] The program has set annual performance targets and is measuring annual progress toward this goal. However, NNSA officials told us that the 2050 date for completing the blend-down of this surplus HEU was an arbitrary placeholder because they could not predict at what rate nuclear weapons would be dismantled and the corresponding rate at which additional HEU will be available for dispositioning. NNSA officials told us that this work could be completed sooner, depending on the rate at which HEU is made available to the program from defense needs. In addition, for the Megaports Initiative, NNSA developed a performance measure to track the number of megaports sites where there is host-country cost sharing and the estimated dollar amount of such cost sharing. However, we found this measure to be unreliable because, as noted above, NNSA is unable to validate foreign cost-sharing estimates. NNSA officials told us that this measure was difficult to quantify.

Furthermore, we question whether the performance measures are sufficiently balanced for two DNN efforts—ensuring the long-term sustainability of MPC&A upgrades in Russia and other countries of the former Soviet Union, and the Next Generation Safeguards Initiative

[30]NNSA conducts MPC&A security upgrades in two phases: Rapid upgrades include improvements such as bricking up windows where material is stored; installing strengthened doors, locks, and nuclear container seals; and establishing controlled access areas. Comprehensive upgrades include electronic systems to detect intruders, central alarm stations, and computerized nuclear material accounting systems.

[31]Downblending is the process of converting HEU to low-enriched uranium by mixing it with other forms of uranium, such as natural or depleted uranium, to dilute and reduce the enrichment level of uranium-235 thereby rendering the material less suitable for weapons purposes.

(NGSI), a multiyear program to develop the policies, concepts, technologies, expertise, and infrastructure necessary to strengthen and sustain the international safeguards system over the next 25 years. Performance in achieving sustainability of MPC&A upgrades in Russia and other countries of the former Soviet Union is measured by the cumulative number of MPC&A regulations in the development phase in those countries, while NGSI performance is measured by the number of safeguards systems deployed and used in other countries to address specific safeguards deficiencies. We question whether measuring performance in a single area of activity provides a sufficient basis for gauging the progress that each effort is making overall toward multiple, diverse objectives. However, NNSA officials told us that DNN programs are allowed only a limited number of representative published performance metrics by the Office of Management and Budget (OMB). Officials representing both programs told us that both programs maintain a broader set of internal-use measures that are not provided to Congress or the public which the programs use to track and assess progress made under both efforts.

For more information on the key attributes of successful performance measures we have identified in our previous work, and for further details on our findings of clarity, reliability, and balance limitations in the DNN measures, see appendix VI.

The Number and Descriptions of DNN Performance Measures Changed from Fiscal Years 2006 through 2010

We examined the performance measures NNSA provided to Congress in its annual budget requests from fiscal years 2006 through 2010 for the DNN programs, and found that the number and nature of DNN program performance measures changed during this period, making it difficult to evaluate DNN program performance consistently over time. For instance, in its fiscal year 2006 congressional budget request, NNSA included 32 measures to track the performance of its nonproliferation programs, but in its fiscal year 2010 budget request NNSA included 26 measures. Based on our review of the performance measures presented in NNSA's annual budget requests, we identified several ways in which DNN performance measures changed over the period we reviewed, including:

- Some performance measures used in earlier years were no longer relevant by fiscal year 2010 because work was reported by NNSA as being completed or because anticipated work was never initiated.

- Some DNN performance measures during this time were dropped, or new measures—that had not been used in prior years to assess program performance—were established.

- Some program performance measures were consolidated into a smaller number, while some single performance measures were disaggregated in to several new measures.

- The descriptions of some program measures also changed over this time, which resulted in program progress being measured in new or different ways.

NNSA officials told us they believed that the DNN performance measures should not be static and should be adjusted to reflect changes in circumstances, such as program reorganizations, and in response to external recommendations. For instance, NNSA officials told us that a Nonproliferation and International Security program performance measure tracking the number of foreign nationals trained on nonproliferation issues was eliminated after the program undertook a review of its program performance measurements in 2009 at the request of OMB and determined that the measure did not adequately capture the value of the training delivered.

Furthermore, after each fiscal year, in annual performance reports, DOE assesses performance made by the DNN programs meeting annual targets under each measure. From fiscal years 2006 through 2010, we found over 30 instances in which DNN program performance measures identified in the congressional budget request for a fiscal year differed from the measures assessed in the DOE annual performance reports for that fiscal year. In some cases, we determined that these differences were relatively minor and involved wording or terminology changes, while in others the differences were more significant. In other cases, measures included in the budget requests for some programs were missing and not updated with a new measure in the performance reports. As a result, some of the measures NNSA identified to Congress for assessing DNN program performance during a fiscal year were not those against which actual progress was assessed at the end of the fiscal year.

NNSA officials stated that for any given fiscal year there can be differences between the performance measures presented in the budget requests to Congress and evaluated in the DOE end of fiscal year performance reports. However, these officials noted that performance measures identified in a budget request can be developed 9 months prior

to the beginning of the fiscal year, with the final performance report issued several months after the end of the fiscal year, or a period of 24 months which may pass from the time the performance measures are developed until performance is evaluated. NNSA officials noted that during this time, DNN programs can be reorganized, be re-evaluated, or experience other changes that result in differences between the measures in the budget request and the final performance reports. However, the end of fiscal year performance reports we reviewed did not include explanations in those instances where the performance measure changed from the measure proposed in the budget request for that fiscal year.

For more information on and examples of the changes in DNN performance measures and for a listing of the measures by DNN program office and year, from fiscal years 2006 through 2010, see appendix VII.

Some DNN Program Accomplishments for Fiscal Year 2010 Appear Overstated Because of Inconsistent Performance Measure Targets

In DOE's Fiscal Year 2010 Annual Performance Report, released in April 2011, DNN programs were assessed as to whether they had exceeded, met, or did not meet their performance targets for that fiscal year. DOE reported that it had met or exceeded the annual performance targets for 20 out of 26 DNN program performance measures. However, we found that the annual targets for several performance measures in the fiscal year 2010 performance report differed from the targets presented for those measures in the fiscal year 2010 congressional budget request. Because some annual targets were lower in the end of fiscal year performance report for several programs than the annual targets proposed in the congressional budget request, the achievements by some programs under those performance measures appear to be overstated. See table 6 for more information on the differences between targets in both documents for DNN program performance measures in fiscal year 2010.

Table 6: Differences in DNN Program Performance Targets, Fiscal Year 2010

Performance measure by program	Result as reported in DOE Fiscal Year 2010 Annual Performance Report	Target in DOE Fiscal Year 2010 Annual Performance Report (DOE assessment based on results)	Target in fiscal year 2010 budget request (GAO assessment based on results)
Global Threat Reduction Initiative			
Cumulative number of HEU reactors converted or verified as shutdown prior to conversion	72 reactors	71 reactors (target exceeded)	73 reactors (target not met)
Cumulative number of kilograms of vulnerable nuclear material (HEU and plutonium) removed or disposed	2,853 kilograms	2,767 kilograms (target exceeded)	2,913 kilograms (target not met)
Cumulative number of buildings with high priority nuclear and radiological materials secured	971 buildings	855 buildings (target exceeded)	818 buildings (target exceeded)
Cumulative number of excess domestic radiological sources removed or disposed	26,172 sources	25,214 sources (target exceeded)	24,500 sources (target exceeded)
International Nuclear Materials Protection and Cooperation Program			
Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades	213 buildings	213 buildings (target met)	218 buildings (target not met)
Cumulative number of SLD sites with nuclear detection equipment installed and cumulative number of Megaports completed	399 SLD sites and 34 Megaports	404 SLD sites and 41 Megaports (not met for both)	369 SLD sites and 43 Megaports (exceeded for SLD sites, but not met for Megaports)
U.S. Surplus Materials Disposition Program			
Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building	47 percent	45 percent (target exceeded)	55 percent (target not met)

Source: GAO analysis of NNSA data.

Specifically, we identified annual targets under four performance measures for three programs—the GTRI, INMPC, and U.S. Surplus Materials Disposition programs—that DOE reported as meeting or exceeding in its Fiscal Year 2010 Annual Performance Report, but which appear to be unmet when the reported program results are compared against the targets specified in the fiscal year 2010 budget request. For example, in the fiscal year 2010 budget request, NNSA proposed converting or verifying as shutdown 73 HEU reactors as a target for that year. In the end of fiscal year 2010 performance report, however, the annual target for this performance measure was changed to 71 reactors, which DOE reported as exceeding based on 72 reactors having been converted or verified as shut down. When the actual results are compared

against the annual goal stated in the congressional budget request, however, the target should have been reported as not met, rather than exceeded.

NNSA officials told us they believed that some flexibility and variation in program performance targets during a fiscal year should be allowed, given the uncertain circumstances under which the DNN programs operate, especially the uncertainty regarding when congressional appropriations will be provided and how much of the requested funding DNN will receive. NNSA officials told us that DNN is permitted to adjust its annual performance measures for its programs within 30 days of the final appropriation to take into account differences between requested and actual funding provided by Congress. GTRI officials told us that a congressional funding cut for the program's gap nuclear material removal effort and a redirection of reactor conversion funding in fiscal year 2010 explain why GTRI changed its targets and why it did not meet the targets for these two efforts as presented in the budget request for that year. However, the 2010 fiscal year performance report did not include explanations in those instances where the performance target changed from the target proposed in the budget request for that fiscal year.

Some DNN Performance Measures Have Not Been Updated Based on Prior GAO Recommendations

For the GIPP program, NNSA has dropped—instead of improving—a long-standing performance measure to gauge the success of the program in reemploying former Soviet weapons scientists in civilian jobs. In 1999, we reported that a major purpose of DOE's Initiatives for Proliferation Prevention (IPP) program was to identify commercial opportunities through IPP projects that would attract commercial investment and lead to self-sustaining business ventures and long-term employment opportunities for WMD scientists in the former Soviet Union.[32] However, we found that the program had not achieved its nonproliferation goal of long-term employment through the commercialization of IPP projects. In our December 2007 report on the IPP program,[33] we reported that the measures DOE used to set program goals and gauge progress were

[32]See GAO, *Nuclear Nonproliferation: Concerns With DOE's Efforts to Reduce the Risks Posed by Russia's Unemployed Weapons Scientists*, GAO/RCED-99-54 (Washington, D.C.: Feb. 19, 1999).

[33]See GAO, *Nuclear Nonproliferation: DOE's Program to Assist Weapons Scientists in Russia and Other Countries Needs to Be Reassessed*, GAO-08-189 (Washington, D.C.: Dec. 12, 2007).

outdated, and that performance achievements under the program's "flagship" commercialization goal were overstated. We recommended, among other things, that NNSA develop more reliable data on the commercialization results of IPP projects, such as the number of jobs created.

NNSA agreed with this recommendation, and in 2008 it reported that it would revise the program performance measure and include in its budget documents a new measure that better reflects program accomplishments. However, NNSA has not implemented this action. Neither the fiscal year 2009 nor fiscal year 2010 NNSA budget request included any new commercialization-related measure. In the fiscal year 2010 budget request, the previous measure to assess program progress in this area was dropped, leaving only one program performance measure: the cumulative percentage of non-U.S. government (private sector and foreign government) project funding contributions obtained relative to cumulative U.S. government GIPP funding contributions.[34] In 2009 and 2010, NNSA officials told us that they were still considering new GIPP performance measures. However, neither the fiscal year 2011 nor fiscal year 2012 budget request included a new GIPP commercialization performance measure.

In September 2011, contrary to the long-standing commercialization goal of the program, NNSA reported to us that commercialization would no longer be a leading program objective, but a secondary program benefit, and as such would no longer be a published program performance measure. Thus, the non-U.S. government cost-sharing measure noted above is the only current GIPP performance measure. NNSA officials stated that the GIPP program was directed by OMB to retain this cost-sharing measure, but NNSA officials told us in 2009 and 2010 that they did not believe this was a good performance measure for the program.

[34]In 2002, the IPP program and another similar DOE nonproliferation program, the Nuclear Cities Initiative, were placed under a common management organization within DOE and designated the Russian Transition Initiatives program. In 2006, the Russian Transition Initiatives program was renamed the Global Initiatives for Proliferation Prevention and adopted the mission of addressing the proliferation of WMD expertise globally.

Limitations in Interagency Strategic Plans Impede Coordination of U.S. Efforts to Combat Nuclear Smuggling Overseas

None of the existing strategies and plans for coordinating federal efforts to prevent and detect nuclear smuggling and illicit nuclear transfers overseas incorporates all of the desirable characteristics of national strategies that we have identified in previous work. We also identified potential fragmentation and overlap among some programs working in this area, especially those providing equipment and training in foreign countries to counter nuclear smuggling. Furthermore, there is no single recognized agency responsible for leading and directing federal efforts to combat nuclear smuggling.

Key Attributes Missing from U.S. Government Strategies to Counter Nuclear Smuggling Overseas

None of the existing strategies and plans for coordinating federal efforts to prevent and detect nuclear smuggling and illicit transfers overseas incorporates all of the desirable characteristics of national strategies that we have identified in previous work. We have previously reported that complex interagency and intergovernmental efforts—such as programs to prevent and detect nuclear smuggling overseas—can benefit from development of a national strategy.[35] We have also previously identified a set of desirable characteristics in national strategies that can enhance their usefulness in resource and policy decisions and to better assure accountability.[36] These elements include (1) purpose, scope, and methodology; (2) problem definition and risk assessment; (3) goals, subordinate objectives, activities, and performance measures; (4) resources, investments, and risk management; (5) organizational roles, responsibilities, and coordination; and (6) integration and implementation.[37] See table 7 for a summary of the six characteristics.

[35]See GAO, *Biosurveillance: Efforts to Develop a National Biosurveillance Capability Need a National Strategy and a Designated Leader*, GAO-10-645 (Washington, D.C.: June 30, 2010); and *Combating Terrorism: Selected Challenges and Related Recommendations*, GAO-01-822 (Washington, D.C.: Sept. 20, 2001).

[36]In prior reports on nonproliferation, we have used the term overarching strategic plan to describe a national strategy for nonproliferation efforts governmentwide. For purposes of this report, we use the term national strategy to include strategic plans.

[37]See GAO, *Combating Terrorism: Evaluation of Selected Characteristics in National Strategies Related to Terrorism*, GAO-04-408T (Washington, D.C.: Feb. 3, 2004).

Table 7: Summary of Desirable Characteristics for a National Strategy

Desirable characteristic	Description
Purpose, scope, and methodology	Addresses why the strategy was produced, the scope of its coverage, and the process by which it was developed.
Problem definition and risk assessment	Addresses the particular national problems and threats the strategy is directed towards.
Goals, subordinate objectives, activities, and performance measures	Addresses what the strategy is trying to achieve, steps to achieve those results, as well as the priorities, milestones, and performance measures to gauge results.
Resources, investments, and risk management	Addresses what the strategy will cost, the sources and types of resources and investments needed, and where resources and investments should be targeted based on balancing risk reduction with costs.
Organizational roles, responsibilities, and coordination	Addresses who will be implementing the strategy, what their roles will be compared to others, and mechanisms for them to coordinate their efforts.
Integration and implementation	Addresses how a national strategy relates to other strategies' goals, objectives, and activities, and to subordinate levels of government and their plans to implement the strategy.

Source: GAO data.

We found that existing interagency strategies to coordinate efforts governmentwide against the overseas nuclear smuggling threat lacked some of these desirable attributes. We reviewed several interagency strategy documents that provide guidelines or direction for coordination of federal programs to counter nuclear smuggling overseas. These include (1) the 2010 "Global Nuclear Detection Architecture (GNDA) Strategic Plan" developed jointly by DHS, DOD, DOE, State, the Department of Justice, the intelligence community, and the Nuclear Regulatory Commission (NRC); (2) a 2006 "Strategic Plan For Interagency Coordination of U.S. Government Nuclear Detection Assistance Overseas," produced by State; and (3) a 2005 "International Nuclear and Radiological Border Security Efforts: Implementation Guidelines" issued by the NSC. We found that each of these documents incorporates some of the desirable elements of effective national strategies, but that they each lacked key components or had other limitations. Specifically:

- *2010 GNDA Strategic Plan*. One of DHS's responsibilities, through DNDO, is to coordinate development of the GNDA. In June 2010, we reported that DNDO had not developed a strategic plan for the global architecture despite our prior recommendations that it do so.[38] In

[38]GAO, *Combating Nuclear Smuggling: DHS Has Made Some Progress but Not Yet Completed a Strategic Plan for Its Global Nuclear Detection Efforts or Closed Identified Gaps*, GAO-10-883T (Washington, D.C.: June 30, 2010).

December 2010, DNDO released the jointly developed strategic plan which establishes a broad vision for the GNDA, identifies cross-cutting issues, defines several objectives, and assigns mission roles and responsibilities to the various federal agencies that contribute to the global architecture.[39] In July 2011, we reported that the new strategic plan addressed some of the key components that we previously recommended should be included, such as identifying roles and responsibilities for meeting the GNDA's strategic objectives.[40] However, we reported that the GNDA strategic plan does not identify the financial resources—a desirable characteristic of a national strategy—needed to achieve the strategic plan's objectives. In addition, we raised concerns about the ability to measure results under the plan, because it did not identify the monitoring mechanisms that could be used to determine programmatic progress and identify needed improvements. DHS officials responded that they will address these missing elements in an implementation plan, which they plan to issue before the end of 2011.

In addition, the GNDA strategic plan should not be considered a comprehensive strategy for coordinating the governmentwide response to the overseas nuclear smuggling threat for other reasons. For instance, the focus of the GNDA is on detecting, analyzing, and reporting on the illicit trafficking and unauthorized use of nuclear and radiological materials. However, some U.S. programs involved in countering the nuclear smuggling threat overseas are not considered part of the global architecture. For instance, neither NNSA's International Nonproliferation Export Control Program (INECP), DOD's Weapons of Mass Destruction-Proliferation Prevention Program, nor DTRA's Regional Combating WMD Program are included in the list of programs contributing to the GNDA in the 2011 annual report on the global architecture, even though these programs

[39]In addition, DNDO produces in cooperation with other members of the interagency a "Joint Annual Interagency Review of the Global Nuclear Detection Architecture" which is used to provide information on the current objectives and status of multiple U.S. programs seeking to prevent nuclear or radiological terrorism against the United States by means of detection, analysis, and reporting on nuclear and radiological materials which the agencies have determined as being outside of regulatory control.

[40]GAO, *Combating Nuclear Smuggling: DHS Has Developed a Strategic Plan for its Global Nuclear Detection Architecture, but Gaps Remain*, GAO-11-869T (Washington, D.C.: July 26, 2011).

are involved in capacity-building and other activities overseas to counter nuclear and related WMD trafficking.

- *Strategic Plan for Interagency Coordination of U.S. Nuclear Detection Assistance Overseas.* In May 2002, we found that efforts to combat nuclear smuggling overseas needed strengthened planning to link U.S. programs through common goals and objectives, strategies and time frames for providing assistance to other countries, and performance measures for evaluating the effectiveness of U.S. assistance.[41] State subsequently developed a "Strategic Plan For Interagency Coordination of U.S. Government Nuclear Detection Assistance Overseas." In March 2006, we found that this plan lacked several key components, including a lack of specific performance measures, overall program cost estimates, and projected time frames for program completion.[42] We concluded that without these elements, State would not have a way of effectively measuring performance toward the plan's goals nor would it have a way of determining the level of resources and the amount of time that would be required to achieve those goals. We recommended that the Secretary of State, working with the Secretaries of Defense and Energy and the NNSA Administrator, strengthen this strategic plan to include specific performance measures. We also recommended that they prepare overall cost estimates and projected time frames for completion of U.S. radiation detection equipment assistance efforts, in order to determine the amount and timing of U.S. government resources required to achieve interagency goals and objectives.

  In our current review, we found that the updated version of the strategic plan issued by State in December 2006 incorporated some but not all of our prior recommendations. The plan does include specific performance measures, but it does not include overall cost estimates or projected time frames for programmatic work. In addition, the 2006 strategic plan does not include some programs such as State's Nuclear Smuggling Outreach Initiative (NSOI), or other

[41]GAO, *Nuclear Nonproliferation: U.S. Efforts to Help Other Countries Combat Nuclear Smuggling Need Strengthened Coordination and Planning*, GAO-02-426 (Washington, D.C.: May 16, 2002).

[42]GAO, *Combating Nuclear Smuggling: Corruption, Maintenance, and Coordination Problems Challenge U.S. Efforts to Provide Radiation Detection Equipment to Other Countries*, GAO-06-311 (Washington, D.C.: Mar. 14, 2006).

recently established programs such as NNSA's Cooperative Border Security Program (CBSP),[43] or DTRA's Regional Combating WMD Program. In addition, State officials said that the 2006 strategic plan is only intended to address programs providing counter-smuggling assistance to foreign countries, and not the full range of programs contributing to the detection and prevention of nuclear smuggling abroad, such as those conducting R&D on technologies to detect illicit nuclear trafficking. As of July 2011, this interagency strategic plan had not been updated. State officials told us that State's Export Control and Related Border Security (EXBS) program does not intend to update the plan because State's Office of Export Control Cooperation no longer plays a coordinating role in the provision of radiation detection assistance since the creation of DNDO and State's Office of WMD Terrorism.

- *International Nuclear and Radiological Border Security Guidelines.* In 2005, we found that there was no governmentwide coordination guidance for programs to improve foreign capabilities to detect and prevent WMD smuggling across borders. We recommended that NSC lead a process to develop clear guidance for these programs that identifies U.S. government goals and objectives, designates roles and responsibilities, and establishes procedures to resolve policy and program disputes.[44] NSC officials told us that they did not know if the recommendation had been acted on or implemented by the previous administration. However, NNSA officials provided us with a document—"International Nuclear and Radiological Border Security Efforts: Implementation Guidelines"—issued by NSC in 2005. This document describes the U.S. government strategy and guidelines for implementation and interagency coordination of U.S. efforts to detect nuclear and radiological material movement across international borders, provides general descriptions of relevant program roles and responsibilities, and includes guidance for an interagency coordination mechanism led by State. However, it does not contain all the elements we have identified previously for an effective strategic plan. For instance, it does not establish priorities, identify measures to track

[43]According to NNSA, CBSP is no longer an independent program, and its functions were merged into the International Nonproliferation Export Control Program in June 2010.

[44]GAO, *Weapons of Mass Destruction: Nonproliferation Programs Need Better Integration*, GAO-05-157 (Washington, D.C.: Jan. 28, 2005).

progress, or define the resources needed to effectively implement the strategy.

Concerns about Potential Fragmentation and Overlap among Some U.S. Programs

We reviewed 21 U.S. government programs and offices that we identified as playing a role in preventing and detecting smuggling of nuclear materials and illicit trafficking of related technologies overseas. The programs we reviewed are implemented by five different agencies—NNSA, DOD, State, DHS, and Justice—and encompass a broad range of activities to ensure that nuclear materials, equipment, and technology are not illegally transferred or smuggled from overseas locations. These include programs that (1) conduct R&D on radiation detection technologies; (2) deploy radiation detection equipment along foreign borders and points of transit; (3) train and equip foreign customs and border security officials to identify and interdict illicit nuclear materials or technology transfers; (4) assist foreign governments in the development of export control systems; (5) enhance foreign antismuggling law enforcement and prosecutorial capabilities; and (6) analyze potential foreign nuclear smuggling cases and incidents. See appendix VIII for a list and descriptions of the programs and offices we reviewed.

We identified potential fragmentation and overlapping functions among some of these programs.[45] For example, we identified six programs providing training to improve the capabilities of foreign border security and customs officials to prevent smuggling and illicit nuclear shipments, including NNSA's INECP, CBSP, and SLD programs; State's EXBS program; DOD's Weapons of Mass Destruction-Proliferation Prevention

[45]In this report, and as we have done in previous reports, we use the term fragmentation to refer to those circumstances in which more than one federal agency, or more than one organization within an agency, is involved in the same broad area of national need. We use the term overlap to refer to circumstances when multiple agencies and programs have similar goals, engage in similar activities or strategies to achieve them, or target similar beneficiaries. The presence of overlap can suggest the need to look closer at the potential for unnecessary duplication. However, our review did not go to sufficient depth to determine whether and to what extent the programs are actually duplicative, which occurs when two or more agencies or programs are engaged in identical activities or provide the same services to the same beneficiaries. For more information on fragmentation, overlap, and duplication in federal programs, see GAO, *Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue*, GAO-11-318SP (Washington, D.C.: Mar. 1, 2011); and *Managing for Results: Using the Results Act to Address Mission Fragmentation and Program Overlap*, GAO/AIMD-97-146 (Washington, D.C.: Aug. 29, 1997).

Program (WMD-PPP);[46] and DTRA's International Counterproliferation (ICP) Program. Similarly, we identified four programs that are involved in providing equipment to foreign governments to enhance the ability of their customs and border security organizations to detect nuclear material smuggling, including EXBS, WMD-PPP, ICP, and the SLD program.

Agency officials representing these programs told us that not all of them have the same focus, that some concentrate on specialized niches, and that many are complementary. For instance, in the area of training foreign border security and customs officials, NNSA officials told us that SLD is focused on training in the use and long-term sustainment of the radiation detection equipment provided by the program, whereas INECP concentrates on training foreign customs and border guard personnel at official points of entry to detect illicit WMD-related commodity transfers and assisting border security officials to detect illicit trafficking of WMD-related items in "green border" areas between official points of entry.[47] DOD officials told us that ICP also conducts training to counter smuggling of dual-use commodities, but that this training is focused on investigations, which is not part of the INECP training program. Regarding the provision of equipment, NNSA, State, and DOD officials noted that SLD tends to provide larger equipment, such as radiation portal monitors and cargo scanning equipment, while EXBS and ICP provide smaller-scale equipment, such as handheld radiation detection pagers, hazardous materials kits, and investigative suits to foreign customs and border security organizations. Similarly, DOD officials also stated that much of the equipment the WMD-PPP program provides—such as coastal radars and large communications networks—cannot be provided by other programs for budgetary or other reasons. DOD and NNSA officials also pointed out geographic distinctions between SLD and WMD-PPP, noting that SLD focuses on equipping official border crossings, while WMD-PPP provides equipment for green border areas and "blue borders," or the maritime border areas between ports of entry.

Furthermore, some officials told us that their programs play a complementary role by addressing priorities and gaps that other

[46]Prior to fiscal year 2011, this CTR program activity was referred to as the Weapons of Mass Destruction-Proliferation Prevention Initiative, or WMD-PPI.

[47]Dual-use refers to equipment or technology that can contribute both to nuclear energy and other peaceful nuclear applications or nuclear weapons development or production.

programs have not. For instance, State officials told us that the NSOI program helps equip some of the highest-priority sites identified by NNSA's SLD program. According to State officials, the SLD program is unable to address some high-priority sites because of limited resources. In country after country, according to State officials, NSOI found that SLD and other programs lacked sufficient resources to address all of their priorities. In cases where the SLD program notified NSOI of additional priority sites needing attention, NSOI identified and facilitated financial contributions from foreign donors who paid for equipping the locations that SLD was unable to address.

No Federal Agency Has Lead Responsibility for U.S. Efforts to Prevent and Detect Nuclear Smuggling Overseas

No single federal agency has lead responsibility to direct federal efforts to prevent and detect nuclear smuggling overseas. In the past, we have reported that interagency undertakings can benefit from the leadership of a single entity with sufficient time, responsibility, authority, and resources needed to ensure that federal programs are based upon a coherent strategy, are well coordinated, and that gaps and duplication in capabilities are avoided.[48] Some of the agency officials we interviewed expressed concerns about the absence of a lead agency, recognized across the government, serving as the focal point for federal efforts to combat nuclear smuggling overseas. For instance, one DOD official told us that the absence of a recognized lead agency, empowered to set priorities and provide direction to relevant programs across the federal government, is an obstacle to a more effective approach to combating nuclear smuggling abroad. Another DOD official stated to us that even with interagency communication and coordinated working groups, without a lead agency having the authority to assign and direct roles and responsibilities in this area, ultimately the individual programs will take direction from their agency leadership or Congress.

For efforts to detect nuclear material smuggling into or movement within the United States, a 2005 presidential directive gave DNDO responsibility for developing the GNDA and managing the domestic portion of the global architecture. However, this directive divided responsibility for the international portion of the global architecture among State, DOD, and

[48]See GAO, *Combating Terrorism: Selected Challenges and Related Recommendations,* GAO-01-822 (Washington, D.C.: Sept. 20, 2001); and *Biosurveillance: Efforts to Develop a National Biosurveillance Capability Need a National Strategy and Designated Leader*, GAO-10-645 (Washington, D.C.: June 30, 2010).

DOE.[49] The 2010 strategic plan for the GNDA takes a step toward clarifying lead agencies responsible for different elements of the global architecture, including efforts overseas. Specifically, for the exterior layer of the GNDA—the portion focused on enhancing international capabilities for detecting nuclear and radiological materials abroad—the strategic plan identifies four performance goals, designating lead and supporting agency roles for each. Lead responsibility rests with State, DOE, and/or Justice, depending on the performance goal. For example, State is identified as lead agency for establishing and maintaining engagement with foreign governments to provide detection assistance and facilitate information sharing, while DOE has the lead in improving international detection capabilities by providing equipment, training, and sustainability support. DOE and Justice share the lead for enhancing international detection capabilities by developing and/or participating in international programs and efforts.

However, it is unclear whether these more defined roles give authority to these lead agencies to provide direction and guidance across multiple agencies and programs. For instance, State and DOD officials told us that neither State nor any other federal agency has the authority to direct the activities or coordinate implementation of programs administered by other agencies involved in preventing or detecting nuclear smuggling overseas. Indeed, notwithstanding its designation of lead agencies, the GNDA strategic plan notes that nothing in it shall be construed as limiting any authorities or responsibilities of the Secretaries of Energy, Defense, State, and Homeland Security, as well as the Attorney General, under any statute, regulation, Executive Order, or Presidential Directive.

State Is Taking Steps to Enhance One of the Principal Interagency Coordinating Mechanisms

The NSC has established mechanisms to coordinate efforts in this area, including a Countering Nuclear Threats Interagency Policy Committee (IPC), and a sub-IPC for international nuclear and radiological border security efforts.[50] NSC officials declined our request to discuss various aspects of the IPC structure and how it coordinates U.S. efforts to combat nuclear smuggling overseas. However, some officials from other agencies expressed doubts about the value of the NSC's coordinating role.

[49]National Security Presidential Directive-43/Homeland Security Presidential Directive-14.

[50]The IPCs were called Policy Coordination Committees, or PCCs, during the George W. Bush administration, and Interagency Working Groups during the Clinton administration.

Notably, DOD officials told us that they believed the NSC has played a negligible role in coordination of programs to counter nuclear smuggling.

Coordinating groups have been established beneath the IPC structure to facilitate greater interagency cooperation at a working level to address the nuclear smuggling threat in foreign countries. One of the principal coordinating mechanisms for U.S. export control and related border security assistance activities overseas is an interagency working group (IWG) specified in the 2005 NSC guidelines for international nuclear and radiological border security, which is chaired by State's EXBS program. This IWG meets on a regular basis and officials at DOD, NNSA, and State told us the meetings are well attended and are useful for exchanging information—such as sharing calendars and information on planned program activities—and building relationships between program managers.

Agency officials identified some limitations with this mechanism and its ability to facilitate a more cohesive national response to this threat. For example, NNSA and DOD officials told us that the coordination meetings are hampered by the participation of many individuals and are oriented toward high-level discussion, making in-depth discussion of specific issues affecting program implementation difficult in these settings. State officials said that they believed they have addressed these limitations, by chairing executive level and regional sub-IWG meetings. According to State officials, quarterly executive level meetings involving senior level participation at the deputy assistant secretary level, allow for high-level level discussion of agency programmatic goals and funding priorities. The regional sub-IWG meetings are conducted at the action-officer level, held approximately two to three times per year, and provide for more focused attention on nonproliferation capacity building in specific countries or regions, according to State officials.

NNSA and DOD officials told us that while the IWG is useful for information exchange, it is not a mechanism designed or suitable for conducting more fundamental interagency strategic planning or for developing guidance and priorities for individual agency programs. For instance, some DOD officials noted that the working group does not seek to establish or enforce program missions or evaluate individual program priorities, plans, and strategies to avoid potential redundancies or duplication of efforts. A State official with the EXBS program told us that the working group is not designed to be anything more than a forum for exchanging information between programs, and that it does not have the mandate to direct the scope and activities of individual agency programs.

Nevertheless, State officials told us that they have recently proposed using the EXBS IWG as a means of developing common interagency strategies and approaches toward other countries and to encourage individual programs to engage or disengage in particular regions, countries, and functional areas.

Conclusions

The missions, goals, and activities of many DNN programs—as well as many nuclear nonproliferation efforts pursued by other agencies—remain critical to addressing one of the most serious risks to U.S. national security. Proliferation of nuclear weapons could have a profound impact on international stability and endanger vital U.S. interests. If terrorists were to acquire and use a nuclear weapon, the results could have far-reaching and long-lasting social, financial, and health impacts that are difficult to contemplate. Recognizing the importance of the DNN efforts, Congress has provided NNSA with significant amounts of funding over the past decade. Nevertheless, the serious fiscal realities now confronting the nation mean the financial resources available to DNN—and numerous other federal government programs and functions—are likely to be constrained for the foreseeable future. For these reasons, it is imperative that DNN programs are implemented and pursued in the most effective and efficient ways possible.

It is essential that NNSA make the most efficient possible use of its funding. Regarding the execution of DNN budgets, we acknowledge the challenging circumstances under which many of the DNN programs operate—including appropriations provided months into the fiscal year, delays that may come in executing agreements with foreign governments, and difficulties in implementing activities through subcontractors overseas—which, as we found, can lead to large uncosted and, in some cases, large uncommitted annual balances. However, NNSA must maintain strong financial oversight to ensure that funding directed to these programs is having the greatest possible impact and that resources Congress is making available to DNN are not being underutilized. For DNN programs having difficulty committing funding on a timely basis, it is appropriate for NNSA to justify as part of its current semiannual reporting to Congress on DNN uncommitted, unobligated, and unexpended balances why uncommitted DNN program funding balances—especially those exceeding acceptable thresholds—should not be rescinded, redirected to other NNSA programs, or used to offset future DNN budget requests.

Furthermore, contributions from other countries to DNN programs can help accelerate these efforts and reduce the financial burden on the United States. However, the foreign contributions made to the three DNN programs in recent fiscal years have remained relatively small compared with the funding directed to these programs from annual appropriations. The recent extension of the mandate of the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction beyond the original 2012 expiration date provides NNSA with an opportunity to seek out additional foreign contributions to DNN programs and provides a reason for extending the time frames authorizing certain DNN programs to receive and use such contributions.

In addition to the contributions provided directly to DNN programs by foreign donor governments, cost sharing by foreign governments in countries where DNN programs are being implemented is another way to leverage NNSA's resources. However, none of the main DNN programs conducting work overseas is systematically tracking and maintaining information on foreign cost sharing that would allow for reporting of such data DNN-wide. Such information could provide a tangible measure of foreign governments' commitment to U.S. nuclear nonproliferation objectives, such as the President's initiative to secure all vulnerable nuclear materials worldwide in four years, and enable Congress to better understand the levels of foreign financial burden sharing relative to the funding appropriated to DNN.

NNSA also faces difficulties in consistently and effectively measuring the results of some DNN programs because it uses performance measures that changed over time, performance targets that differed in the end of fiscal year performance report and in the budget request to Congress for at least one fiscal year, and measures with limitations—specifically for the MPC&A, NGSI, Nonproliferation and Verification R&D, and U.S. HEU disposition programs—concerning clarity, reliability, or balance. As a result, Congress and the public may not have a sufficient basis to judge, or may be receiving misleading information about, the results of some DNN programs, their goals and scope of work, and the limitations and challenges they face in implementing their efforts. Furthermore, NNSA's decision to eliminate the commercialization measure for the GIPP program raises questions about the fundamental underlying goals of the program. From its inception in the mid-1990s, commercialization was a central goal of the GIPP program. Eliminating this measure and relying only on cost sharing as a performance indicator, in our view, raises serious questions about the ability of the program to achieve this long-

standing goal and provides little information on the program's nonproliferation impact and results.

Finally, effective coordination of federal government efforts to prevent and detect nuclear smuggling overseas is limited by shortcomings in strategic plans, potential fragmentation and overlap among some programs, and divided responsibilities among several agencies. Furthermore, it is apparent that no single agency or program has the authority to undertake and implement a strategic re-evaluation and restructuring across the government to address these concerns.

Matter for Congressional Consideration

To allow DNN programs to receive and use additional foreign contributions in the future, thereby offsetting some future DNN appropriations requests, Congress may wish to consider extending the time frames under which current DNN programs are authorized in current law to receive and use such contributions.

Recommendations for Executive Action

We recommend that the Administrator of NNSA take the following seven actions:

- To provide further information to Congress on DNN program budget execution, in the end of fiscal year semiannual reports on DNN uncommitted program funding balances (1) identify uncommitted balances over acceptable carryover thresholds on a program-by-program basis, and (2) justify why such balances should not be considered for rescission, redirection to other NNSA programs, or to offset future DNN budget requests.

- To clarify how other countries are sharing in the burden of implementing DNN programs, develop ways to better track and maintain information on foreign cost sharing for DNN projects overseas. To allow Congress to understand the scope of foreign country cost sharing, NNSA should include in the annual DNN budget requests to Congress information explaining actual or estimated amounts of cost sharing during the prior fiscal year by foreign governments in countries where DNN program activities have been implemented.

- To provide Congress with consistent information on DNN program results over time, develop and maintain to the extent practicable a consistent set of DNN program performance measures and ensure

that, for each fiscal year, the targets for measuring annual program performance as proposed in the budget requests to Congress are the same as those used to assess progress in the end of fiscal year performance reports. In those cases where circumstances warrant a change in performance measures or targets—especially during the course of a fiscal year—the end of fiscal year performance reports should explain why the measures or targets were changed.

- To provide Congress with better information on the status and progress of DNN program performance, address clarity, reliability, and balance issues in the performance measures for specific programs as follows:

    - Develop clearer measures, especially for the Nonproliferation and Verification R&D program and MPC&A programs, so the requirements and scope of program efforts can be more easily understood. For the MPC&A program in particular, reconsider the practice under its performance measure of counting buildings and facilities as having "completed" MPC&A upgrades, where there is additional or ongoing security work under way or planned.

    - Clarify the long-term goal under the performance measure for the U.S. HEU disposition program to reflect that the overall amount of material for dispositioning and the rate at which it will be downblended is conditional upon decisions regarding the U.S. nuclear weapons stockpile and the pace of warhead dismantlement.

    - Develop broader, more encompassing, or a more balanced set of public measures to gauge progress by the Next Generation Safeguards Initiative and in the sustainability of MPC&A upgrades provided to foreign countries.

    - Provide an updated and more reliable measure to assess the nonproliferation impact of the GIPP program, as NNSA previously stated it would.

We are making the following two recommendations to the Assistant to the President for National Security Affairs:

- To streamline and eliminate potential for fragmentation and overlap among U.S. government programs involved in preventing and detecting smuggling of nuclear materials, equipment, and technologies overseas, undertake—or direct and delegate an

appropriate agency or agencies to undertake—a comprehensive review of the structure, scope, and composition of agencies and programs across the federal government involved in such efforts. Such a review should assess several issues, including: (1) the level of overlap and duplication among agencies and programs, especially in the provision of nuclear detection equipment and in training provided to foreign border security, customs, and law enforcement officials; (2) potential for consolidation of these functions to fewer programs and agencies; (3) the feasibility, costs, and benefits of establishing a special coordinator to preside over the allocation of U.S. counter-nuclear-smuggling assistance to foreign nations and be responsible for directing the interagency process of development, funding, and implementation of all U.S. government programs related to combating nuclear smuggling overseas; and (4) any U.S. laws that would need to be amended by Congress in order to facilitate consolidation, elimination, or other changes to existing programs.

- Following this review, to ensure remaining programs are being coordinated and implemented effectively, issue new guidance that incorporates the elements of effective strategic plans, including clearly delineating the roles and missions of relevant programs, specific priorities and objectives, performance measures and targets, overall program cost estimates, and projected time frames for program completion.

Agency Comments and Our Evaluation

We provided a draft of this report to the Administrator of NNSA, the Assistant to the President for National Security Affairs (NSC), the Secretary of State, Secretary of Defense, the Secretary of Homeland Security, and the Attorney General for their review and comment. DHS and NNSA provided written comments on the draft report, which are presented in appendixes IX and X, respectively. State, DOD, and NSC did not provide written comments but provided technical comments which we incorporated as appropriate. Justice did not provide comments. In its comments, DHS provided additional information about the Domestic Nuclear Detection Office's role in initiatives related to nuclear forensics and on the Global Nuclear Detection Architecture Strategic Plan and Joint Annual Interagency Review, as well as technical comments, which we incorporated as appropriate.

In its comments, NNSA neither agreed nor disagreed with our recommendations. However, concerning our findings, NNSA stated that the draft report distorts the facts and reinforces misperceptions about DNN's financial, procurement, and performance management. NNSA

stated that the report leaves the false impression that DNN has unused funds and does not make effective program management a priority. Specifically, NNSA commented on three points of the report—the discussion of (1) uncosted and uncommitted carryover funding, (2) DNN tracking of cost-sharing data, and (3) performance measures for several DNN programs. NNSA also provided technical comments, which we incorporated as appropriate.

Uncosted and uncommitted carryover funding. NNSA commented that: the DOE threshold for DNN programs only applies to uncommitted uncosted balances, not uncosted balances; we "buried" information on DNN uncommitted balances in the draft report; and that our finding that uncommitted uncosted carryover funding of several DNN programs raises questions as to whether such balances could be directed to other NNSA programs or be used to reduce future DNN budget requests, is "untrue and has dangerous implications in the current budget environment."

NNSA's assertion that the DOE threshold applies only to uncommitted uncosted balances and not uncosted balances is not consistent with DOE's annual reports to Congress on the status of its uncosted obligations, in which DNN uncosted balances are evaluated against the threshold. For example, DOE stated in its report on uncosted balances for fiscal years 2008 and 2009 that total DNN uncosted balances exceeded the overall DNN threshold level by a net amount of $827.9 million in fiscal year 2009. In addition, the financial statements we obtained from NNSA that served as the basis for our analysis compared the uncosted balances of each DNN program against a corresponding threshold for each program. We also note that NNSA is presenting this information in its comment letter for the first time. In August 2011, NNSA officials indicated that they did not want us to discuss uncosted DNN funding balances in any way due to their concerns that our report would be misunderstood by Congress and, in turn, jeopardize future DNN appropriations. However, prior to our receipt of these comments, NNSA officials had not provided any indication that we should not have analyzed the uncosted data in this manner. In response to NNSA's technical comments, we modified the presentation of our analysis of uncosted and uncommitted DNN funding balances against the thresholds.

Furthermore, contrary to NNSA's statement in its comments, the information on DNN uncommitted carryover is not "buried" in the report. Rather, it is presented in a logical sequence following the discussion of DNN's overall and program-specific uncosted funding balances and the discussion of the reasons why NNSA believes it is important to consider

DNN funding that is uncosted but committed. In our view, including information on the annual levels of DNN costed and uncosted funding is relevant information because it depicts the level at which DNN work is being completed and expenditures are being made. At the same time, we recognize that information on committed and uncommitted balances can be useful in understanding DNN program commitments that have been incurred but which may not be payable for years to come, and therefore provides a longer-term picture of current DNN program operations. We believe both sets of financial data present complementary information, provide fuller context to Congress on the execution of DNN budgets, and can be used together to provide a more comprehensive picture of DNN's financial position today and over time.

We continue to believe that it is appropriate to consider whether DNN uncommitted uncosted funding balances—especially the uncommitted balances of programs that have routinely exceeded the DOE thresholds—could be rescinded, directed to other NNSA programs, or used to reduce future DNN budget requests. NNSA's comment that rescission of "amounts committed to signed contracts" would create significant delays and result in possible contract-related penalties. However, we reiterate that our finding pertains to consideration of uncommitted, not committed, funding which is not yet contracted. In addition, concerning NNSA's reference to "dangerous implications in the current budget environment," we believe that current U.S. fiscal environment means that all federal programs must be held accountable to executing—whether costing or committing—their budgets efficiently and on a timely basis.

DNN tracking of cost sharing data. NNSA commented that our draft report does not mention the inherent difficulties associated with assessing cost sharing with foreign partners at sensitive sites. In the report, we note the limitations in NNSA's ability to audit foreign cost sharing. We also explained the efforts NNSA has made to develop cost sharing relationships with international partners and the different approaches and methodologies DNN programs have adopted to collect data on or estimate cost sharing. However, none of the DNN programs we reviewed are systematically tracking and maintaining these data to allow for reporting of foreign cost sharing DNN-wide. We understand, however, the challenges involved in obtaining such information and have added further language to the report which reflects NNSA's comment.

On a related matter, NNSA commented that when it asked us what type of methodology might be used as a satisfactory way to calculate foreign cost-sharing data, we responded that we could not provide any prescriptive advice on how to approach the issue. It is important to note that the discussion of this issue was one among many issues discussed with NNSA during the exit meeting and throughout our review. Furthermore, we point out that our recommendation to NNSA is not that it audit or validate foreign cost-sharing data but that it improve its internal processes for tracking and maintaining such information and that it provide information on actual or estimated amounts of cost sharing in annual DNN budget requests to Congress.

Performance metrics for DNN programs. NNSA made several statements in its written comments concerning our findings on the performance measures of several DNN programs, including the nuclear Material Protection, Control, and Accounting (MPC&A) program, the Global Threat Reduction Initiative (GTRI), the Next Generation Safeguards Initiative (NGSI), and the Global Initiatives for Proliferation Prevention (GIPP) program.

Regarding the MPC&A program performance measures, NNSA commented that the program does not track the amount of material secured because estimates of inventories are highly uncertain and the specifics are considered sensitive or classified by foreign governments. NNSA also commented that having to reclassify buildings previously deemed as complete if a new MPC&A upgrade project is initiated would require the metric baseline to change frequently and make it an unusable measure. We acknowledged in our draft report the difficulties NNSA faces in obtaining information from foreign governments on the amounts of material being secured by the program. For this reason, we did not recommend that NNSA develop a new performance measure that attempts to capture and report on such information. With respect to our finding that the MPC&A program is not adjusting the total number of buildings with completed MPC&A upgrades to account for any new upgrade work that may be pursued, NNSA stated that the metric baseline would change frequently if it were required to adjust the total number of completed buildings when new upgrade work is undertaken. We continue to believe it is misleading and could create a false sense of security to classify a building as having “completed” MPC&A upgrades when additional upgrade work is ongoing at that location. Furthermore, while we did not specify the frequency by which NNSA should update MPC&A program performance data we believe that NNSA should, at a minimum,

provide accurate data on this matter in the DOE end of fiscal year performance reports and in the DNN budget requests to Congress.

Regarding the GTRI performance measure, NNSA commented that we implied that the GTRI program had an ulterior motive to change the program's reactor conversion measure. Our characterization of the performance metric is accurate: the measure changed during the time frame of our review. NNSA explained the change in the measure, but the broader point made in the report concerns the changing nature of DNN program performance measures and the difficulty this poses in evaluating program performance consistently over time.

Regarding the NGSI performance measure, NNSA stated that we had incorrectly claimed that the measure was not sufficiently balanced, and that we did not include the full text of the measure, leaving out the word "deployed." We stand by our statement for the following reasons. We believe the NGSI is a significant, multifaceted undertaking whose scope of goals and activities is not adequately captured by the single current published performance measure. The overarching goal of NGSI is to develop the policies, concepts, technologies, expertise, and infrastructure needed to strengthen and sustain the international safeguards system as it evolves to meet new challenges over the next 25 years. In our view, this is a much broader, long-term strategic goal that transcends questions of whether safeguards systems have been deployed and used in other countries to address specific safeguards deficiencies. We recognize the difficulties facing NNSA posed by the limited number of published DNN performance measures allowed by OMB. However, we believe NGSI will remain an important, wide-ranging DNN program for years to come, which calls for a wider, more balanced set of public measures to allow Congress to track the program's performance rather than a single measure assessing progress in one dimension of program output. In response to NNSA's comment, we added language to the report concerning the word deployed as it relates to the program's performance measure.

Regarding the GIPP program, NNSA commented that we criticized the lack of a commercialization metric. NNSA stated that commercialization is no longer a leading program metric, but a secondary benefit. We believe that our observation regarding this metric is fair and reasonable. Commercialization had been a long-standing measure used by the program to track reemployment of former Soviet weapons scientists and, as we reported in 2007, was considered the "flagship" of the program. We explain in our report that NNSA determined that commercialization would

no longer be a leading program objective and would no longer be a published program performance measure. However, as we noted in the report, we had previously recommended that NNSA improve the measure by developing more reliable data on the commercialization results of GIPP projects, not eliminate the measure. Eliminating the measure leaves the impression that the program has failed to meet a key program objective and raises other questions about GIPP's continued value as a nonproliferation program. In that regard, we do not believe that the single current public performance measure for the GIPP program—the cumulative percentage of non-U.S. government project funding contributions obtained relative to cumulative U.S. government GIPP funding—provides Congress with sufficient information on the program's nonproliferation results.

We are sending copies of this report to the Administrator of NNSA, the Assistant to the President for National Security Affairs, the Secretary of Energy, Secretary of State, Secretary of Defense, Secretary of Homeland Security, the Attorney General, and interested congressional committees. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or aloisee@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix XI.

Gene Aloise
Director, Natural Resources and Environment

Appendix I: Objectives, Scope, and Methodology

The objectives of our review of the National Nuclear Security Administration's (NNSA) Defense Nuclear Nonproliferation (DNN) programs were to assess (1) the extent of annual DNN uncosted, or unexpended, balances; (2) the level of financial contributions from foreign donor and recipient governments to the DNN programs; (3) the effectiveness of DNN program performance measures; and (4) the effectiveness of interagency strategies and plans for coordinating NNSA and other agency nuclear nonproliferation programs, especially those working to prevent and detect nuclear smuggling overseas.

To assess DNN uncosted balances, we obtained and analyzed financial data generated from the Standard Accounting and Reporting System, the Department of Energy's (DOE) and NNSA's official financial management system. We analyzed data on uncosted and uncommitted DNN funding from fiscal years 2006 through 2010. We selected this time frame as the most recent five year period of available end of fiscal year financial data. This included data on end of fiscal year funding costed by the programs; uncosted balances; uncosted funding committed; and thresholds developed by the Department of Energy (DOE) to assess the appropriateness of uncosted carryover balances. We used this data to analyze uncosted and uncommitted uncosted balances at the end of each fiscal year, compare uncosted and uncommitted uncosted balances against the thresholds, and assess individual DNN programs whose annual uncommitted uncosted balances frequently exceeded acceptable thresholds.

We conducted a reliability assessment of the system that generated this data and interviewed knowledgeable officials from NNSA's Office of Planning, Programming, Budgeting, and Evaluation on the reliability of the data, including issues such as data entry, access, quality control procedures, and the accuracy and completeness of the data. In several instances, we found minor discrepancies in the financial data provided to us by NNSA, but were able to reconcile and obtain satisfactory explanations for the differences from NNSA officials. Specifically, the scope of our analysis of DNN-wide uncosted and uncommitted uncosted balances included funding for several small DNN program elements that involve shared or transferred funding between DNN and other agency programs. NNSA does not consider these amounts in its semiannual reports to Congress on DNN program uncosted and committed funding. According to NNSA, this resulted in minor differences in the data in our report and in NNSA's reports to Congress. We also reviewed external auditor reports of DOE's consolidated financial statements to identify any potential material weaknesses that could affect the reliability of the data.

We did not identify any material weaknesses in those reports that would raise questions about the reliability of the data during the timeframe of our review. We determined that, overall, the data provided to us were sufficiently reliable for the purposes of this review.

To assess the financial contributions to the DNN programs made by foreign donor governments, we analyzed data provided in the most recent DOE report to Congress on the receipt and utilization of international contributions for nonproliferation and threat reduction work. We analyzed these contributions to the four programs authorized by Congress to receive such contributions over the most recent 5-year period of available data—fiscal years 2006 through 2010—to align with the timeframe of our analysis of DNN program uncosted balances. We analyzed the contribution data by DNN programs receiving the funding and the countries providing the contributions. In addition, using DOE financial data, we compared the foreign contributions to each program against the amount of funding from annual appropriations acts allocated to each program. Regarding cost sharing by host governments in countries where DNN activities are implemented, NNSA officials provided us with data estimating the dollar amount of foreign cost sharing for relevant programs, and provided us with examples of cost-sharing activity. We interviewed NNSA officials on the policies, methods, and systems for collecting, estimating, and maintaining foreign cost-sharing information. NNSA did not have documentation to support the validity or reliability of these estimates. We included the cost-sharing estimates to illustrate that DNN programs are attempting to measure the level of financial assistance by recipient governments, but we noted that these figures were not audited and that the NNSA faces difficulties in developing valid and reliable foreign cost-sharing estimates. We did not adjust any dollar figures in this report for inflation.

To assess the effectiveness of DNN performance measures, we evaluated the DNN program performance measures presented by NNSA in its annual budget requests to Congress from fiscal years 2006 through 2010. For each DNN program, we assessed the description of each program performance measure in each fiscal year to assess how the measures have changed over time. To further analyze consistency in these measures, for each fiscal year we compared the description of each performance measure in the budget requests against the measures described in the DOE annual performance reports produced at the end of each fiscal year. For fiscal year 2010, we also compared the annual performance targets for the DNN programs as proposed in the budget request with the targets and actual accomplishments reported in the

performance report for fiscal year 2010. Furthermore, we evaluated the DNN performance measures against criteria we have developed in previous reports which identify key characteristics and attributes of effective performance measures. We interviewed NNSA officials on some of the DNN performance measures, including measures used by the Nonproliferation and Verification R&D, Global Threat Reduction Initiative, Material Protection, Control, and Accounting, and Global Initiatives for Proliferation Prevention programs.

To assess the effectiveness of interagency strategies and plans for coordinating NNSA and other agency nuclear nonproliferation programs, especially those working to prevent and detect nuclear smuggling overseas, we reviewed relevant interagency strategies and coordinating guidance. These documents included the Global Nuclear Detection Architecture Strategic Plan 2010 produced jointly by the Departments of Homeland Security (DHS), Defense, State, and Justice, DOE, the intelligence community, and the Nuclear Regulatory Commission, a 2006 strategic plan produced by the Department of State for interagency coordination of U.S. government nuclear detection assistance overseas, and 2005 implementation guidelines issued by the National Security Council for international nuclear and radiological border security efforts. We evaluated these strategies against characteristics and attributes of effective national strategies for complex interagency undertakings that we developed previously. We also reviewed findings and recommendations in our prior reports on programs involved in combating nuclear smuggling and evaluated whether current strategic plans and coordinating guidance have addressed relevant findings or recommendations in these reports. To assess coordination between NNSA and other agency nonproliferation programs, we focused on those programs across the federal government that play a role in preventing and detecting nuclear smuggling overseas. By reviewing agency documentation—such as descriptions of programs in NNSA, State, DHS, and Department of Defense budget requests and in the “Joint Annual Interagency Review of the Global Nuclear Detection Architecture” produced by the interagency partners responsible for the GNDA Strategic Plan, as coordinated by DNDO—and interviewing agency officials, we identified 21 programs across five federal government agencies that are involved in preventing and detecting smuggling or illicit transfers of nuclear materials and related sensitive technologies overseas for further evaluation. These included programs that (1) conduct R&D on radiation detection technologies; (2) deploy radiation detection equipment along foreign borders and points of transit; (3) train and equip foreign customs and border security officials; (4) assist foreign governments in the development of export control systems;

(5) enhance foreign antismuggling law enforcement and prosecutorial capabilities; and (6) analyze potential foreign nuclear smuggling cases and incidents. These programs we selected do not represent the total universe of federal programs involved in this area, nor does our list represent a statistically representative sample of the total U.S. government effort in this area. To conduct our assessment of coordination in this area, we submitted a standard set or questions to and/or interviewed officials representing the 21 programs we identified on a range of issues pertaining to their programs, including scope of program missions and activities, types of interactions with other federal programs, and their views on the coordination and integration of similar programs across agencies. We used the responses to our questions and information from our interviews with officials from these agencies to evaluate similarities in missions, functions, and activities between programs, and obtain official perspectives on the effectiveness of coordinating mechanisms and guidance.

We conducted this performance audit from January 2011 to December 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence, to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Previous GAO Reports Assessing DOE and NNSA Nuclear Nonproliferation Programs

For over a decade, we have evaluated the implementation and execution of Department of Energy (DOE) and National Nuclear Security Administration (NNSA) nuclear nonproliferation programs. The following is a list of selected products on these programs.

For more information on the Global Threat Reduction Initiative, see:

Nuclear Nonproliferation: National Nuclear Security Administration Has Improved the Security of Reactors in its Global Research Reactor Program, but Action Is Needed to Address Remaining Concerns. GAO-09-949. Washington, D.C.: Sept. 17, 2009.

Nuclear Nonproliferation: DOE's International Radiological Threat Reduction Program Needs to Focus Future Efforts on Securing the Highest Priority Radiological Sources. GAO-07-282. Washington, D.C.: Jan. 31, 2007.

Nuclear Nonproliferation: DOE Needs to Take Action to Further Reduce the Use of Weapons-Usable Uranium in Civilian Research Reactors. GAO-04-807. Washington, D.C.: July 30, 2004

For more information on the Nonproliferation and Verification R&D program, see:

Nonproliferation R&D: NNSA's Program Develops Successful Technologies, but Project Management Can Be Strengthened. GAO-02-904. Washington, D.C.: Aug. 23, 2002.

For information on NNSA's WMD scientist redirection programs, see:

Nuclear Nonproliferation: DOE's Program to Assist Weapons Scientists in Russia and Other Countries Needs to Be Reassessed. GAO-08-189. Washington, D.C.: Dec. 12, 2007.

Nuclear Nonproliferation: DOE's Efforts to Assist Weapons Scientists in Russia's Nuclear Cities Face Challenges. GAO-01-429. Washington, D.C.: May 3, 2001.

Nuclear Nonproliferation: Concerns With DOE's Efforts to Reduce the Risks Posed by Russia's Unemployed Weapons Scientists. GAO/RCED-99-54. Washington, D.C.: Feb. 19, 1999.

For information on the nuclear Material Protection, Control, and Accounting program, see:

Nuclear Nonproliferation: Comprehensive U.S. Planning and Better Foreign Cooperation Needed to Secure Vulnerable Nuclear Materials Worldwide. GAO-11-227. Washington, D.C.: Dec. 15, 2010.

Nuclear Nonproliferation: Progress Made in Improving Security at Russian Nuclear Sites, but the Long-term Sustainability of U.S.-Funded Security Upgrades Is Uncertain. GAO-07-404. Washington, D.C.: Feb. 28, 2007.

For information on the Second Line of Defense Core Program and Megaports Initiative, see:

Combating Nuclear Smuggling: Corruption, Maintenance, and Coordination Problems Challenge U.S. Efforts to Provide Radiation Detection Equipment to Other Countries. GAO-06-311. Washington, D.C.: Mar. 14, 2006.

Preventing Nuclear Smuggling: DOE Has Made Limited Progress in Installing Radiation Detection Equipment at Highest Priority Foreign Seaports. GAO-05-375. Washington, D.C.: Mar. 31, 2005.

For more information on the U.S. plutonium disposition effort, see:

Nuclear Nonproliferation: DOE Needs to Address Uncertainties with and Strengthen Independent Safety Oversight of Its Plutonium Disposition Program. GAO-10-378. Washington, D.C.: Mar. 26, 2010.

For more information on the Elimination of Weapons-Grade Plutonium Production program, see:

Nuclear Nonproliferation: DOE's Effort to Close Russia's Plutonium Production Reactors Faces Challenges, and Final Shutdown Is Uncertain. GAO-04-662. Washington, D.C.: June 4, 2004.

Appendix III: Foreign Contributions Received by DNN Programs, by Program, from Fiscal Years 2006 through 2010

Dollars in thousands

Program and country contributing	Fiscal year 2006 total foreign contributions received	Fiscal year 2007 total foreign contributions received	Fiscal year 2008 total foreign contributions received	Fiscal year 2009 total foreign contributions received	Fiscal year 2010 total foreign contributions received	Total, fiscal years 2006-2010
International Nuclear Materials Protection and Cooperation						
Canada	$0.0	$4,418.8	$0.0	$4,067.1	$0.0	**$8,485.9**
Finland	$0.0	$0.0	$0.0	$0.0	$308.8	**$308.8**
New Zealand	$0.0	$497.2	$0.0	$387.0	$0.0	**$884.2**
Norway	$0.0	$0.0	$0.0	$837.6	$0.0	**$837.6**
South Korea	$0.0	$0.0	$0.0	$300.0	$250.0	**$550.0**
United Kingdom	$0.0	$0.0	$0.0	$0.0	$140.0	**$140.0**
Subtotal	**$0.0**	**$4,916.0**	**$0.0**	**$5,591.7**	**$698.8**	**$11,206.5**
Elimination of Weapons-Grade Plutonium Production						
Finland	$628.0	$0.0	$0.0	$0.0	$0.0	**$628.0**
Netherlands	$1,190.2	$0.0	$0.0	$0.0	$0.0	**$1,190.2**
New Zealand	$308.0	$0.0	$0.0	$0.0	$0.0	**$308.0**
South Korea	$250.0	$250.0	$250.0	$0.0	$0.0	**$750.0**
United Kingdom	$10,300.0	$5,148.0	$0.0	$0.0	$0.0	**$15,448.0**
Subtotal	**$12,676.2**	**$5,398.0**	**$250.0**	**$0.0**	**$0.0**	**$18,324.2**
Global Threat Reduction Initiative						
Canada	$0.0	$1,738.8	$1,975.4	$3,918.0	$0.0	**$7,632.2**
South Korea	$0.0	$0.0	$250.0	$0.0	$0.0	**$250.0**
United Kingdom	$0.0	$0.0	$3,998.0	$5,722.2	$0.0	**$9,720.2**
Subtotal	**$0.0**	**$1,738.8**	**$6,223.4**	**$9,640.2**	**$0.0**	**$17,602.4**
Total	**$12,676.2**	**$12,052.8**	**$6,473.4**	**$15,231.9**	**$698.8**	**$47,133.1**

Source: GAO analysis of NNSA data.

Note: All data and calculations are in nominal dollars.

Appendix IV: Foreign Contributions Received by DNN Programs, by Country, from Fiscal Years 2006 through 2010

Dollars in thousands

Donating Country	DNN program receiving contribution	Fiscal year 2006 foreign contributions received	Fiscal year 2007 foreign contributions received	Fiscal year 2008 foreign contributions received	Fiscal year 2009 foreign contributions received	Fiscal year 2010 foreign contributions received	Total, fiscal years 2006-2010
Canada	INMPC	$0.0	$4,418.8	$0.0	$4,067.1	$0.0	**$8,485.9**
	GTRI	$0.0	$1,738.8	$1,975.4	$3,918.0	$0.0	**$7,632.2**
	Subtotal	**$0.0**	**$6,157.6**	**$1,975.4**	**$7,985.1**	**$0.0**	**$16,118.1**
Finland	INMPC	$0.0	$0.0	$0.0	$0.0	$308.8	**$308.8**
	EWGPP	$628.0	$0.0	$0.0	$0.0	$0.0	**$628.0**
	Subtotal	**$628.0**	**$0.0**	**$0.0**	**$0.0**	**$308.8**	**$936.8**
Netherlands	EWGPP	$1,190.2	$0.0	$0.0	$0.0	$0.0	**$1,190.2**
	Subtotal	**$1,190.2**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$1,190.2**
New Zealand	INMPC	$0.0	$497.2	$0.0	$387.0	$0.0	**$884.2**
	EWGPP	$308.0	$0.0	$0.0	$0.0	$0.0	**$308.0**
	Subtotal	**$308.0**	**$497.2**	**$0.0**	**$387.0**	**$0.0**	**$1,192.2**
Norway	INMPC	$0.0	$0.0	$0.0	$837.6	$0.0	**$837.6**
	Subtotal	**$0.0**	**$0.0**	**$0.0**	**$837.6**	**$0.0**	**$837.6**
South Korea	INMPC	$0.0	$0.0	$0.0	$300.0	$250.0	**$550.0**
	EWGPP	$250.0	$250.0	$250.0	$0.0	$0.0	**$750.0**
	GTRI	$0.0	$0.0	$250.0	$0.0	$0.0	**$250.0**
	Subtotal	**$250.0**	**$250.0**	**$500.0**	**$300.0**	**$250.0**	**$1,550.0**
United Kingdom	INMPC	$0.0	$0.0	$0.0	$0.0	$140.0	**$140.0**
	EWGPP	$10,300.0	$5,148.0	$0.0	$0.0	$0.0	**$15,448.0**
	GTRI	$0.0	$0.0	$3,998.0	$5,722.2	$0.0	**$9,720.2**
	Subtotal	**$10,300.0**	**$5,148.0**	**$3,998.0**	**$5,722.2**	**$140.0**	**$25,308.2**
Total		**$12,676.2**	**$12,052.8**	**$6,473.4**	**$15,231.9**	**$698.8**	**$47,133.1**

Source: GAO analysis of NNSA data.

Note: All data and calculations are in nominal dollars.

Appendix V: Foreign Contributions to DNN Programs Compared to Funding from Appropriations Acts, Fiscal Years 2006-2010

Dollars in thousands

	Fiscal year 2006	Fiscal year 2007	Fiscal year 2008	Fiscal year 2009	Fiscal year 2010	Total, fiscal years 2006-2010
International Nuclear Materials Protection and Cooperation						
Total funding from annual appropriations acts directed to the program[a]	$422,730	$592,730	$624,482	$452,232	$572,050	$2,664,224
Foreign contributions	$0.0	$4,916.0	$0.0	$5,591.7	$698.8	$11,206.5
Foreign contributions as a percentage of total funding directed to program from appropriations	**0.0%**	**0.8%**	**0.0%**	**1.2%**	**0.1%**	**0.4%**
Elimination of Weapons-Grade Plutonium Production						
Total funding from annual appropriations acts directed to the program[a]	$174,423	$225,754	$179,941	$141,299	$24,507	$745,924
Foreign contributions	$12,676.2	$5,398.0	$250.0	$0.0	$0.0	$18,324.2
Foreign contributions as a percentage of total funding directed to program from appropriations	**7.3%**	**2.4%**	**0.1%**	**0.0%**	**0.0%**	**2.5%**
Global Threat Reduction Initiative						
Total funding from annual appropriations acts directed to the program[a]	$96,995	$129,495	$193,225	$393,208	$333,500	$1,146,423
Foreign contributions	$0.0	$1,738.8	$6,223.4	$9,640.2	$0.0	$17,602.4
Foreign contributions as a percentage of total funding directed to program from appropriations	**0.0%**	**1.3%**	**3.2%**	**2.5%**	**0.0%**	**1.5%**
Russian Plutonium Disposition Program						
Total funding from annual appropriations acts directed to the program[a]	$33,427	$0	-$207,000	-$27	$1,000	-$172,600
Foreign contributions	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Foreign contributions as a percentage of total funding directed to program from appropriations	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Dollars in thousands

	Fiscal year 2006	Fiscal year 2007	Fiscal year 2008	Fiscal year 2009	Fiscal year 2010	Total, fiscal years 2006-2010
Total						
Total funding from annual appropriations acts directed to all four programs[a]	$727,575	$947,979	$790,648	$986,712	$931,057	$4,383,971
Total foreign contributions to all four programs	$12,676.2	$12,052.8	$6,473.4	$15,231.9	$698.8	$47,133.1
Total foreign contributions as a percentage of total funding directed to programs from appropriations, all four programs	1.7%	1.3%	0.8%	1.5%	0.1%	1.1%

Source: GAO analysis of NNSA data.

Note: All data and calculations are in nominal dollars.

[a]Amounts are adjusted new obligational authority to account for changes to original DNN annual appropriations, including across the board rescissions, rescission of prior year unobligated balances, transfers to other NNSA accounts, supplemental appropriations, and other structural changes affecting the funds available to the programs to obligate and cost.

Appendix VI: Limitations in Key Attributes of Defense Nuclear Nonproliferation Program Performance Measures

We have found that agencies successfully measure performance when they use measures that satisfy four general characteristics—(1) they demonstrate results, (2) are limited to the vital few, (3) cover multiple program priorities, and (4) provide useful information for decision making.[1] To assess whether program performance measures satisfy these general characteristics, we developed nine key specific attributes of successful measures, including whether the measures are clear, measurable, reliable, objective, and balanced.[2] For more information on the attributes of successful performance measures, see table 8.[3]

Table 8: Key Attributes of Successful Performance Measures

Attribute	Definition	Potentially adverse consequences of not meeting attribute
Linkage	Measure is aligned with division and agencywide goals and mission and clearly communicated throughout the organization.	Behaviors and incentives created by measures do not support achieving division or agencywide goals or mission.
Clarity	Measure is clearly stated and the name and definition are consistent with the methodology used to calculate it.	Data could be confusing and misleading to users.
Measurable target	Measure has a numerical goal.	Cannot tell whether performance is meeting expectations.
Objectivity	Measure is reasonably free from significant bias or manipulation.	Performance assessments may be systematically over- or understated.
Reliability	Measure produces the same result under similar conditions.	Reported performance data are inconsistent and add uncertainty.
Core program activities	Measures cover the activities that an entity is expected to perform to support the intent of the program.	Not enough information available in core program areas to managers and stakeholders.
Limited overlap	Measure should provide new information beyond that provided by other measures.	Manager may have to sort through redundant, costly information that does not add value.

[1]GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-118 (Washington, D.C.: June 1, 1996).

[2]The four characteristics are overarching, thus there is not necessarily a direct link between any one attribute and any one characteristic.

[3]GAO, *Tax Administration: IRS Needs to Further Refine Its Tax Filing Season Performance Measures*, GAO-03-143 (Washington, D.C.: Nov. 22, 2002).

Attribute	Definition	Potentially adverse consequences of not meeting attribute
Balance	Balance exists when a suite of measures ensures that an organization's various priorities are covered.	Lack of balance could create skewed incentives when measures over-emphasize some goals.
Governmentwide priorities	Each measure should cover a priority such as quality, timeliness, and cost of service.	A program's overall success is at risk if all priorities are not addressed.

Source: GAO.

Some National Nuclear Security Administration (NNSA) Defense Nuclear Nonproliferation (DNN) program performance measures we reviewed did not have key attributes of successful performance measures, including some DNN performance measures that were potentially unclear, of questionable reliability, or lacking sufficient balance.

DNN Performance Measures Having Potential Clarity Limitations

We identified clarity concerns in the performance measures for the following two DNN programs:

- The Nonproliferation and Verification Research and Development (R&D) program measures the cumulative progress in demonstrating the next generation of technologies and methods to detect uranium-235 production, plutonium production, and special nuclear material movement. For each of these measures, progress is judged against unspecified "baseline criteria" and milestones published in an "FY 2006 R&D Requirements Document." NNSA officials told us that the R&D requirements document is classified. Nevertheless, because these measures link performance to a secondary set of criteria that are not clearly expressed, it is difficult for a third party who may be unfamiliar with the classified requirements to interpret the measure and discern whether the criteria provide an appropriate, sufficient, and up-to-date basis for tracking program progress.
- For the nuclear Material Protection, Control, and Accounting (MPC&A) program, NNSA measures progress by the cumulative number of buildings with weapon-usable nuclear materials in Russia and the former Soviet states with completed MPC&A upgrades.[4] Through

[4]NNSA conducts MPC&A security upgrades in two phases: Rapid upgrades include improvements such as bricking up windows where material is stored; installing strengthened doors, locks, and nuclear container seals; and establishing controlled access areas. Comprehensive upgrades include electronic systems to detect intruders, central alarm stations, and computerized nuclear material accounting systems.

fiscal year 2009, the program also gauged progress on the cumulative number of Russian nuclear warhead sites with completed MPC&A upgrades, but no longer uses this measure because, according to NNSA, all 73 warhead sites in the scope of work received completed MPC&A upgrades as of December 2008. We identified several concerns with both of these measures.

- First, one of the measures focuses on the number of buildings with nuclear material having completed MPC&A upgrades, rather than the amounts of materials secured. This measure is less than optimal because it does not provide information about the quantities of materials being secured by the program. NNSA officials agreed that this performance measure is less than ideal to track material security progress in Russia, but they told us that the Russian government's unwillingness to divulge the amount of material located in each building under the program's scope prevented the program from developing a more refined measure.

- Second, in our 2007 report on the MPC&A program, we reported that DOE's measure for reporting progress on the number of buildings "secured" by the MPC&A program was a potentially misleading indicator of security at those facilities, because a building was considered secure after only "rapid" rather than "comprehensive" security upgrades had been put in place.[5] NNSA subsequently revised its performance measure to track the number of buildings with completed MPC&A upgrades. According to NNSA officials, the program periodically conducts reviews of completed sites to assess levels of residual risk and other issues. In some cases, additional upgrades may be pursued if warranted by the new information. In those cases, however, the MPC&A program is not adjusting the total number of buildings completed to account for any new upgrade work that may be pursued. In the view of NNSA officials, subtracting the number of buildings that will receive MPC&A equipment retrofits or additional upgrades from the total number of "completed" buildings would be impractical, and that to redevelop the measure to only

[5]See GAO, *Nuclear Nonproliferation: Progress Made in Improving Security at Russian Nuclear Sites, but the Long-term Sustainability of U.S.-Funded Security Upgrades Is Uncertain*, GAO-07-404 (Washington, D.C.: Feb. 28, 2007).

include completed buildings where there is no MPC&A work taking place would be potentially confusing to external reviewers familiar with the program.

- Third, the completed MPC&A upgrades measure may also be misleading and create a false sense of security to the extent decision makers interpret this to mean that a nuclear material or warhead site is secure and further U.S. assistance is no longer required. However, as we reported in our December 2010 report, the MPC&A program has a significant effort under way to establish practices and procedures to ensure that security improvements at Russian nuclear material and warhead storage sites will be effectively sustained over time by Russia without U.S. assistance. This effort faces a number of challenges and may require continued U.S. support to 2018. NNSA officials told us they believed that nuclear security is a dynamic, ongoing process that has to keep up with an evolving threat, and may never be finished.

- Fourth, the MPC&A performance measure for nuclear material security in Russia may produce a false sense of security because it does not acknowledge that there are several significant sites in Russia believed to have large amounts of nuclear weapon-usable materials where the program is not planning to pursue MPC&A upgrades. As we noted in our December 2010 report, the Russian government has refused to include in the scope of MPC&A cooperation with NNSA three major facilities in Russia responsible for production of nuclear weapons material. NNSA has not been provided access to and is not anticipating conducting future MPC&A work at those locations.

DNN Performance Measures Having Potential Reliability Limitations

We identified reliability concerns in the performance measures for the following two DNN programs:

- For the disposition of surplus U.S. highly enriched uranium (HEU), under the U.S. Surplus Materials Disposition program, NNSA's performance measure tracks progress in the cumulative amount of surplus HEU down-blended or shipped for down-blending to LEU

each year.[6] The measure has an endpoint target of down-blending 217 metric tons of HEU that the United States has declared surplus to defense needs by 2050. The program has set annual performance targets and is measuring annual progress toward this goal. Through fiscal year 2010, the program had completed down-blending a cumulative total of 133 metric tons. However, we identified potential reliability concerns with this measure. NNSA officials told us that the 2050 date was an arbitrary placeholder because they could not predict at what rate nuclear weapons would be dismantled and the corresponding rate at which additional HEU will be available for dispositioning. The program has adopted a conservative time frame for tracking performance in this mission area due to this uncertainty, even though NNSA officials told us that this work could be completed sooner, depending on the rate at which HEU is made available to the program from nuclear weapons needs.

- For the Megaports Initiative, NNSA developed a performance measure to track the number of megaports sites where there is host-country cost sharing and the estimated dollar amount of such cost sharing. However, NNSA does not systematically track and verify foreign cost sharing for the Megaports Initiative or other DNN programs. An NNSA official told us that the Megaports Initiative cost-sharing values are estimates and are not validated or audited. For these reasons, the cost-sharing measure for the Megaports Initiative is unreliable. NNSA officials told us that this measure was difficult to quantify, and told us that it would be eliminated for fiscal year 2012 as a result of a DOE "performance measures streamlining initiative."

DNN Performance Measures Having Potential Balance Limitations

We identified concerns as to whether performance measures for two DNN programs are sufficiently balanced:

- NNSA has developed one performance measure—the cumulative number of MPC&A regulations in the development phase in Russia and other countries of the former Soviet Union—to track the long-term sustainability of MPC&A upgrades that NNSA has provided to these countries. According to NNSA officials, the MPC&A program's sustainability work is very important to ensure that Russia can

[6]Downblending is the process of converting HEU to LEU by mixing it with other forms of uranium, such as natural or depleted uranium, to dilute and reduce the enrichment level of uranium-235 thereby rendering the material less suitable for weapons purposes.

effectively assume long-term responsibility for maintaining the U.S.-provided systems. Regulations are important in this regard because they establish legal requirements for MPC&A activities for relevant ministries, agencies, services, operating organizations, and facilities in foreign countries. By working with other countries, such as Russia, to develop their MPC&A regulations, NNSA aims to create incentives for effective MPC&A procedures and sanctions for noncompliance in order to foster a strong MPC&A culture and sustain U.S.-funded security upgrades.

However, we have some concerns with the performance measure NNSA uses to gauge progress in the MPC&A sustainability. First, while development of regulations is an important component of effective and sustainable MPC&A systems, according to NNSA officials, the extent to which and how effectively these regulations are implemented by the facilities responsible for handling and managing nuclear materials is unclear. Second, the measure implies that the rate at which MPC&A regulations are developed in Russia alone provides a sufficient basis for judging whether Russia and other host countries are adequately prepared and equipped to sustain MPC&A systems on their own independent of U.S. support. However, as we reported in December 2010, transitioning responsibility to Russia for sustaining MPC&A improvements over the long term has been a complex process, pursued at both the national and site levels in Russia through multiple project areas, including but not limited to development of MPC&A regulations.[7]

- In 2008 NNSA launched the Next Generation Safeguards Initiative (NGSI), a multiyear program to develop the policies, concepts, technologies, expertise, and infrastructure necessary to strengthen and sustain the international safeguards system as it evolves to meet new challenges over the next 25 years. According to NNSA officials, NGSI is considered an important, high-priority undertaking intended to address a range of emerging challenges to the international

[7]At the national level in Russia, NNSA is working to enhance infrastructure to sustain MPC&A systems for nuclear materials in 10 ongoing project areas, including enhancement of Russian nuclear security culture, developing Russian regulations for MPC&A operations, and strengthening Russian inspection and oversight capabilities. NNSA is also working to develop MPC&A sustainability practices and procedures at individual Russian nuclear material sites in seven sustainability areas, such as developing an effective MPC&A management structure at the site that plans, implements, tests, and evaluates the site's MPC&A systems.

safeguards system. Specifically, NGSI is addressing multiple objectives under five long-term safeguards goals, including (1) supporting U.S. safeguards policy development and conducting outreach bilaterally and multilaterally to strengthen the international safeguards system; (2) developing advanced safeguards concepts, approaches, and assessment methodologies; (3) developing safeguards technologies and methods to optimize effectiveness of safeguards implementation; (4) revitalizing the international safeguards human capital base; and (5) developing national safeguards infrastructure in countries that have nuclear power programs or plans for nuclear power.

NNSA has used one performance measure to track safeguards-related assistance to other countries under NGSI: the number of safeguards systems deployed and used in other countries to address specific safeguards deficiencies. However, NNSA does not have a broader set of public performance measures to monitor and provide information to Congress on progress toward the longer-term safeguards-related goals of NGSI, such as progress in addressing human capital issues associated with the international safeguards system.

In both of these cases, we question whether measuring performance in a single area of activity provides a sufficient basis for gauging the progress that each effort is making overall toward multiple, diverse objectives. However, NNSA officials told us that DNN programs are allowed only a limited number of representative published performance metrics by the Office of Management and Budget. Officials representing both programs told us that these efforts have been allotted only one performance measure each. These officials noted that the programs maintain a broader set of internal-use measures that are not provided to Congress or the public which the programs use to track and assess progress made under both efforts.

Appendix VII: DNN Performance Measures, Fiscal Years 2006 to 2010

We examined the performance measures the National Nuclear Security Administration (NNSA) provided to Congress in its annual budget requests from fiscal years 2006 through 2010 for its Defense Nuclear Nonproliferation (DNN) programs, and found that the number and nature of some DNN program performance measures changed over this period making it difficult to evaluate program performance consistently over time. For instance, in its fiscal year 2006 congressional budget request, NNSA included 32 measures to track the performance of its nonproliferation programs, but in its fiscal year 2010 budget request NNSA included 26 measures. For descriptions of the DNN program performance measures, by nonproliferation program office and year, from fiscal years 2006 through 2010, see table 9.

Based on our review of the performance measures presented in NNSA's annual budget requests, we identified several ways in which DNN performance measures changed over the period we reviewed, including:

- Some performance measures NNSA used in earlier years were no longer relevant by fiscal year 2010 because work was reported by NNSA as being completed—such as efforts by the nuclear Material Protection, Control, and Accounting (MPC&A) program to secure nuclear warheads in Russia, or work by the Elimination of Weapons-Grade Plutonium Production (EWGPP) program to facilitate the shutdown of plutonium production reactors in Russia. In other cases, performance measures developed in earlier years became irrelevant because, according to NNSA officials, anticipated work was never initiated, such as assisting Russia in constructing a mixed oxide fuel fabrication facility for plutonium disposition.

- Some measures used by NNSA during this time were dropped, while some new measures were established. For example, from fiscal years 2006 through 2009, the Nonproliferation and International Security program had a performance measure tracking the number of international and domestic experts trained in nuclear nonproliferation issues. In fiscal year 2010, this measure was dropped. Conversely, in fiscal year 2010 NNSA established two new measures to gauge progress by the Nonproliferation and International Security program in assisting countries with export controls and nuclear safeguards, which had not been used in prior years to assess program performance.

- Some program performance measures used by NNSA in earlier years were consolidated into new performance measures, while some single measures were divided into several new measures. For example, in

fiscal year 2006, the Nonproliferation and International Security program maintained three separate measures to track performance in U.S. monitoring of Russian highly enriched uranium (HEU) downblending. In fiscal year 2007, these three measures were consolidated into a single measure—the cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement.[1] In fiscal year 2010 this single measure was augmented with the addition of another—the annual number of special monitoring visits to Russian downblending facilities to confirm the elimination of Russian HEU under the agreement. In fiscal year 2006, the Nonproliferation and Verification R&D program used a single measure—the annual number of advanced radiation and remote sensing technologies developed—to assess progress in the program's proliferation detection mission. However, in subsequent years, this performance measure was divided into three separate measures to track detection technology development in three specific areas: detection of uranium-235 production, detection of plutonium production, and detection of special nuclear material movement.

- The descriptions of some program measures also changed over this time, which resulted in program progress being measured in new or different ways. For example, the GTRI program changed its measure from tracking the cumulative number of HEU-fueled research and test reactors converted to low-enriched uranium (LEU) during fiscal years 2006-2008, to the cumulative number of HEU reactors converted or shut down in fiscal years 2009 and 2010. In addition, the International Nuclear Materials Protection and Cooperation (INMPC) program stopped monitoring the cumulative percentage of weapon-usable material being secured after fiscal year 2006, switched to measuring the cumulative number of buildings with weapon-usable material secured in fiscal years 2007 and 2008, and then switched to evaluating the cumulative number of buildings containing weapon-

[1]In 1993, the United States and Russia signed a government-to-government agreement to downblend 500 metric tons of HEU from Russian nuclear warheads into LEU used to fabricate fuel for commercial nuclear power plants. Under the agreement, the HEU would be converted in Russia and purchased by the United States. The United States Enrichment Corporation serves as U.S. executive agent. NNSA implements transparency measures under the agreement to, among other things, monitor Russian HEU downblending.

usable material with completed MPC&A upgrades in fiscal years 2009 and 2010.

NNSA officials told us they believed that the DNN performance measures should not be static and should be adjusted to reflect changes in circumstances, such as program reorganizations, and in response to external recommendations. For instance, NNSA officials told us that the Office of Nonproliferation and International Security undertook a review of its program performance measurements in 2009 at the request of the Office of Management of Budget (OMB). Based on the OMB recommendations the Nonproliferation and International Security program eliminated the performance measure for tracking the number of foreign nationals trained on nonproliferation issues, since that measure did not adequately capture the value of the training delivered.

Furthermore, after each fiscal year, in annual performance reports, the Department of Energy (DOE) assesses performance made by the DNN programs meeting annual targets under each measure. From fiscal year 2006 through 2009, we found over 30 instances in which DNN program performance measures identified in the congressional budget request for a fiscal year were different from the measures assessed in the DOE annual performance reports for that fiscal year. In some cases, we determined that these differences were relatively minor and involved wording or terminology changes. In other instances, we found the differences were more significant. For instance, the fiscal year 2007 budget request included two measures for the Global Threat Reduction Initiative's (GTRI) recovery of nuclear materials in foreign locations: the cumulative kilograms of HEU fresh and/or spent fuel from Soviet-supplied research reactors repatriated to Russia, and the cumulative number of fuel assemblies containing U.S.-origin spent fuel returned from foreign research reactors. However, neither of these measures appears in the fiscal year 2007 performance report, and they were replaced with a new single measure: the cumulative kilograms of nuclear material (HEU and plutonium) removed or disposed.

In other cases, measures included in the budget requests for some programs were missing and not updated with a new measure in the performance reports. For example, in the fiscal year 2009 budget request, NNSA indicated that one of the Nonproliferation and International Security program performance measures for the year would be the cumulative number of displaced weapons experts in Russia and the former Soviet Union employed in Global Initiatives for Proliferation Prevention (GIPP) program grants or private sector jobs. However, the DOE performance

report for fiscal year 2009 did not assess program performance against this measure at all. As a result, in some cases the measures NNSA identified to Congress for assessing DNN program performance during a fiscal year were not those against which actual progress was assessed at the end of the fiscal year.

NNSA officials stated that for any given fiscal year there can be differences between the performance measures presented in the budget requests to Congress and evaluated in the DOE end of fiscal year performance reports. However, these officials noted that performance measures identified in a budget request can be developed 9 months prior to the beginning of the fiscal year, with the final performance report issued several months after the end of the fiscal year, or a period of 24 months which may pass from the time the performance measures are developed until performance is evaluated. NNSA officials noted that during this time, DNN programs can be reorganized, be reevaluated, or experience other changes that result in differences between the measures in the budget request and the final performance reports. However, the end of fiscal year performance reports we reviewed did not include explanations in those instances where the performance measures changed from the measures proposed in the budget requests.

Table 9: Defense Nuclear Nonproliferation Program Performance Measures, from Fiscal Years 2006 through 2010, As Presented in Annual Budget Requests

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Global Threat Reduction Initiative				
Cumulative number of targeted research/test reactors converted from highly enriched uranium (HEU) to low-enriched uranium (LEU) fuel	Cumulative number of targeted research/test reactors converted from HEU to LEU fuel[a]	Cumulative HEU reactors converted[a]	Cumulative HEU reactors converted or shutdown	Cumulative number of HEU reactors converted or verified as shutdown prior to conversion
Cumulative kilograms of HEU fresh and/or spent fuel from Soviet-supplied research reactors repatriated to Russia	Cumulative kilograms of HEU fresh and/or spent fuel from Soviet-supplied research reactors repatriated to Russia[a]	Cumulative kilograms of nuclear material (HEU and plutonium) removed or disposed	Cumulative kilograms of nuclear material (HEU and plutonium) removed or disposed[a]	Cumulative number of kilograms of vulnerable nuclear material (HEU and plutonium) removed or disposed
Cumulative number of fuel assemblies containing U.S.-origin spent fuel returned from foreign research reactors	Cumulative number of fuel assemblies containing U.S.-origin spent fuel returned from foreign research reactors[a]			
Cumulative number of U.S. excess sealed sources recovered	Cumulative number of U.S. excess sealed sources recovered[a]	Cumulative radiological sources removed or disposed	Cumulative U.S. radiological sources removed or disposed	Cumulative number of excess domestic radiological sources removed or disposed
Cumulative number of high priority sites with vulnerable radiological material secured	Cumulative number of high priority sites with vulnerable radiological material secured[a]	Cumulative high priority radiological sites protected	Cumulative high priority international radiological sites protected[a]	Cumulative number of buildings with high priority nuclear and radiological materials secured
Not applicable	Not applicable[b]	Cumulative funds to support threat reduction work contracted directly with the private sector	Cumulative funds to support threat reduction work contracted directly with the private sector[a]	Not applicable

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Nonproliferation and Verification R&D				
Annual number of advanced radiation and remote sensing technologies developed and evaluated through customized tests that challenge and characterize their operating parameters. These advanced technologies are intended to improve U.S. capability to detect the early stages of nuclear weapon programs[a]	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect uranium-235 enrichment activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect uranium-235 enrichment activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect uranium-235 production activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect uranium-235 production activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")
	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect plutonium reprocessing activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect plutonium reprocessing activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect plutonium production activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect plutonium production activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")
	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect special nuclear material movement. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect special nuclear material movement. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect special nuclear material movement. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")	Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect special nuclear material movement. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document")

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Annual number of advanced technologies and operational systems (e.g. satellite payloads and seismic stations calibration data sets) delivered to U.S. national security users which improves the accuracy and sensitivity of nuclear weapons test monitoring[a]	Annual index that summarizes the status of all NNSA nuclear explosion monitoring R&D deliveries that improve the nation's ability to detect nuclear explosions	Annual index that summarizes the status of all NNSA nuclear explosion monitoring R&D deliveries that improve the nation's ability to detect nuclear explosions	Annual index that summarizes the status of all NNSA detonation detection R&D deliveries that improve the nation's ability to detect nuclear detonations	Annual index that summarizes the status of all NNSA detonation detection R&D deliveries that improve the nation's ability to detect nuclear detonations
Percentage of research projects for which an independent R&D merit assessment was completed during the second year of effort and again within each subsequent three year period to assess scientific quality and mission relevance	Cumulative percentage of active research projects for which an independent R&D peer assessment of the project's scientific quality and mission relevance has been completed during the second year of effort (and again within each subsequent three year period for those projects found to be of merit)	Cumulative percentage of active research projects for which an independent R&D peer assessment of the project's scientific quality and mission relevance has been completed during the second year of effort (and again within each subsequent three year period for those projects found to be of merit)	Cumulative percentage of active research projects for which an independent R&D merit review of the project's scientific quality and mission relevance has been completed during the second year of effort (and again within each subsequent three year period for those projects found to be of merit)	Cumulative percentage of active research projects for which an independent R&D merit review of the project's scientific quality and mission relevance has been completed during the second year of effort (and again within each subsequent three year period for those projects found to be of merit)
Annual number of professional papers/exchanges presented, each representing science and technology knowledge and U.S. leadership in program areas	Annual number of articles published in peer reviewed professional journals/forums representing leadership in advancing science and technology knowledge	Annual number of articles published in peer reviewed professional journals/forums representing leadership in advancing science and technology knowledge	Annual number of articles published in merit reviewed professional journals/forums representing leadership in advancing science and technology knowledge	Annual number of articles published in merit reviewed professional journals/ forums representing leadership in advancing science and technology knowledge

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Elimination of Weapons-Grade Plutonium Production				
Cumulative percentage of progress towards refurbishing a fossil plant in Seversk facilitating shut down of two weapons-grade plutonium production reactors	Cumulative percentage of progress towards refurbishing a fossil plant in Seversk shutting down two weapons-grade plutonium production reactors	Cumulative percentage of progress towards refurbishing a fossil plant in Seversk shutting down two weapons-grade plutonium production reactors	Cumulative percentage of progress towards refurbishing a fossil plant in Seversk facilitating the shut-down of two weapons-grade plutonium production reactors	Not applicable
Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating shut down of one weapons-grade plutonium production reactor	Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk shutting down one weapons-grade plutonium production reactor	Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk shutting down one weapons-grade plutonium production reactor	Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating the shutdown of one weapons-grade plutonium production reactor	Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating the shut down of one weapons-grade plutonium production reactor
Not applicable	Not applicable	Not applicable	Annual percentage of Russian weapons-grade plutonium production capability eliminated from its 2003 baseline of 1.2 metric tons (MT) per year (0.4 MT per reactor)	Annual percentage of Russian weapons-grade plutonium production capability eliminated from its 2003 baseline of 1.2 MT per year (0.4 MT per reactor per year)
Cumulative actual costs per budgeted cost of work performed at Seversk	Annual costs performance index for Seversk construction as measured by the ratio of budgeted costs of work performed to actual costs of work performed	Annual costs performance index for Seversk construction as measured by the ratio of budgeted costs of work performed to actual costs of work performed	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable[c]	Annual costs performance index for Zheleznogorsk construction as measured by the ratio of budgeted costs of work performed to actual costs of work performed

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Nonproliferation and International Security				
Annual average cost per review of nuclear, chemical, and biological export license applications[a]	Not applicable	Not applicable	Not applicable	Not applicable
Cumulative number of international and domestic experts trained in nuclear nonproliferation since 9/11 (e.g., IAEA inspectors, export control officers, etc.)[a]	Annual number of international and domestic experts (e.g., IAEA inspectors, export control officers, physical protection personnel) trained in nonproliferation to fulfill the President's policy delineated on February 11, 2004 and implement the U.S.-sponsored UN Security Council Resolution 1540 criminalizing proliferation	Annual number of international and domestic experts (e.g., IAEA inspectors, export control officers, physical protection personnel) trained in nonproliferation to fulfill the President's policy delineated on February 11, 2004 and implement the U.S.-sponsored UN Security Council Resolution 1540 criminalizing proliferation	Annual number of international and domestic experts (e.g., IAEA inspectors, export control officers, physical protection personnel) trained in nonproliferation to fulfill the President's policy delineated on February 11, 2004 and implement the U.S.-sponsored UN Security Council Resolution 1540 criminalizing proliferation[a]	Not applicable
Cumulative percentage of progress towards redirecting former Libyan WMD scientists and instituting conformance with Libya's international nonproliferation obligations[a]	Not applicable	Not applicable	Not applicable	Not applicable
Cumulative percentage of progress in development of the next-generation Attribute Measurement System to determine the mass and isotopics of a nuclear warhead, warhead component or fissile material without revealing classified information[a]	Not applicable	Not applicable	Not applicable	Not applicable

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Annual percentage of operation of the Blend-Down Monitoring Systems during the HEU blend-down process[a]	Cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement	Cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement	Cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement	Cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement
Percentage of the year that the on-site Transparency Monitoring Office is staffed at the Ural Electrochemical Integrated Plant[a]				
Annual percentage completed of the 24 annually allowed special monitoring visits to the four Russian HEU-to-LEU processing facilities to monitor conversion of 30 MT per year of HEU to LEU[a]			Not applicable[d]	Annual number of special monitoring visits completed to the four Russian processing facilities that downblend HEU to LEU to monitor and confirm the permanent elimination of 30 MT of Russian HEU from the Russian weapons stockpile under the HEU Purchase Agreement
Annual number of former Soviet weapons scientists, engineers, and technicians engaged[a]	Cumulative number of the Global Initiatives for Proliferation Prevention (GIPP) program target population of displaced Russian and FSU WMD experts who are currently employed in GIPP grants or long-term private sector jobs (and cumulative number who are employed in long-term private sector jobs resulting from GIPP grants)	Cumulative number of the GIPP target population of displaced Russian and FSU WMD experts who are currently employed in GIPP grants or long-term private sector jobs (and cumulative number who are employed in long-term private sector jobs resulting from GIPP grants)	Cumulative number of the GIPP target population of displaced Russian and FSU WMD experts who are currently employed in GIPP grants or long-term private sector jobs (and cumulative number who are employed in long-term private sector jobs resulting from GIPP grants)[a]	Not applicable
Cumulative number of technologies commercialized or businesses created/expanded[a]				
Annual percentage of non-U.S. government (USG) project funding contributions obtained[a]	Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions	Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions	Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions	Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Not applicable[e]	Annual number of technologies transferred to international regimes and other countries to prevent and counter WMD proliferation and nuclear-related terrorism	Annual number of technologies transferred to international regimes and other countries to prevent and counter WMD proliferation and nuclear-related terrorism	Annual number of technologies transferred to international regimes and other countries to prevent and counter WMD proliferation and nuclear-related terrorism[a]	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable[f]	Cumulative number of countries where International Nonproliferation Export Control Program is engaged that have export control systems that meet critical requirements
Not applicable	Not applicable	Not applicable	Not applicable[g]	Annual number of safeguards systems deployed and used in international regimes and other countries that address an identified safeguards deficiency
International Nuclear Materials Protection and Cooperation				
Cumulative number of Russian Navy warhead sites secured[a]	Cumulative number of warhead sites with completed MPC&A upgrades	Cumulative number of warhead sites with completed MPC&A upgrades	Cumulative number of warhead sites with completed MPC&A upgrades	Not applicable
Cumulative number of Russian Strategic Rocket Forces and 12th Main Directorate sites secured[a]				
Cumulative percentage of 600 MTs of weapons-usable nuclear material secured[a]	Cumulative number of buildings with weapons-usable material secured	Cumulative number of buildings with weapons-usable material secured[a]	Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades	Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades
Cumulative cost in millions of dollars per metric ton to complete rapid security upgrades on Russian weapons usable nuclear material	Cumulative cost in millions of dollars per metric ton to complete rapid security upgrades on Russian weapons usable nuclear material[a]	Not applicable	Not applicable	Not applicable

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Not applicable	Not applicable	Not applicable	Cumulative number of MPC&A regulations in the development phase for the Russian Federation and FSU countries	Cumulative number of MPC&A regulations in the development phase for Russia and other FSU countries
Cumulative metric tons of HEU converted to LEU	Cumulative metric tons of HEU converted to LEU	Cumulative metric tons of HEU converted to LEU	Cumulative metric tons of HEU converted to LEU	Cumulative metric tons of HEU converted to LEU
Cumulative number of Second Line of Defense (SLD) sites with nuclear detection equipment installed and cumulative number of megaports completed	Cumulative number of SLD sites with nuclear detection equipment installed and cumulative number of megaports completed	Cumulative number of SLD sites with nuclear detection equipment installed and cumulative number of megaports completed	Cumulative number of SLD sites with nuclear detection equipment installed and cumulative number of megaports completed	Cumulative number of SLD sites with nuclear detection equipment installed and cumulative number of megaports completed
Not applicable	Not applicable	Not applicable[h]	Cumulative number of megaports with host country cost-sharing, resulting in decreased cost to the US program, with estimated cost sharing value	Cumulative number of megaports with host country cost-sharing, resulting in decreased cost to the US program, with estimated cost sharing value
Fissile Materials Disposition				
Cumulative percentage of the design, construction, and start-up activities completed for the Pit Disassembly and Conversion Facility (PDCF)	Cumulative percentage of the design, construction, and cold start-up activities completed for PDCF	Cumulative percentage of the design, construction, and cold start-up activities completed for PDCF	Cumulative percentage of the design, construction, and cold start-up activities completed for PDCF[a]	Not applicable
Cumulative percentage of the design, construction, and start-up activities completed for the Mixed Oxide (MOX) Fuel Fabrication Facility	Cumulative percentage of the facility and equipment design, construction, and cold start-up activities completed for the MOX Fuel Fabrication Facility	Cumulative percentage of the design, construction, and cold start-up activities completed for the MOX Fuel Fabrication Facility	Cumulative percentage of the design, construction, and cold start-up activities completed for the MOX Fuel Fabrication Facility	Cumulative percentage of the design, construction, and cold start-up activities completed for the MOX Fuel Fabrication Facility
Not applicable	Not applicable	Not applicable	Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building	Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building

Fiscal Year 2006 Performance Indicators	Fiscal Year 2007 Performance Indicators	Fiscal Year 2008 Performance Indicators	Fiscal Year 2009 Performance Indicators	Fiscal Year 2010 Performance Indicators
Cumulative percentage of design, construction, and startup activities completed for the Russian MOX fuel fabrication facility[a]	Cumulative percentage of design, construction, and cold start-up activities completed for the Russian MOX fuel fabrication facility[a]	Not applicable	Not applicable	Not applicable
Cumulative amount of surplus U.S. HEU downblended or shipped for downblending	Cumulative amount of surplus U.S. HEU down-blended or shipped for downblending	Cumulative amount of surplus U.S. HEU down-blended or shipped for downblending	Cumulative amount of surplus U.S. HEU down-blended or shipped for downblending	Cumulative amount of surplus U.S. HEU down-blended or shipped for downblending

Source: GAO analysis of NNSA data.

[a]In these 32 cases, the performance measures used to evaluate progress in the Department of Energy (DOE) Annual Performance Report for that fiscal year were different from the performance measures presented by NNSA in its budget justification to Congress for those programs and that fiscal year.

[b]In this case, the DOE Annual Performance Report for FY 2007 included a performance measure to assess the Global Threat Reduction Initiative's cumulative funds contracted directly with the private sector, though no such metric was presented for the program in NNSA's FY 2007 budget request to Congress.

[c]In this case, the DOE Annual Performance Report for FY 2009 included a performance measure to assess the Elimination of Weapons-Grade Plutonium Production program's annual costs performance index for Zheleznogorsk construction as measured by the ratio of budgeted costs of work performed to actual costs of work performed, though no such metric was presented for the program in NNSA's FY 2009 budget request to Congress.

[d]In this case, the DOE Annual Performance Report for FY 2009 included a performance measure to assess the Nonproliferation and International Security program's annual number of special monitoring visits completed to the four Russian processing facilities that downblend HEU to LEU to monitor and confirm the permanent elimination of 30 metric tons of Russian HEU from the Russian weapons stockpile under the HEU Purchase Agreement, though no such metric was presented for the program in NNSA's FY 2009 budget request to Congress.

[e]In this case, the DOE Annual Performance Report for FY 2006 included a performance measure to assess the Nonproliferation and International Security program's annual number of technologies transferred to international regimes and other countries to prevent and counter WMD proliferation and nuclear-related terrorism, though no such metric was presented for the program in NNSA's FY 2006 budget request to Congress.

[f]In this case, the DOE Annual Performance Report for FY 2009 included a performance measure to assess the Nonproliferation and International Security program's cumulative number of countries where International Nonproliferation Export Control Program is engaged that have export control systems that meet critical requirements, though no such metric was presented for the program in NNSA's FY 2009 budget request to Congress.

[g]In this case, the DOE Annual Performance Report for FY 2009 included a performance measure to assess the Nonproliferation and International Security program's annual number of safeguards systems deployed and used in international regimes and other countries that address an identified safeguards deficiency, though no such metric was presented for the program in NNSA's FY 2009 budget request to Congress.

[h]In this case, the DOE Annual Performance Report for FY 2008 included a performance measure to assess the International Nuclear Material Protection and Cooperation program's cumulative number of Megaports with host country cost-sharing, with estimated cost sharing value, though no such metric was presented for the program in NNSA's FY 2008 budget request to Congress.

Appendix VIII: U.S. Programs Contributing to Overseas Nuclear Smuggling Prevention and Detection

National Nuclear Security Administration		
Office of Nonproliferation Research and Development	Office of Proliferation Detection	This program supports long-term R&D of nuclear material detection technologies, including detecting shielded highly enriched uranium (HEU) and weapon-grade plutonium.
Office of Nonproliferation and International Security	International Nonproliferation Export Control Program (INECP)	Helps build and maintain foreign export control systems through long term partnerships with counterpart technical experts and agencies to strengthen export control licensing procedures and practices, promote industry compliance with national export control norms and strengthen enforcement capabilities. INECP's export control work began in 1995 in Kazakhstan, Russia, and Ukraine and has expanded to adjacent countries and to Southeast Asia.
	Cooperative Border Security Program (CBSP)	Created in 2007, CBSP works to strengthen the capacity of its foreign partners to monitor and improve the security of volatile borders through technical exchanges and border security workshops, as well as other measures designed to help facilitate holistic approaches to addressing border security challenges. CBSP works in Latin America, the Mediterranean region, Transahara Africa, Iraq, and Southeast Asia, among other places.
	Interdiction-Enforcement Program	Through an Interdiction Technical Analysis Group, which draws on technical expertise from Department of Energy national laboratories, this program supports technical assessments of potential nuclear smuggling or trafficking cases, provides technical support to interagency meetings on nuclear interdiction, and provides training on nuclear commodities and technologies related to customs enforcement and border security.
Office of International Material Protection and Cooperation	Second Line of Defense (SLD) Core Program	Initiated in 1998, the SLD Core Program installs radiation detection equipment at international land borders, airports, and strategic feeder seaports in the former Soviet Union, Turkey, Eastern Europe and Central Asia.
	SLD Megaports Initiative	Established in 2003, the Megaports Initiative provides radiation detection systems at key international seaports to screen cargo containers for nuclear and other radioactive materials regardless of the container destination.
Department of Defense		
Defense Threat Reduction Agency	International Counterproliferation (ICP) Program	The ICP program prevents the spread of weapons of mass destruction, components, and related materials through borders and across territories of participating nations in the former Soviet Union, Baltic region and Eastern Europe, through training courses and equipment deliveries targeted at foreign government law enforcement, border security, and first-responder personnel.

	Regional Combating WMD Program (RCP)	The RCP program develops regional networks—primarily among countries in the Black Sea and Southern Caucasus regions—in which countries work collaboratively to build and sustain long-term defenses against WMD on a regional basis, including interdiction of WMD trafficking. Program activities have focused on information exchange through workshops on topics related to counter-trafficking.
Cooperative Threat Reduction program	WMD Proliferation Prevention Program (WMD-PPP)	WMD-PPP assists non-Russia former Soviet Union states, and others as determined by the Secretary of Defense in coordination with the Secretary of State, in building capabilities to stem the potential proliferation of WMD. The program works with foreign border guards and customs officers to detect and interdict possible WMD trafficking by enhancing land and maritime borders through provision of equipment and training.
Department of State		
Bureau of International Security and Nonproliferation	Export Control and Related Border Security (EXBS) Program	The EXBS program assists development of capabilities in foreign countries to detect, deter, and interdict illicit nuclear trafficking, and prevent the authorization of transfers of such items to end-uses and end-users of proliferation concern. EXBS assistance includes placement of in-country advisors and provision of specialized training and equipment.
	Nuclear Smuggling Outreach Initiative (NSOI)	Started in 2004, NSOI works with other countries to identify gaps in their capabilities to prevent, detect and respond effectively to nuclear smuggling incidents, addresses those gaps by negotiating a joint action plan to improve anti-nuclear smuggling capabilities, and identifies assistance projects for implementing the joint action plan.
	Preventing Nuclear Smuggling Program (PNSP)	PNSP was started in 2007 to help address funding gaps for programs involved in preventing nuclear smuggling overseas, including funding projects developed by NSOI where no donor can be found, or to serve as a source of funding to attract and leverage foreign government donations.
	Nuclear Trafficking Response Group (NTRG)	The NTRG, chaired by State, was established in 1995 to coordinate U.S. government interdiction and other responses to incidents of illicit nuclear and radiological smuggling overseas. The NTRG focuses on nuclear material smuggling and trafficking cases at the “non-state actor” level, and works to prosecute nuclear smugglers overseas and develop information on nuclear smuggling-related threats.
	Office of Counterproliferation Initiatives (CPI)	Among other things, CPI supports efforts to prevent nuclear smuggling overseas through its chairmanship of the interagency Nuclear Interdiction Action Group (NIAG), whose primary purpose is to interdict shipments or potential shipments of nuclear-related equipment, materials, and technology of proliferation concern. The NIAG focuses primarily on incidents at the state level involving transfers or potential transfers of nuclear and dual-use items of concern from both US and foreign markets.

	Nonproliferation and Disarmament Fund (NDF)	Started in 1994, NDF provides a source of contingency funding for the U.S. government to respond rapidly, on an ad hoc basis, to nonproliferation and disarmament opportunities, circumstances, or conditions that are unanticipated or unusually difficult, but of high priority. While NDF does not maintain a program focused on counter smuggling, in the past, NDF support has enabled the acquisition and deployment of radiation detection equipment in Eastern and Central Europe and the former Soviet Union, as well as the purchase of radiation detectors for the Russian Customs Service in support of NNSA's SLD program, and represents a potential source of future support of unanticipated, short notice initiatives focused on the nuclear smuggling threat.
Department of Homeland Security		
Customs and Border Protection (CBP)	Container Security Initiative (CSI)	Initiated in 2002, CSI involves identifying high risk maritime cargo containers at foreign seaports and requesting that foreign authorities examine the containers in coordination with CBP before they are loaded on vessels destined for the United States. CSI efforts are under way at 58 foreign ports.
	Secure Freight Initiative (SFI)	Initiated in 2006, SFI was created in response to legislative mandate that, by 2012 or earlier, 100 percent of maritime cargo bound for the United States be scanned at the foreign seaport. SFI includes an integrated scanning system, consisting of radiation detection equipment and non-intrusive inspection imaging systems. CBP also requires importers to provide CBP with additional data, or a "Security Filing" prior to loading the maritime cargo on vessels bound for the United States to assess and identify high-risk U.S.-bound maritime cargo. SFI pilots have been completed at ports in Hong Kong, South Korea, the United Kingdom, and Honduras, with SFI operations continuing at the port in Qasim, Pakistan.
Domestic Nuclear Detection Office (DNDO)	Global Nuclear Detection Architecture (GNDA) and related programs and activities	DNDO is responsible for coordinating the development of the GNDA—which DNDO describes as a worldwide network of sensors, telecommunications, and personnel, with supporting information exchanges, programs, and protocol, to detect, analyze, and report on nuclear and radiological materials outside of regulatory control. In addition, DNDO supports bilateral engagements with international partners to exchange best practices and collaborate on research and development and testing and evaluation programs. DNDO also leads and participates in multilateral initiatives to develop international guidance on nuclear detection architectures. Furthermore, DNDO supports geographic and transnational studies assessing gaps and vulnerabilities in nuclear detection architectures and identifying potential solutions.

Department of Justice		
Federal Bureau of Investigation (FBI)	WMD-Directorate	FBI conducts extensive outreach and liaison internationally on incidents that may involve illicit nuclear trafficking. This includes maintaining a legal attaché program which enables FBI to assist investigation and prosecution of nuclear smuggling crimes overseas. At the request of foreign governments, and by working with other U.S. government programs, FBI also provides training to foreign law enforcement organizations on nuclear smuggling detection, response, investigation and prosecution issues.
Criminal Division	Office of Overseas Prosecutorial Development, Assistance, and Training (OPDAT)	OPDAT works to strengthen foreign criminal justice institutions in combating terrorism and transnational crimes including WMD trafficking, by providing legal, enforcement, and prosecution-related assistance that helps foreign governments prosecute such cases. Activities include encouraging legislative and justice sector reform in countries with laws deemed inadequate and improving the skills of foreign prosecutors, investigators, and judges.
	International Criminal Investigative Training and Assistance Program (ICITAP)	ICITAP provides assistance to help foreign governments develop professional and transparent law enforcement institutions that protect human rights, combat corruption, and reduce the threat of transnational crime and terrorism, including potential WMD smuggling. ICITAP's activities include working to enhance foreign investigative, enforcement, and response functions through technical assistance and training to foreign law enforcement agencies through full-time programs staffed in overseas field offices, and intermittent deployments of technical advisors and trainers.

Source: GAO analysis of NNSA, DOD, State, DHS, and Justice information.

Appendix IX: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528

Homeland Security

November 30, 2011

Mr. Gene Aloise
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Re: Draft Report GAO-12-71, "NUCLEAR NONPROLIFERATION: Action Needed to Address NNSA's Program Management and Coordination Challenges"

Dear Mr. Aloise:

Thank you for the opportunity to review and comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO's) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's positive recognition of the DHS Domestic Nuclear Detection Office's (DNDO) role in helping to reduce the threat of nuclear proliferation to United States and international security. Although the report does not contain any recommendations specifically directed at DHS, the Department remains committed to continuing its work with interagency partners. The following paragraphs provide additional insight into our work as it relates to this particular audit.

The advancement of international capabilities in nuclear forensics is a priority for the Nuclear Security Summit, the Global Initiative to Combat Nuclear Terrorism (GICNT), the International Atomic Energy Agency (IAEA), and the Nuclear Forensics International Technical Working Group to support the prevention of illicit nuclear trafficking and nuclear terrorism. DNDO, along with U.S. Government (USG) partners, is working through these and other forums to advance international collaboration in nuclear forensics and improve the ability of governments to identify the nature and source of interdicted or seized nuclear and radiological materials and weapons. DNDO performs a major role in several key initiatives. Specifically, DNDO:

- Works with its interagency partners (e.g., U.S. Department of Energy, U.S. Department of State, etc.) and the IAEA on efforts to develop national nuclear forensics libraries. The purpose of national libraries, which contain information regarding the holdings of nuclear and radioactive materials within a country, is to enable states to credibly assess whether nuclear or radioactive material encountered outside of regulatory control originated domestically or somewhere else. The design and development of these libraries will provide a framework for fostering cooperation between governments investigating illicit uses of nuclear or radioactive material, a top USG priority.

- Works with the IAEA on the revision of its Nuclear Security Series No. 2, *Nuclear Forensics Support*, which provides technical information and guidance on nuclear forensics response. This effort includes the drafting of a "Definitions" or glossary section that will aid in the development of a community-authored international nuclear forensics lexicon, another identified priority of the Nuclear Security Summit and the GICNT, which will help enhance communication and understanding among international partners.

- Assists the IAEA and USG partners with a number of international technical nuclear forensics training activities, such as the regional workshop, "Radiological Crime Scene Management and an Introduction to Nuclear Forensics."

- Participates in GICNT Nuclear Forensics Working Group activities, which have recently included assisting in the development and execution of an international nuclear forensics tabletop exercise and drafting a Nuclear Forensics Fundamentals for Policymakers document.

- Performed an integral role in the most recent Round Robin exercise of the ITWG, in which more than 30 countries participate. DNDO supported the planning, execution, and evaluation of this laboratory analysis exercise, the latest in a series of unique exercises that improve international cooperation and communication in a nuclear material security incident.

In December 2010, the Department submitted a strategic plan for the Global Nuclear Detection Architecture (GNDA). The GNDA Strategic Plan is a jointly developed, interagency product of the U.S. Departments of Defense, Energy, Homeland Security, Justice, and State; the Office of the Director of National Intelligence; and the U.S. Nuclear Regulatory Commission. The plan identifies high-level goals for the GNDA and objectives and performance goals for the USG in support of the GNDA. In addition, it identifies agencies or departments that lead or support each performance goal and includes language to describe the roles and responsibilities of each participating department. The completion of the first-ever GNDA Strategic Plan represents successful cooperation and coordination among the interagency to create a document that will guide multiple USG efforts to fulfill the objectives and goals set forth in the plan.

In June 2011, the Department submitted the report on the GNDA Joint Annual Interagency Review 2011, which was also a jointly developed, interagency product by the same partners as for the strategic plan. This report fulfilled a requirement of the *Implementing Recommendations of the 9/11 Commission Act of 2007* (P.L. 110-53). The 2011 report includes information about the multiple USG programs that collectively seek to prevent nuclear or radiological terrorism against the United States by means of detection, analysis, and reporting on nuclear or radiological materials out of regulatory control. In support of previous reviews, DNDO has issued data calls to agencies performing GNDA functions; the data call for this report was augmented to reflect the recently completed strategic plan, collecting information about support for the performance goals. The report represented an important step forward in the understanding of the GNDA, with new details about agency activities in support of the GNDA,

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graphical representations of the assets and capabilities, and a set of recommendations for future activities.

Again, thank you for the opportunity to review and comment on this draft report. General and technical comments were provided under separate cover. We look forward to working with you on future Homeland Security issues.

Sincerely,

Jim H. Crumpacker
Director
Departmental GAO-OIG Liaison Office

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Appendix X: Comments from the National Nuclear Security Administration

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

November 29, 2011

Mr. Gene Aloise
Director
National Resources and Environment
Government Accountability Office
Washington, D.C. 20548

Dear Mr. Aloise:

The National Nuclear Security Administration (NNSA) appreciates the opportunity to review the Government Accountability Office's (GAO) draft report, *Nuclear Nonproliferation: Action Needed to Address NNSA's Program Management and Coordination Challenges,* GAO-12-71. I understand that GAO was asked to assess: (1) the extent of annual Defense Nuclear Nonproliferation (DNN) uncosted, or unexpended, balances; (2) the level of financial support from foreign donor and recipient governments to the DNN programs; (3) the effectiveness of DNN program performance measures; and (4) the effectiveness of strategies for coordinating DNN and other agency nonproliferation programs.

Congress has recognized the unique nature of the DNN program in legislation, Section 3121 of the National Defense Authorization Act for 2004 (50 U.S.C. § 2454). This legislation requires semi-annual financial commitment reporting on the DNN program because of this unique nature. This should continue to be the basis for measuring DNN financial performance.

Overall, NNSA is concerned with the way that the draft GAO report is written, as we believe it distorts the facts, and reinforces misperceptions about DNN's financial, procurement, and performance management. DNN's approach, though unique, is sound. The report's factual inaccuracies begin in the Highlights page and are carried through the rest of the document. The GAO's approach is sure to prejudice the reader and leave the false impressions that DNN has unused funds and does not make effective program management a priority. Below are comments to clarify points in the draft report.

Uncosted/Uncommitted Carryover: The Department of Energy (DOE) threshold for DNN programs applies to uncosted/uncommitted balances ***only***, and not uncosted balances as the GAO indicates. Contrary to the GAO contention on the Highlights page, DNN programs have not exceeded their thresholds by hundreds of millions of dollars. In fact, for every year of the study, DNN uncosted/uncommitted carryover was hundreds of millions of dollars *below* the DOE carryover threshold percentage (13%) – a fact that this report buries on page 16. Further, the statement "However, much of the annual uncosted DNN-wide funding balances were committed for future expenditures" clearly understates DNN's fiscally prudent approach and

achievement. The amounts committed to contracts that include work in future fiscal years by DNN each year represent over 80 percent of GAO's claimed uncosted balances, making the actual amount of funding unused at the end of the year a small fraction of the $1.5 billion cited by GAO. DOE aligns DNN thresholds to uncosted/uncommitted funds because DNN intentionally withholds payments on many foreign security and proliferation projects until work is complete and verified as acceptable. Because contracts can only be signed if the full value of the contract is available to be committed, and complex technical work often spans more than a single fiscal year, funds must be legally committed on contracts up front, but may not be fully costed until some future fiscal year after the final deliverable is evaluated and accepted. This practice ensures U.S. tax dollars are expended only after DNN can verify the work is complete to our standards. This is why, as GAO indicates, NNSA provides semiannual reports to Congress on uncommitted balances. This is the only way to accurately present funds that are unused at the end of a fiscal year. Lastly, the GAO's contention that these uncosted/uncommitted carryover funds should be considered "available to reduce future NNSA budget requests" is untrue and has dangerous implications in the current budget environment; amounts committed to signed contracts must be retained to fulfill the terms of the contract. Their rescission would create significant program delays making it impossible to meet Presidential commitments, as well as result in possible contract-related penalties.

Tracking Cost-Sharing Data: The GAO asserts that "NNSA does not systematically track and maintain (cost sharing) data," but neglects to mention the inherent difficulties associated with assessing levels of cost-sharing with foreign partners at sensitive sites. It is not reasonable for the GAO to expect DNN to audit another country's books in the case of cost-sharing. Foreign counterparts such as Russia consider material security funding classified and IMPC does not have the legal ability to audit foreign recipients of upgrade assistance. IMPC teams can make general assessments of Russian contributions to security upgrades by validating their contributions during site visits, but estimates of funding contributions are complicated due to uncertainties associated with Russian labor rates, labor hours, material costs, overhead rates, etc. There may be some cases where estimates can be made on the basis of cost avoidance, i.e. the amount that the United States would have had to bear had it funded the full project. However, when DNN asked GAO if that or other methodologies might be used as a satisfactory way to calculate foreign contributions, GAO responded that it could not provide any prescriptive advice on how to approach the issue.

Performance Measures: The GAO states that some DNN program performance metrics are not effective measures, some DNN results appear to be overstated, and because DNN changed performance measures from year to year, it is difficult to evaluate progress over time. Specifically, the GAO stated that Material Protection, Control, and Accounting (MPC&A) performance metrics are unclear and potentially misleading because they do not include information about quantities of material being secured by the program. They also note that DNN does not adjust the total numbers of buildings complete each time new upgrade work is initiated. DNN does not track amounts of material secured because estimates of inventories are highly uncertain and specifics are considered sensitive or classified. If our foreign counterparts were willing to declassify this information and provide it to us, we could track it as a metric. Further, too much emphasis on material quantity can be misleading, since buildings containing 100 kg of weapons usable nuclear material can present as great or greater vulnerabilities than buildings

containing larger amounts of material, depending on many other vulnerability indicators. As the GAO indicates, DNN does not "reclassify" buildings previously deemed "complete" if a new upgrade project is initiated. The buildings complete metric baseline was established at a given point in time and represents the suite of upgrades planned for execution at that time. If DNN were to re-baseline the metric each time a new upgrade project was agreed to (such as smaller insider-related projects now receiving increased attention), the metric baseline would change so frequently as to make it unusable, creating the incorrect impression that the program was regressing, instead of reflecting additional progress being made on insider threats. DNN is working to establish a new metric to capture project-level MPC&A upgrade progress to capture new, smaller projects and provide even more resolution on performance at foreign facilities.

The GAO report implies that the Global Threat Reduction Initiative had an ulterior motive for changing its reactor conversion measure. We would have preferred for the GAO to point out this change, as this is a good example of clarifying a measure without changing its historical reference point. The explanation that GTRI provided to the GAO never made it into the report. The GAO noted that GTRI's description of its HEU conversion performance measure changed over time to include the phrase "or shutdown" starting in FY 2009. To clarify, HEU minimization can be accomplished two ways: (1) converting cores from HEU to LEU; and (2) shutting down reactors prior to conversion. Through FY 2008, GTRI had converted 57 reactors and verified the shutdown of an additional 5 for a total of 62 converted or verified as shutdown. Starting around the President's Prague speech, GTRI began more aggressively to encourage regulators to consider shutting down underutilized reactors in order to accelerate threat reduction efforts and reduce costs since shutdowns are more cost effective than conversions. If a host nation decides to shut the reactor down, GTRI can provide limited support in this process. Since the start of FY 2009, GTRI has converted 5 reactors and verified the shutdown of an additional 9 for a cumulative total of 76 reactors converted or verified as shutdown. Therefore, GTRI clarified this growing success with the additional "or shutdown" text the measure.

The GAO incorrectly claims that the Next Generation Safeguards Initiative (NGSI) performance measure is not sufficiently balanced. Part of the problem is that the GAO did not include the full text of the measure, leaving out the word "deployed" as it relates to safeguards technologies. NGSI has five sub-programs that work in concert to achieve its goals. The NGSI metric captures this synergy measuring and demonstrating how NGSI's technology development, international engagement, and human capital development subprograms work together to develop technologies either for or cooperatively with partners that address a specific safeguards deficiency. These three areas provide the core technology, international engagement and facility access, and human capital necessary to ensure that safeguards systems are deployed in an effective manner. As the report indicates, DNN programs are allowed only a limited number of representative published performance metrics by OMB. This particular measure is an attempt to measure performance across the NGSI sub-programs.

Lastly, the GAO criticized the lack of a commercialization results metric for Global Initiatives for Proliferation Prevention (GIPP). GIPP has worked with the United States Industry Coalition (USIC) to improve the collection of commercialization data. GIPP also has improved collection of other data including the number of WMD experts engaged. DNN programs are granted a

limited number of representative "published" performance metrics. As a result of the referenced GAO report, an OMB streamlining exercise, and the 2010 Reassessment reported to Congress, it was determined that commercialization is no longer a leading program metric; it is a secondary benefit of the program as it is not the main nonproliferation objective of the program. Therefore, there is no "published" commercialization metric. We continue to collect the data for internal purposes. In addition to the comments above, we offer the enclosed specific comments to the draft report.

If you have any questions related to this response, please contact Dean Childs, Director, Office of Management Controls and Assurance at 301-903-1341.

Sincerely,

Kenneth W. Powers
Associate Administrator
for Management and Budget

cc: Deputy Administrator for Defense Nuclear Nonproliferation

Appendix: XI: GAO Contact and Staff Acknowledgments

GAO Contact

Gene Aloise, (202) 512-3841 or aloisee@gao.gov

Staff Acknowledgments

In addition to the contact named above, Glen Levis (Assistant Director), Bridget Grimes, William Hoehn, William King, and Kevin Remondini made key contributions to this report. Other technical assistance was provided by Allison Bawden, Antoinette Capaccio, Rebecca Shea, Ben Shouse, and Kiki Theodoropoulos.