DOE/CF-0047
Volume 1

Department of Energy

FY 2011 Congressional Budget Request

National Nuclear Security Administration

Office of the Administrator
Weapons Activities
Defense Nuclear Nonproliferation
Naval Reactors

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The Department of Energy's Congressional Budget justification is available on the Office of Chief Financial Officer, Office of Budget homepage at http://www.cfo.doe.gov/crorg/cf30.htm.

For the latest details on the Department of Energy's implementation of the Recovery Act, please visit: http://www.energy.gov/recovery

Department of Energy
Appropriation Account Summary
(dollars in thousands - OMB Scoring)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010 $	FY 2011 vs. FY 2010 %
Discretionary Summary By Appropriation						
Energy And Water Development, And Related Agencies						
Appropriation Summary:						
Energy Programs						
Energy Efficiency and Renewable Energy	2,156,865	16,771,907	2,242,500	2,355,473	+112,973	+5.0%
Electricity Delivery and Energy Reliability	134,629	4,495,712	171,982	185,930	+13,948	+8.1%
Nuclear energy	791,444	0	786,637	824,052	+37,415	+4.8%
Fossil Energy Programs						
Clean Coal Technology	0	0	0	0	——	——
Fossil Energy Research and Development	863,104	3,398,607	672,383	586,583	-85,800	-12.8%
Naval Petroleum and Oil Shale Reserves	19,099	0	23,627	23,614	-13	-0.1%
Strategic Petroleum Reserve	226,586	0	243,823	138,861	-104,962	-43.0%
Strategic Petroleum Account	-21,586	0	0	0	——	——
Northeast Home Heating Oil Reserve	9,800	0	11,300	11,300	——	——
Total, Fossil Energy Programs	1,097,003	3,398,607	951,133	760,358	-190,775	-20.1%
Uranium Enrichment D&D Fund[1]	535,503	390,000	573,850	730,498	+156,648	+27.3%
Energy Information Administration	110,595	0	110,595	128,833	+18,238	+16.5%
Non-Defense Environmental Cleanup	261,819	483,000	254,673	225,163	-29,510	-11.6%
Science	4,813,470	1,632,918	4,903,710	5,121,437	+217,727	+4.4%
Energy Transformation Acceleration Fund	8,700	388,856	0	299,966	+299,966	N/A
Nuclear Waste Disposal	145,390	0	98,400	0	-98,400	-100.0%
Departmental Administration	155,326	42,000	168,944	169,132	+188	+0.1%
Inspector General	51,927	15,000	51,927	42,850	-9,077	-17.5%
Advanced Technology Vehicles Manufacturing Loan Program	7,510,000	10,000	20,000	9,998	-10,002	-50.0%
Innovative Technology Loan Guarantee Program	0	0	0	500,000	+500,000	N/A
Section 1705 Temporary Loan Guarantee Program	0	3,960,000	0	0	——	——
Total, Energy Programs	17,772,671	31,588,000	10,334,351	11,353,690	+1,019,339	+9.9%
Atomic Energy Defense Activities						
National Nuclear Security Administration:						
Weapons Activities	6,410,000	0	6,384,431	7,008,835	+624,404	+9.8%
Defense Nuclear Nonproliferation	1,545,071	0	2,136,709	2,687,167	+550,458	+25.8%
Naval Reactors	828,054	0	945,133	1,070,486	+125,353	+13.3%
Office of the Administrator	439,190	0	410,754	448,267	+37,513	+9.1%
Total, National Nuclear Security Administration	9,222,315	0	9,877,027	11,214,755	+1,337,728	+13.5%
Environmental and Other Defense Activities:						
Defense Environmental Cleanup[1]	5,656,345	5,127,000	5,642,331	5,588,039	-54,292	-1.0%
Other Defense Activities						
Health, Safety and Security	446,471	0	441,882	464,211	+22,329	+5.1%
Legacy Management	185,981	0	189,802	188,626	-1,176	-0.6%
Nuclear Energy	565,819	0	83,358	88,200	+4,842	+5.8%
Defense Related Administrative Support	108,190	0	122,982	130,728	+7,746	+6.3%
Office of Hearings and Appeals	6,603	0	6,444	6,444	——	——
Congressionally Directed Projects	999	0	3,000	0	-3,000	-100.0%
Total, Other Defense Activities	1,314,063	0	847,468	878,209	+30,741	+3.6%
Defense Nuclear Waste Disposal	143,000	0	98,400	0	-98,400	-100.0%
Total, Environmental & Other Defense Activities	7,113,408	5,127,000	6,588,199	6,466,248	-121,951	-1.9%
Total, Atomic Energy Defense Activities	16,335,723	5,127,000	16,465,226	17,681,003	+1,215,777	+7.4%
Power Marketing Administrations:						
Southeastern Power Administration	7,420	0	7,638	0	-7,638	-100.0%
Southwestern Power Administration	28,414	0	44,944	12,699	-32,245	-71.7%
Western area Power Administration	218,346	10,000	256,711	105,558	-151,153	-58.9%
Falcon & Amistad Operating & Maintenance Fund	2,959	0	2,568	220	-2,348	-91.4%
Colorado River Basins	-23,000	0	-23,000	-23,000	——	——
Total, Power Marketing Administrations	234,139	10,000	288,861	95,477	-193,384	-66.9%
Federal Energy Regulatory Commission	0	0	0	0	——	——
Subtotal, Energy And Water Development and Related Agencies	34,342,533	36,725,000	27,088,438	29,130,170	+2,041,732	+7.5%
Uranium Enrichment D&D Fund Discretionary Payments	-463,000	0	-463,000	-696,700	-233,700	-50.5%
Excess Fees and Recoveries, FERC	-23,080	0	-28,886	-29,111	-225	-0.8%
Total, Discretionary Funding	**33,856,453**	**36,725,000**	**26,596,552**	**28,404,359**	**+1,807,807**	**+6.8%**

[1] The Defense Environmental Cleanup/Uranium Enrichment Decontamination and Decommissioning Fund accounts reflect correctly the Administration's policy for the Department's FY 2011 request. These accounts include $47 million that was inadvertently omitted from the official Budget request. A budget amendment is expected to be forthcoming to formally correct for this error.

National Nuclear Security Administration

Overview

Appropriation Summary

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
National Nuclear Security Administration			
Office of the Administrator	439,190	420,754	448,267
Weapons Activities	6,410,000	6,384,431	7,008,835
Defense Nuclear Nonproliferation	1,545,071	2,136,709	2,687,167
[non-add MOX Project funded in other appropriations]	[278,879]	N/A	N/A
Naval Reactors	828,054	945,133	1,070,486
Subtotal, NNSA	9,222,315	9,887,027	11,214,755
Transfer of prior year balances	------	-10,000	------
Total, NNSA - OMB Scoring	9,222,315	9,877,027	11,214,755

The National Nuclear Security Administration (NNSA) is critical to ensuring the security of our nation. The NNSA implements programs for three major national security endeavors: leveraging science to maintain a safe, secure and effective arsenal of nuclear weapons and capabilities to deter any adversary and guarantee that defense to our allies; accelerating and expanding our efforts here in the homeland and around the world to reduce the global threat posed by nuclear weapons, nuclear proliferation and unsecured or excess nuclear materials; and, providing safe and effective nuclear propulsion for the United States (U.S.) Navy.

The FY 2011-2015 President's Request for the NNSA is a funding increase over the current appropriations because NNSA is a key player in the implementation of the President's vision for our nation's nuclear security and non-proliferation goals. This vision is based on the reality that nuclear security is not just about warheads and the size of the stockpile. The vision emphasizes that we must increase our focus on global nuclear security, and transform the Cold War nuclear weapons complex into a 21st century national security enterprise. We must ensure our evolving strategic posture places the stewardship of our nuclear stockpile, nonproliferation programs, counterterrorism, missile defenses, and the international arms control objectives into one comprehensive strategy that protects the American people and our allies.

Outyear Appropriation Summary
NNSA Future-Years Nuclear Security Program

(dollars in thousands)

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
NNSA					
Office of the Administrator	448,267	426,424	430,726	435,069	448,498
Weapons Activities	7,008,835	7,032,672	7,082,146	7,400,966	7,648,200
Defense Nuclear Nonproliferation	2,687,167	2,507,191	2,715,191	2,833,243	2,956,328
Naval Reactors	1,070,486	1,099,734	1,171,178	1,226,017	1,310,530
Total, NNSA	**11,214,755**	**11,066,021**	**11,399,241**	**11,895,295**	**12,363,556**

The NNSA budget justification contains information for five years as required by Section 3253 of P.L. 106-065, entitled Future-Years Nuclear Security Program (FYNSP). The FY 2011-2015 FYNSP projects $57.9 billion for NNSA programs through 2015. While the funding necessary to support the President's commitment to secure vulnerable nuclear materials throughout the world is focused in the near term, major longer term funding commitments are needed in other NNSA programs. The Secretaries of the Department of Defense (DoD) and the Department of Energy (DOE) agree that it is necessary to modernize the nuclear weapons infrastructure of the United States, and this will require the investments over the long term reflected in the FYNSP. Modernization of the infrastructure, including major capital projects, is needed to ensure safe, secure, sustainable and cost-effective operations in support of scientific and manufacturing activities. It is also necessary to bolster key scientific, technical and manufacturing capabilities needed to ensure that the U.S. nuclear weapons stockpile remains safe, secure and effective while avoiding the requirement for new nuclear tests. Increased outyear resources are also included for major new deliverables in support of the nuclear navy, including reactor plant development for the OHIO Class replacement submarine, core manufacturing for and refueling of the technology demonstration land-based prototype, and recapitalization of spent nuclear fuel infrastructure.

FY 2009 Budget Execution

(dollars in thousands)

	FY 2009 Appropriation	PY Balance/ General Reduction	Supplemental Appropriation	Reprogramming and Other Transfers	Total Adjustments	Final FY 2009
Office of the Administrator	439,190	0	0	0	0	439,190
Weapons Activities	6,380,000	0	30,000	0	30,000	6,410,000
Defense Nuclear Nonproliferation	1,493,768	-11,418	55,000	7,721	51,303	1,545,071
Naval Reactors	828,054		0	0	0	828,054
Total, NNSA	**9,141,012**	**-11,418**	**85,000**	**7,721**	**81,303**	**9,222,315**

FY 2010 Budget Execution

(dollars in thousands)

	FY 2010 Appropriation	PY Balance/ General Reduction	Supplemental Appropriation	Reprogramming and Other Transfers	Total Adjustments	Current FY 2010
Office of the Administrator	420,754	0	0	0	0	420,754
Weapons Activities	6,426,531	-42,100	0	0	-42,100	6,384,431
Defense Nuclear Nonproliferation	2,136,709	0	0	0	0	2,136,709
Naval Reactors	945,133	0	0	0	0	945,133
Total, NNSA	**9,929,127**	**-42,100**	**0**	**0**	**-42,100**	**9,887,027**

Preface

The NNSA was created by the Congress in 2000 to focus the management of the nation's nuclear defense through a single, separately organized and managed agency within the DOE. The NNSA brought together three existing major program components related to nuclear weapons and the nuclear deterrent: the U.S stockpile and associated infrastructure; the Administration's efforts to reduce and prevent the proliferation of nuclear weapons, materials, and expertise; and the responsibility to provide cradle-to-grave support for the U.S. Navy fleet's nuclear propulsion.

The NNSA is funded through four appropriations. The Weapons Activities appropriation funds mission programs in five organizations, (Defense Programs, Nuclear Counterterrorism Incident Response (NCTIR), Infrastructure and Environment, Defense Nuclear Security (DNS), and Cyber Security, and has 14 Government Performance and Results Act (GPRA) Unit Programs. The Defense Nuclear Nonproliferation (DNN) appropriation funds one program with 5 GPRA Unit Programs. The Naval Reactors appropriation supports all activities, including Program Direction, for that program, and is a single GPRA Unit Program. The Office of the Administrator appropriation provides support for all Federal NNSA employees in Headquarters and its field elements (except the Secure Transportation Asset (STA) and Naval Reactors), and also provides for Information Technology for Federal employees in Headquarters and field locations and is a single GPRA Unit Program.

Mission

To strengthen United States' security through the military application of nuclear energy and by reducing the global threat from terrorism and weapons of mass destruction.

Strategic Themes and Goals

- Broaden the NNSA's science, technology and engineering mission to meet both energy and national security needs;
- Work with global partners to secure all vulnerable nuclear materials around the world within four years;
- Work towards a world with no nuclear weapons while ensuring that the U.S. stockpile remains safe, secure and effective in the interim;
- Complete the transformation of the nation's Cold-War era weapons complex to a 21st century national security enterprise, and
- Provide safe and effective nuclear propulsion for U.S. navy warships.

American Recovery and Reinvestment Act (Recovery Act)

NNSA did not receive any Recovery Act funding.

Presidential Initiatives

The President has initiated bold steps to put an end to Cold War thinking to lead a new international effort to enhance global security. In his April 5, 2009 speech given in Prague, Czech Republic, President Obama charted a new course for the United States. The President's goals of securing nuclear material in four years and advancing the Comprehensive Test Ban Treaty (CTBT) provided clear direction for the NNSA. Program work to address this direction is found in the requests for the Defense Nuclear Nonproliferation appropriation: International Materials Protection and Cooperation, and Global Threat Reduction Initiative.

In addition, the Administration's Nuclear Posture Review is nearing completion. The United States will take steps toward achieving a world without nuclear weapons. Until that goal is achieved, we will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies. Programs funded within the Weapons Activities appropriation support the nation's current and future defense posture, and its attendant nationwide infrastructure of science, technology and engineering capabilities. The President's Request reflects an investment strategy consistent with these challenges by providing a strong basis for transitioning to a smaller but continued safe, secure and effective nuclear stockpile without additional nuclear testing, strengthening the science, technology and engineering base, modernizing the physical infrastructure, and streamlining the enterprise's physical and

operational footprint. These investments will enable execution of a comprehensive nuclear defense strategy based on current and projected global threats that relies less on nuclear weapons, yet enhances national security by strengthening NNSA's nuclear security programs. This improved NNSA capability base will mitigate the concerns regarding ratification of the follow-on Strategic Arms Reduction Treaty and the Comprehensive Test Ban Treaty.

Science Technology and Engineering

In his address to the National Academy of Sciences on April 27, 2009, President Obama stated, "Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before…" It is an acknowledgement of this statement and the reality of today's security environment that the United States requires an agile and responsive national security science, technology and engineering (ST&E) enterprise to address the threats of today and the future. Sustaining the national security ST&E capabilities within the NNSA is not in the sole interest of those responsible for assessing and monitoring the nuclear weapons stockpile. While national ST&E investments are instrumental in transitioning to a 21st century nuclear deterrent strategy, they are also key to a range of national security issues, tools, and solutions. NNSA and its laboratories have a unique national role in taking on complex projects requiring both breadth and depth of science as well as an ability to respond to rapidly changing priorities. The integration of the multi-disciplinary national security science and technology skills within the NNSA provides the versatility to address urgent national needs on appropriate time scales. It is essential that planning of NNSA ST&E takes on a strategic perspective to ensure agile and responsive capabilities. Transparency into these capabilities and the investments made in them is critical. The President has challenged agencies to identify science and technology innovation that drive the economy, impact climate change and energy security, improve health care and life quality and enhance U.S. national security. NNSA programs contribute to addressing many of these challenges.

Despite the classified nature of NNSA's mission, many of the science and engineering activities are unclassified and can, and in some cases already do, involve universities, industry and civilian agencies. Specific actions are being initiated to improve the open communication and facilitate such cooperation. One example is the Livermore Valley Open Campus with both Lawrence Livermore National Laboratory and Sandia National Laboratories-California making some modifications of physical space on the government-owned property to provide for easier access by visiting scientists, particularly researchers associated with transportations science (Combustion Research Facility operated by the Office of Science) and high energy density physics (National Ignition Facility). Science, Technology and Engineering funding is contained in the Weapons Activities appropriation in the Campaigns, and in a new subprogram element, Science, Technology and Engineering Capabilities. The Nuclear Counterterrorism Incident Response has an important R&D component. In the Defense Nuclear Nonproliferation appropriation, the research efforts are funded by the Nonproliferation and Verification R&D program.

FY 2011 Program Changes

Weapons Activities Appropriation

NNSA is sensitive to the need to more fully reflect in the budget the wide range of activities funded by this appropriation. In recent years, NNSA's nuclear security enterprise has broadened the application of NNSA's science, technology and engineering capabilities to the wider set of energy and national security missions while still carrying on the historical responsibilities for stockpile stewardship, infrastructure, emergency response and security.

Although no change to the existing program budget structure within this appropriation is proposed in this budget, we will address the current programs within the Weapons Activities appropriation in four related components:

- Stockpile Support (Directed Stockpile Work, Readiness Campaign);
- Science, Technology and Engineering (Science Campaign, Engineering Campaign, Inertial Confinement Fusion and High Yield Campaign, Advanced Simulation and Computing Campaign, Science, Technology and Engineering Capability);
- Infrastructure (Readiness in Technical Base and Facilities, Secure Transportation Asset, Facilities and Infrastructure Recapitalization Program, Site Stewardship), and,
- Security and Nuclear Counterterrorism (Defense Nuclear Security, Cyber Security, Nuclear Counterterrorism Incident Response).

All components and programs are closely related in pursuit of NNSA's unique mission to leverage the best science and technology to enhance national security. The added benefit is that the new approach underpins the broader interagency discussions that the Department is having on the strategic role of the national laboratories in support of the Office of Science and Technology Policy, the National Security Council, Department of Homeland Security, the Department of Defense and the Intelligence Community.

Science, Technology and Engineering Capability

Within the Weapons Activities appropriation, the separate line created by the Congress in 2009 is continued through the FYNSP. This new GPRA unit provides a focal point for science, technology and engineering in NNSA, and facilitates a point of entry for the wider national security community into NNSA's programs and facilities. Supplemental funding was provided in FY 2009, and there is a request for continuing funding in FY 2011. Outyear funding requests are pending the completion of a number of program plans including those required by the Congress for the supplemental appropriations and associated with the 5-year MOU with the Defense Threat Reduction Agency. Future budget requests will be considered in the FY 2012-2016 Programming cycle.

Functional Transfers

Two functional transfers are included in this budget request: Transfer of one Federal FTE and $204,900 in FY 2011 from Environmental Management (EM) to NNSA to support past functional transfers for Long Term Stewardship activities; and, transfer of $1,500,000 in FY 2011 from Naval Reactors to Nuclear Energy for continued performance of Safeguards and Security Services at the Idaho National Laboratory (INL).

NNSA Program Summaries

The President's FY 2011 Budget Request for the NNSA is $11.2 billion, a 13.4 percent increase over FY 2010 appropriations. Outyear projections are consistent with this level to meet the requirements for significant long term investments in the nuclear security enterprise deliverables, capabilities and infrastructure.

Weapons Activities Appropriation

The request for this appropriation is $7.0 billion, an increase of 9.8 percent over the FY 2010 appropriated level. This level is sustained and increased in the later outyears. Increased funding is requested for programs in direct support of the nuclear weapon stockpile, for scientific, technical and engineering activities related to maintenance assessment and certification capabilities for the stockpile,

and for critical infrastructure improvements. The Security and Nuclear Counterterrorism component decreases about 3 percent from the FY 2010 appropriated levels, attributable to continuing efficiencies in the Defense Nuclear Security programs and budget.

This multi-year increase reflects the President's commitment to maintain the safety, security and effectiveness of the nuclear deterrent without underground nuclear testing, consistent with the principles of the Stockpile Management Program outlined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524). The nuclear security requirements driving this budget request include improvements to the safety and security of the enduring stockpile; a strengthened science, technology, and engineering (ST&E) base; and a recapitalized physical infrastructure. The enterprise must also be responsive to an arguably more complex future national defense environment than the singular Cold-War context within which the legacy deterrent was built.

The President's Request provides funding necessary to protect and advance the scientific capabilities at the U.S. national security laboratories — including the ability to design nuclear warheads as well as development and engineering expertise and capabilities—through a stockpile stewardship program that fully exercises these capabilities.

This budget request is responsive to FY 2010 Congressional direction to carry out a Stockpile Management program in support of stockpile stewardship that provides for effective management of the weapons in the nuclear weapons stockpile. This program will strengthen the stockpile activities, including life extension and surveillance; strengthen science, technology and engineering, including the workforce; and modernize the aging infrastructure, especially special nuclear materials capabilities.

The Stockpile Support component of this appropriation includes Directed Stockpile Work and the supporting Readiness Campaign. The President's Request is $2.0 billion, an increase of 25.2 percent over the FY 2010 appropriation. This provides for the Stockpile Management program, including surveillance, maintenance, assembly, disassembly and dismantlement activities, and will fully support the ongoing Life Extension Programs (LEP) for the W76 warhead and the refurbishment of the B61 bomb. The budget request will enhance surveillance efforts, and ensure that capabilities and capacity are available so that future warhead life extension programs will allow for increased margin and enhanced warhead safety, security and control. The request will initiate a study in FY 2011 to evaluate future options and approaches to maintaining the W78, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524).

The Science, Technology and Engineering component of this appropriation includes the Science Campaign, Engineering Campaign, Inertial Confinement Fusion and High Yield Campaign, Advanced Simulation and Computing Campaign, and Science, Technology and Engineering Capability. The President's Request of $1.6 billion is an increase of 10.4 percent over FY 2010 appropriations that will restore sufficient funds for the science and technology that support stockpile assessment and certification in the absence of nuclear testing. Within this request, the ICF Ignition and High Yield campaign is requested at $481.5 million. Construction of the National Ignition Facility was completed in FY 2009, and the first ignition campaign spanning FY 2010 to FY 2011 will attempt to compress, implode, and ignite a layered Deuterium-Tritium (DT) capsule with a ~1.3 megajoule energy pulse from the NIF. Regardless of the specific status of ignition, FY 2011 will present a very demanding agenda of work in the ignition effort. Results from the first ignition attempts in 2010 will be analyzed in detail,

and the intensive process of tuning laser and target parameters for optimum performance will continue. The NIF provides critical scientific data to support the stockpile without underground nuclear testing.

Computation and simulation underpin all of our science, technology and engineering, and are pervasive throughout the activities in the nuclear security enterprise. The FY 2011 President's Request of $616 million for the Advanced Simulation and Computing Campaign, and the out-year funding profile, will enable a stronger simulation program and inject a renewed scientific rigor back into the program. Developing robust peer review among the national security laboratories as we move away from the test base experience is essential to being able to maintain a stockpile without underground testing. Comprehensive uncertainty quantification calculations in 3D will provide the confidence necessary to make reliable progress toward the predictive capability necessary to address stockpile aging issues. In the next decade, predictive capability and specific warhead simulation deliverables will demand ever more powerful and sophisticated simulation environments. This request will position the national security laboratories to take advantage of future platform architectures to more efficiently steward the stockpile.

The Infrastructure/Construction component of the appropriation includes Readiness in Technical Base and Facilities, Secure Transportation Asset, Facilities and Infrastructure Recapitalization Program, and Site Stewardship. The President's Budget Request is $2.3 billion, a 4.8 percent increase over the FY 2010 level. Creation and maintenance of supporting physical infrastructure for the nuclear security enterprise is a high priority in the upcoming FYNSP. Along with the funding to support the ongoing operations of the government-owned, contractor operated laboratories and manufacturing facilities, the President's Request includes funding for major long term construction projects needed to restore critical capabilities in plutonium and uranium essential to the Stockpile Management program.

The President's Request includes funding to complete the design and begin construction of the Chemistry and Metallurgy Research Facility Replacement (CMRR) nuclear facility at the Los Alamos National Laboratory. This facility conducts plutonium research and development and provides analytical capabilities in support of pit surveillance and production. Current planning would have this facility fully operational by 2022. A related project is requested to increase pit production capacity and capability at the adjoining PF-4 facility that is part of the main plutonium facility at Los Alamos to demonstrate pit reuse by 2017 and production by 2018-2020. The budget request also includes funding to complete the design and begin construction of the Uranium Processing Facility (UPF) at the Y-12 National Security Complex to support production and surveillance of highly-enriched uranium components. This facility is also planned to achieve full operations by 2022.

Maintaining and improving the current infrastructure is also an important priority for NNSA. The Facilities and Infrastructure Recapitalization Program is continuing to reduce the deferred maintenance backlog as it proceeds toward its planned conclusion in 2013. Increased funding is provided for the Site Stewardship program that integrates institutional/landlord functions for our sites, including regulatory-driven long-term Stewardship, Nuclear Materials Consolidation, and energy efficiency projects.

The Security and Nuclear Counterterrorism component of the appropriation includes Defense Nuclear Security, Cyber Security, and Nuclear Counterterrorism Incident Response. The President's request for these programs is $1.1 billion, a slight 3.2 percent decrease from FY 2010 appropriated levels. The decrease is driven by continuing to leverage efficiencies in the implementation of the Graded Security

Protection Policy by the Defense Nuclear Security program. The Nuclear Counterterrorism Incident Response activities within this component increase by 5 percent.

Defense Nuclear Nonproliferation Appropriation

The request for this appropriation is $2.7 billion, an increase of 25.8 percent over the FY 2010 appropriation. The increase is driven by the imperative for U.S. leadership in nonproliferation initiatives both here and abroad, including the consolidation of fissile materials disposition activities into this account. In addition to the programs funded solely by the NNSA, our programs support the Department of Energy mission to protect our national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and rogue states. These efforts are implemented in part through the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, formed at the G8 Kananaskis Summit in June 2002, and the Global Initiative to Combat Nuclear Terrorism, launched in Rabat, Morocco, in October 2006.

The FY 2011 President's Request reflects a shift in emphasis from work completed under the Bratislava agreement to completing additional Second Line of Defense sites, including Megaports, sustainability of MPC&A upgrades, and continued expansion of nuclear and radiological material removal. The Global Threat Reduction Initiative increases by 68 percent in support of the President's policy direction to secure vulnerable nuclear materials around the world in four years. The Fissile Materials Disposition program increases by 47 percent reflecting continuing domestic construction on the MOX Fuel Fabrication Facility, and the design and construction of two major supporting facilities.

The NNSA's nonproliferation programs seek to secure nuclear materials worldwide that could be used for weapons and to convert such materials for peaceful applications. Within the Nuclear Nonproliferation Research and Development activities, improved detection of nuclear material is being achieved through instrument development and extensive cooperation among federal and international agencies. These advanced detection techniques and analysis capabilities are a major part of the U.S. capability to detect nuclear weapon tests and nuclear materials production processes to assure that intelligence information and agreed material controls are adequate in the face of increasing efforts by adversaries to obtain these capabilities. Demonstration of improved detection techniques, relying on state-of-the-art instrument advances to detect smaller and more specific types of material, in many cases remotely, are uniquely contributed by NNSA. Novel verification technologies and methodologies and realistic testing of detectors are also uniquely available from NNSA. Frequent interagency technical meetings and international comparisons, along with scientific peer review of each activity, guide these specific research and development programs.

The FY 2011 President's Budget Request has consolidated all of the funding requests for the Fissile Materials Disposition activities within the Defense Nuclear Nonproliferation appropriation. The current funding for both the MOX Fuel Fabrication Facility and Waste Solidification Building projects were moved in the FY 2010 appropriation, and the Pit Disassembly and Conversion Facility (PDCF) project has been moved back to Defense Nuclear Nonproliferation starting in FY 2011. The DOE has decided to pursue a proposed combination of the Office of Environmental Management Plutonium Preparation Project and the Pit Disassembly and Conversion Project in a single project located in an existing K-Area Facility at the Savannah River Site. This activity will be evaluated using the Department's project management order, DOE 413 and will move toward a Critical Decision 1 (approval of alternative selection and cost range).

The U.S. continues to work with the Russian Federation on plutonium disposition in Russia pursuant to the Plutonium Management and Disposition Agreement reached in September 2000. Congress had appropriated $200 million in a FY 1999 Supplemental Appropriation to support Russian plutonium disposition activities; however, $207 million of this and other funding for this program was rescinded in FY 2008 due to lack of progress in Russia. The FY 2011 Request includes $100 million of a commitment to provide $400 million to support plutonium disposition in Russia once a Protocol amending the 2000 Agreement, related liability provisions, and a monitoring and inspection regime is signed. The balance of more than $2 billion in remaining cost associated with Russian plutonium disposition would be borne by Russia and non-U.S. contributions, if available.

Naval Reactors Appropriation

The President's Request for Naval Reactors is $1.1 billion, an increase of 13.3 percent over the FY 2010 appropriated level. The program supports the U.S. Navy's nuclear fleet, comprised of all of the Navy's submarines and aircraft carriers, including 52 attack submarines, 14 ballistic missile submarines, 4 guided missile submarines, and 11 aircraft carriers. These ships are relied on every day, all over the world, to protect our national interests. Starting in FY 2010, there are major new missions for the NNSA Naval Reactors program. A significant funding increase is requested for the OHIO Class submarine replacement that will begin procurement in 2019. Two years prior, in 2017, reactor plant components will be procured to allow for the long manufacturing spans and early need for these components in submarine construction; thus, the R&D and design is underway now. This design will require a new fuel system and a new cladding material.

The land-based prototype (located at the Kesselring site in New York), which requires refueling in 2017, continues to provide multiple benefits. It provides a cost-effective test platform for new technologies and components before they are introduced for Fleet application, it allows for early fuel depletion and learning from new core materials, and it provides a training platform for reactor plant operators. The land-based prototype refueling will also provide key technical data for the OHIO Class submarine replacement, since the reactor core work to support the refueling will also support the core manufacturing development for the OHIO Class replacement.

The Expended Core Facility (located at the Naval Reactors Facility on the Idaho National Laboratory), is the central location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage, as well as detailed examination of spent cores and irradiated specimens. The existing facility and related infrastructure is more then 50 years old, does not meet current standards, and requires recapitalization. To ensure uninterrupted receipt of naval spent nuclear fuel without impact to the Fleet and to minimize risks associated with an aging facility, construction is targeted to begin by 2015. The mission need statement for sustaining this capability long-term has been approved, and conceptual design and alternative analysis efforts are planned to begin in 2010.

Office of the Administrator Appropriation

This appropriation provides for the Federal staff and related support for the NNSA Headquarters and field organizations. The President's Request is $448.3 million for these activities. The Federal personnel level for FY 2011 is projected at 1,970 Full Time Equivalents, essentially level with the expectation for FY 2010.

NNSA Summary by Appropriation

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Office of the Administrator							
Office of the Administrator	415,878	418,074	448,267	426,424	430,726	435,069	448,498
Congressionally Directed Projects	23,312	13,000	0	0	0	0	0
Use of Prior Year Balances	0	-10,320	0	0	0	0	0
Total, Office of the Administrator	439,190	420,754	448,267	426,424	430,726	435,069	448,498
Weapons Activities Appropriation							
Defense Programs							
Directed Stockpile Work	1,590,152	1,505,859	1,898,379	1,900,736	1,999,470	2,240,139	2,346,254
Science Campaign	316,690	295,646	365,222	397,460	418,823	416,199	394,766
Engineering Campaign	150,000	150,000	141,920	149,737	134,996	144,920	145,739
Inertial Confinement Fusion Ignition and High Yield Campaign	436,915	457,915	481,548	480,451	475,597	470,994	484,812
Advanced Simulation and Computing Campaign	556,125	567,625	615,748	622,940	616,257	615,420	633,134
Readiness Campaign	160,620	100,000	112,092	81,697	70,747	69,854	72,584
Readiness in Technical Base and Facilities	1,674,406	1,842,870	1,848,970	1,872,546	1,841,325	1,926,568	1,997,764
Secure Transportation Asset	214,439	234,915	248,045	251,272	249,456	252,869	261,521
Total, Defense Programs	5,099,347	5,154,830	5,711,924	5,756,839	5,806,671	6,136,963	6,336,574
Nuclear Counterterrorism Incident Response	215,278	221,936	233,134	222,914	222,508	235,300	237,986
Facilities and Infrastructure Recapitalization Program	147,449	93,922	94,000	94,000	94,000	0	0
Site Stewardship	0	61,288	105,478	101,929	103,536	174,071	205,802
Environmental Projects and Operations	38,596	0	0	0	0	0	0
Safeguards and Security							
Defense Nuclear Security	735,208	769,044	719,954	730,944	729,609	728,925	740,649
Cyber Security	121,286	122,511	124,345	126,046	125,822	125,707	127,189
Subtotal, Safeguards and Security	856,494	891,555	844,299	856,990	855,431	854,632	867,838
Science, Technology and Engineering Capability	30,000	0	20,000	0	0	0	0
Congressionally Directed Projects	22,836	3,000	0	0	0	0	0
Use of Prior Year Balances	0	-42,100	0	0	0	0	0
Total, Weapons Activities	6,410,000	6,384,431	7,008,835	7,032,672	7,082,146	7,400,966	7,648,200
Defense Nuclear Nonproliferation							
Nonproliferation and Verification Research and Development	356,281	317,300	351,568	315,941	317,558	328,194	351,145
Nonproliferation and International Security	150,000	187,202	155,930	161,083	165,275	169,861	181,741
International Nuclear Materials Protection and Cooperation	460,592	572,050	590,118	570,798	561,790	558,492	623,670
Elimination of Weapons-Grade Plutonium Production	141,299	24,507	0	0	0	0	0
Fissile Materials Disposition	41,774	701,900	1,030,713	859,375	1,010,642	789,558	743,600
Global Threat Reduction Initiative	404,640	333,500	558,838	599,994	659,926	987,138	1,056,172
Congressionally Directed Projects	1,903	250	0	0	0	0	0
Use of Prior Year Balances	-11,418	0	0	0	0	0	0
Total, Defense Nuclear Nonproliferation	1,545,071	2,136,709	2,687,167	2,507,191	2,715,191	2,833,243	2,956,328
Naval Reactors							
Naval Reactors	828,054	945,133	1,070,486	1,099,734	1,171,178	1,226,017	1,310,530
Total, Naval Reactors	828,054	945,133	1,070,486	1,099,734	1,171,178	1,226,017	1,310,530
Total, NNSA	9,222,315	9,887,027	11,214,755	11,066,021	11,399,241	11,895,295	12,363,556
Transfer of Prior Year Balances (Office of the Administrator)		-10,000					
Total, NNSA (OMB Scoring)		9,877,027					

Site Estimates
(Dollars in Thousands)

Site	FY 2009 Omnibus	FY 2010 Approp	FY 2011				Total
			OA	WA	NN	NR	
Ames	236	435	0	0	420	0	420
ANL	45,501	53,527	0	2,412	63,835	0	66,247
BAPL	418,700	434,400	0	0	0	498,900	498,900
BNL	39,135	28,350	0	1,876	38,165	0	40,041
CH	38,962	15,404	0	14,236	0	0	14,236
GA	15,707	22,100	0	22,500	0	0	22,500
HQ	355,401	515,174	248,681	356,596	18,712	24,086	648,075
ID	1,237	1,299	0	1,364	0	0	1,364
INL	212,786	186,457	0	9,945	133,456	93,400	236,801
KAPL	302,800	391,800	0	0	0	434,900	434,900
KCP	456,103	461,995	0	532,949	2,439	0	535,388
KSO	6,106	5,881	7,078	0	0	0	7,078
LANL	1,563,230	1,488,040	0	1,636,838	233,537	0	1,870,375
LASO	19,874	19,805	20,021	0	0	0	20,021
LBNL	6,541	5,717	0	0	5,506	0	5,506
LLNL	1,121,277	1,077,345	0	1,051,070	108,755	0	1,159,825
LSO	18,564	18,914	19,759	0	0	0	19,759
NBL	1,150	3,769	0	221	988	0	1,209
NETL	3,359	1,050	0	0	0	0	0
NRL	6,027	2,104	0	2,060	0	0	2,060
NRLFO	0	18,300	0	0	0	19,200	19,200
NS	755,064	618,382	81,414	265,055	235,866	0	582,335
NTS	288,259	265,159	0	228,669	106,570	0	335,239
NVSO	105,937	103,627	19,485	78,495	0	0	97,980
OR	215	240	0	0	223	0	223
ORISE	13,819	15,663	0	15,007	3,473	0	18,480
ORNL	183,016	183,901	0	5,874	276,717	0	282,591
OSTI	631	773	0	771	0	0	771
PN	10,905	0	0	0	0	0	0
PNNL	237,219	330,140	0	11,834	281,185	0	293,019
PSO	12,813	12,902	14,396	0	0	0	14,396
PX	526,567	534,706	0	532,317	218	0	532,535
RL	1,463	1,385	0	1,418	0	0	1,418
RSL	0	0	0	0	9,464	0	9,464
SNL	1,165,794	1,124,875	0	1,141,953	187,275	0	1,329,228
SR	34,130	134,356	0	0	217,408	0	217,408
SR/MOX	0	494,238	0	0	465,788	0	465,788
SR/WGI	0	0	0	0	80,000	0	80,000
SRNL	2,216	2,100	0	1,650	0	0	1,650
SRS	247,367	335,782	0	191,685	147,529	0	339,214
SRSO	31,176	7,750	6,194	1,516	0	0	7,710
SSO	14,611	14,352	15,217	0	0	0	15,217
ST	8,245	0	0	0	0	0	0
UR/LLE	55,370	59,939	0	62,477	0	0	62,477
Y-12	866,573	907,227	0	832,343	53,073	0	885,416
YSO	39,647	40,084	16,022	5,704	16,565	0	38,291
PYBal	-11,418	-52,420	—	0	0	0	0
Grand Total	9,222,315	9,887,027	448,267	7,008,835	2,687,167	1,070,486	11,214,755

Indirect Costs and Other Items of Interest

Institutional General Plant Projects (IGPP)

Institutional General Plant Projects (IGPP) provide for minor new construction of a general institutional nature at multi-program sites, funded out of Management and Operating Contractor indirect funds. IGPPs benefit multi-program users (e.g., NNSA and Office of Science) at a site. The following are planned IGPP funding projections:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Los Alamos National Laboratory	8,200	9,200	9,400	8,800	0	0	0
Lawrence Livermore National Laboratory	4,632	4,632	10,000	10,000	0	0	0
Sandia National Laboratories	4,280	4,500	870	8,300	1,400	5,400	5,520
Total Site IGPP	**17,112**	**18,332**	**20,270**	**27,100**	**1,400**	**5,400**	**5,520**

The three NNSA laboratories, LANL, LLNL and SNL, are funding general institutional projects that support multiple programs.

Other Indirect

Facilities Maintenance and Repair

The Department's Facilities Maintenance and Repair activities are tied to its programmatic missions, goals, and objectives. Facilities Maintenance and Repair activities funded by NNSA are displayed below.

Indirect-Funded Maintenance and Repair

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Bettis Atomic Power Laboratory	6,669	6,571	6,307
Kansas City Plant	8,864	8,954	10,915
Knolls Atomic Power Laboratory	10,933	11,323	12,639
Lawrence Livermore National Laboratory	100,107	100,107	101,640
Los Alamos National Laboratory	54,449	54,449	54,449
Nevada Test Site	51,779	52,970	54,135
Pantex Plant	0	0	0
Sandia National Laboratories	92,142	94,086	96,613
Savannah River Site	1,647	1,701	1,757
Y-12 National Security Complex	22,189	22,744	23,267
Total, Indirect-Funded Maintenance and Repair	**348,779**	**352,905**	**361,722**

Outyear Indirect-Funded Maintenance and Repair

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Bettis Atomic Power Laboratory	6,371	6,375	6,494	6,373
Kansas City Plant	10,547	6,140	5,005	5,180
Knolls Atomic Power Laboratory	13,172	13,859	11,814	11,562
Lawrence Livermore National Laboratory	103,107	106,920	109,562	111,112
Los Alamos National Laboratory	54,449	54,449	54,449	72,340
Nevada Test Site	55,326	56,543	57,787	59,059
Pantex Plant	0	0	0	0
Sandia National Laboratories	93,925	94,614	95,758	97,849
Savannah River Site	1,815	1,875	1,937	2,103
Y-12 National Security Complex	23,779	24,302	24,837	25,383
Total, Indirect-Funded Maintenance and Repair	**362,491**	**365,077**	**367,643**	**390,961**

Direct-Funded Maintenance and Repair

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Bettis Atomic Power Laboratory	9,030	9,592	13,079
Kansas City Plant	21,282	21,392	25,968
Knolls Atomic Power Laboratory	4,798	3,798	3,779
Lawrence Livermore National Laboratory	19,610	21,005	21,394
Los Alamos National Laboratory	70,054	72,663	73,155
Nevada Test Site	17,557	28,166	28,839
Pantex Plant	74,403	62,831	62,391
Sandia National Laboratories	8,049	11,647	21,279
Savannah River Site	29,411	29,080	30,479
Y-12 National Security Complex	16,995	50,207	51,135
Total, Direct-Funded Maintenance and Repair	**271,189**	**310,381**	**331,498**

Outyear Direct-Funded Maintenance and Repair

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Bettis Atomic Power Laboratory	14,602	13,532	12,661	11,689
Kansas City Plant	25,111	14,826	11,679	12,088
Knolls Atomic Power Laboratory	3,981	4,011	4,025	4,094
Lawrence Livermore National Laboratory	21,437	17,940	4,055	4,145
Los Alamos National Laboratory	73,097	73,446	44,541	59,187
Nevada Test Site	29,288	29,596	17,484	17,335
Pantex Plant	65,154	68,106	48,877	51,151
Sandia National Laboratories	24,966	21,221	4,547	2,845
Savannah River Site	37,752	38,094	34,631	35,213
Y-12 National Security Complex	51,302	52,040	12,006	12,270
Total, Direct-Funded Maintenance and Repair	**346,690**	**332,812**	**194,506**	**210,017**

Office of the Administrator

Office of the Administrator

Office of the Administrator

Proposed Appropriation Language

For necessary expenses of the Office of the Administrator in the National Nuclear Security Administration, including official reception and representation expenses not to exceed $12,000, [$420,754,000] *$448,267,000,* to remain available until expended.

Explanation of Change

The FY 2011 Request provides escalation for a level NNSA Federal staff of 1,970 full time equivalents (FTEs). The escalation is largely a 4.7 percent increase in salary and benefits over FY 2010 levels, and additionally reflects full funding by the Office of the Administrator of government site offices.

Office of the Administrator

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation *	FY 2011 Request
Office of the Administrator			
Office of the Administrator	415,878	418,074	448,267
Congressionally Directed Projects	23,312	13,000	0
Use of Prior Year Balances	0	-10,320	0
Total, Office of the Administrator	**439,190**	**420,754**	**448,267**
Transfer of Prior Year Balances		-10,000	
Total, OMB Scoring	**439,190**	**410,754**	**448,267**

* Note: In accordance with P.L. 111-85, $10,000,000 of Office of the Administrator prior year balances have been transferred to Non-Defense Environmental Cleanup for cleanup efforts at the Argonne National Laboratory.

Public Law Authorization:

Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
FY 2009 Omnibus Appropriations Act (P.L. 111-8)
National Nuclear Security Administration Act (P.L. 106-65), as amended

Outyear Appropriation Summary

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Office of the Administrator	**426,424**	**430,726**	**435,069**	**448,498**

Mission

The Office of the Administrator creates a well-managed, inclusive, responsive, and accountable organization through the strategic management of human capital and acquisitions; enhanced cost-effective utilization of information technology; and integration of budget and performance data.

Benefits

The Office of the Administrator provides the Federal personnel and resources necessary to plan, manage, and oversee the operation of the National Nuclear Security Administration (NNSA). The Nation benefits from having a highly educated and skilled cadre of Federal managers overseeing the operations of the defense mission activities and performing many specialized duties including leading Emergency Response teams, nuclear nonproliferation coordination, and safeguards and security oversight.

Performance

The Office of the Administrator appropriation supports Secretarial Goal 3 - ***Security: Reduce nuclear dangers and environmental risks.*** NNSA will provide a well-managed, inclusive, responsive and

accountable organization through the strategic management of human capital; enhanced cost-effective utilization of information technology; and greater integration of budget and performance data.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Priority: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 25, Office of the Administrator											
Federal Administrative Costs: Maintain the Office of the Administrator Federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6% (Efficiency)[a]	N/A	N/A	N/A	R: 5.0% T: 5.9%	T: 5.9%	T: 5.9%	T: 5.9%	T: 5.9%	T: 5.9%	T: 5.9%	In keeping with OMB and DOE expectations that administrative costs be minimized, maintain the Office of the Administrator Federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6% .[a]
PMCDP Certification: Cumulative percent of active NNSA projects managed by a Federal Project Director, certified at the appropriate level through the Project Management Career Development Program (Long-term Output)[a]	N/A	N/A	N/A	R: 76% T: 4%	T: 80%	T: 85%	T: 90%	T: 95%	T: 100%	T: 100%	By 2014, 100% of NNSA Federal Project Directors will be certified at the appropriate level though the Project Management Career Development Program.[a]
Annual average NNSA Program score on the OMB Program Assessment Rating Tool (PART) assessment indicating progress in budget performance integration and results (Efficiency)	R: 82% T: 80%	R: 84.3% T: 85%	R: 85% T: 85%	T: N/A[b]	T: N/A	T: N/A	T: N/A	T: N/A	T: N/A	T: N/A	By 2007, increase annual average PART scores to 85%.

[a] New measure developed for FY 2009.

[b] Prior to FY 2008, the cumulative average NNSA PART score was used as the indicator of the overall health of the organization. This metric was replaced with two new metrics that better depict the overall health of the organization.

Means and Strategies

The Office of the Administrator Program leverages Federal resources with contractual support to optimize its mission achievement. The NNSA has implemented a disciplined planning, programming, and budgeting process to assure taxpayers that these programs are integrated and cost effective. The program has an integrated headquarters and field administrative structure, and is forward looking in its workforce planning initiatives. The program is also implementing information and acquisition management tools and practices for improved job performance and efficiency. The NNSA uses creative personnel practices to ensure the best talent is recruited, retained, and rewarded. All employees are accountable to the NNSA Administrator for achieving their elements of the NNSA's mission.

The Office of the Administrator budget is 72 percent Salaries and Benefits for NNSA Federal staff. Budget components for Information Technology, Space and Occupancy, International Offices, Travel, and Support Services, comprise the remaining 28 percent.

Validation and Verification

To validate and verify program performance, the NNSA conducts various internal and external reviews and audits. The NNSA's programmatic activities are subject to review by the Congress, the Government Accountability Office, the Department's Inspector General, the National Security Council, the Defense Nuclear Facilities Safety Board, the Department's Office of Engineering and Construction Management, and the Department's Office of Independent Oversight. Each year, numerous external independent reviews are conducted of selected projects. Additionally, NNSA Headquarters senior management and field managers conduct frequent, in-depth reviews of cost, schedule, and scope to ensure projects are on-schedule and within budget.

The NNSA has established a comprehensive validation and verification process as part of its Planning, Programming, Budgeting and Evaluation (PPBE) system. Long-term performance goals are established/validated during the Planning Phase and linked to annual targets and detailed technical milestones. During the Programming Phase, budget and resource trade-offs and decisions are evaluated based on the impact to annual and long-term outcomes. These NNSA decisions are documented and used to develop the budget requests during the Budgeting Phase. Program and financial performance for each measure is monitored and progress verified during the Execution and Evaluation Phase.

The NNSA validation and verification activities during the PPBE Execution and Evaluation Phase include a set of tiered performance reviews to examine program management and corporate performance against long-term goals. The NNSA Administrator reviews each NNSA program as part of the NNSA's PPBE Evaluation process. These reviews, usually conducted annually, include the NNSA Management Council and focus on both technical and financial information to identify issues, monitor program progress, and make recommendations for corporate improvement. The focus of these reviews is to verify and validate that NNSA programs are on track to meet their long-term goals and annual targets. The results of these reviews are reported quarterly in the Department's performance tracking system and annually in the NNSA Administrator's Annual Performance Report and the DOE Performance Accountability Report (PAR). These documents present the progress that NNSA programs are making toward achieving both annual targets and long-term goals, and help senior managers verify and validate progress toward NNSA and Departmental commitments.

Significant Program Shifts

- Beginning in FY 2011, there is a transfer of 1 FTE from the Office of Environmental Management (EM) to NNSA for Long-term Stewardship (LTS) at the Service Center. This transfer reflects a past transfer of functions from EM to NNSA and future reductions in EM work with increases in NNSA work (e.g., nuclear materials consolidation, Facility Deactivation and Demolition), specifically the transfer of 1 FTE associated with the completion of legacy EM funded work at the Livermore, Savannah River, and Pantex Site Offices. (FY 2011: +$204,900)

Major Outyear Priorities and Assumptions

- The outyear projections for the Office of the Administrator appropriation total $1,740,717,000 (FY 2012 through FY 2015). This FYNSP level does not provide for true escalation in the outyears. These adjustments are made in the budget year only to reflect the most precise estimate possible based on staffing levels.

Department of Energy (DOE) Working Capital Fund (WCF) Support

The NNSA Office of the Administrator appropriation projected allocation of the DOE Working Capital fund for FY 2011 is $23,098,000.

The DOE WCF Board has extended the policy for using program funding to finance WCF activities. Beginning in FY 2011, NNSA programs will fund a pro rata share by Appropriation of certain DOE Working Capital Fund activities. FY 2011 projected NNSA program allocations are as follows: DOEnet ($482,000) for DOE telecommunications services; Financial Statement Audits ($4,514,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($3,076,000) for procurement management; iManage ($3,121,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,502,000).

The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2011 is projected at $35,942,000.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established a program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the nuclear security enterprise. The FY 2010 Energy and Water Development and Related Agencies Appropriations Act (P.L. 111-85), included $13,000,000 in Congressionally Directed projects in support of HBCU programs within the Office of the Administrator Appropriation. In FY 2011, the Office of the Administrator appropriation requests approximately $4,677,051 to support HBCU activities. Additionally, the Weapons Activities appropriation plans to provide up to $6,000,000; the Defense Nuclear Nonproliferation appropriation plans to provide up to $3,000,000; and the Naval Reactors program plans to fund up to $1,000,000 of HBCU efforts in multiple research areas directly supporting program activities.

Office of the Administrator

Full Time Equivalents (FTEs)

	FY 2009 Actual	FY 2010 Appropriation	FY 2011 Request
Office of the Administrator			
Headquarters			
Office of the Administrator	78	84	84
Defense Programs	173	178	178
Defense Nuclear Nonproliferation	212	259	259
Emergency Operations	89	99	99
Infrastructure and Environment	38	42	42
Management and Administration	96	102	102
Defense Nuclear Security	22	28	28
Future Leaders Program	57	60	60
Subtotal, Headquarters	765	852	852
NNSA Service Center	458	491	491
Livermore Site Office	93	97	97
Los Alamos Site Office	109	111	111
Sandia Site Office	83	84	84
Nevada Site Office	90	98	98
Pantex Site Office	77	81	81
Y-12 Site Office	81	81	81
Kansas City Site Office	39	42	42
Savannah River Site Office	36	33	33
Total, Office of the Administrator	**1,831**	**1,970**	**1,970**

Office of the Administrator

Funding by Site

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Appropriation	FY 2011 Request	$ Change	% Change
NNSA Office of the Administrator					
Office of the Administrator					
Headquarters	230,987	235,076	248,681	+13,605	+5.8%
NNSA Service Center	74,999	74,203	81,414	+7,211	+9.7%
Livermore Site Office	18,564	18,914	19,759	+845	+4.5%
Los Alamos Site Office	19,084	18,780	20,021	+1,241	+6.6%
Sandia Site Office	14,611	14,352	15,217	+865	+6.0%
Nevada Site Office	17,549	17,987	19,485	+1,498	+8.3%
Pantex Site Office	12,813	12,902	14,396	+1,494	+11.6%
Y-12 Site Office	14,972	14,712	16,022	+1,310	+8.9%
Kansas City Site Office	6,106	5,881	7,078	+1,197	+20.4%
Savannah River Site Office	6,193	5,267	6,194	+927	+17.6%
Subtotal	**415,878**	**418,074**	**448,267**	**+30,193**	**+7.2%**
Use of Prior Year Balances	0	-10,320	0	+10,320	-100.0%
Total, Office of the Administrator	**415,878**	**407,754**	**448,267**	**+40,513**	**+9.9%**
Congressionally Directed Projects					
NNSA Service Center	23,312	13,000	0	-13,000	-100.0%
Total, Congressionally Directed Projects	**23,312**	**13,000**	**0**	**-13,000**	**-100.0%**
Total, NNSA Office of the Administrator	**439,190**	**420,754**	**448,267**	**27,513**	**+6.5%**

Office of the Administrator

Funding by Object Class

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Appropriation	FY 2011 Request	$ Change	% Change
NNSA Office of the Administrator					
Office of the Administrator					
Salaries and Benefits	282,096	306,644	321,149	+14,505	+4.7%
Travel	15,412	14,912	15,495	+583	+3.9%
Support Services	25,378	21,678	23,256	+1,578	+7.3%
Other Related Expenses					
Space and Occupancy Costs/WCF	38,939	36,000	44,621	+8,621	+23.9%
Information Technology	29,614	23,444	26,231	+2,787	+11.9%
Other Related Expenses	21,365	12,517	14,377	+1,860	+14.9%
Training	3,074	2,879	3,138	+259	+9.0%
Subtotal, Other Related Expenses	92,992	74,840	88,367	+13,527	+18.1%
Subtotal, Office of the Administrator	**415,878**	**418,074**	**448,267**	**+30,193**	**+7.2%**
Use of Prior Year Balances	0	-10,320	0	+10,320	-100.0%
Total, Office of the Administrator	**415,878**	**407,754**	**448,267**	**+40,513**	**+9.9%**
Congressionally Directed Projects					
Other Related Expenses	23,312	13,000	0	-13,000	-100.0%
Total, Congressionally Directed Projects	**23,312**	**13,000**	**0**	**-13,000**	**-100.0%**
Total, NNSA Office of the Administrator	**439,190**	**420,754**	**448,267**	**+27,513**	**+6.5%**

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Salaries and Benefits	**282,096**	**306,644**	**321,149**

Provides support for a NNSA Federal staff level of 1,970 Full Time Equivalents (FTEs) under the NNSA's Pay for Performance Demonstration Project. Funding includes annual cost of living adjustments of 1.4 percent, performance based salary increases (up to 3 percent), promotions, performance awards, severance costs, health and retirement benefits, workman's compensation payments, and other payroll adjustments.

Provides Salaries and Benefits funding to support the Future Leaders Program (the sixth class of NNSA interns is planned to come on board at the end of the 3rd quarter of FY 2010). The Future Leaders Program funds the interns for two years, during which time they are not counted against a site's managed staffing targets. After the two years, the interns are absorbed into the staffing allocations at the receiving locations.

Travel	**15,412**	**14,912**	**15,495**

Supports domestic and foreign travel necessary to conduct NNSA business. Domestic travel provides management oversight, public outreach, and national security assistance and interface with the Site Offices, the Service Center, Headquarters, the laboratories and plants, and local governments. Domestic travel reflects efficiencies resulting from NNSA efforts to constrain travel expenses by increasing utilization of the existing video teleconferencing capabilities, further reducing multiple employees on trips, and assuring that travel is absolutely mission essential.

International travel is increasing consistent with the DNN mission growth. It is a key element of the nonproliferation work with international agencies and the former Soviet Union republics, and other International partners. DNN travel accounts for 45 percent of the total NNSA travel request.

Support Services	**25,378**	**21,678**	**23,256**

Provides technical support for highly specialized analytical expertise required to address critical technical program issues in nonproliferation and national security including areas of security, facility representatives, environment, safety and health, and project management. (FY 2011: $8,177,759)

Administrative support includes the operation of mailrooms and maintenance of various databases in addition to clerical support. (FY 2011: $12,495,925)

Funding requested provides management support for studies and reviews of NNSA corporate policies and procedures concerning management operations and planning. (FY 2011: $2,582,128)

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Other Related Expenses	**92,992**	**74,840**	**88,367**

Information Technology

Provides Information Technology (IT) support for the NNSA Federal staff, including network services, maintenance and equipment; help desk support; and user equipment and software, including support for Department-wide systems such as the financial information reporting systems.

The IT request for FY 2011 is $26,230,526 the majority of which is provided to the DOE under the Common Operating Environment (DOECOE) arrangement. Other support stays within NNSA for application consolidation; replacing sunset technology; and support for implementation of NNSA's capital planning and acquisition management programs associated with IT investments at NNSA Management and Operating facilities.

Space and Occupancy/Working Capital Fund

Supports $44,621,139 in Space and Occupancy costs for Headquarters and the field including the NNSA contribution to the Working Capital Fund and overall operations and maintenance of both rented and federally owned space. The FY 2011 allocation for space and occupancy costs is comprised of the following areas and associated funding estimates:

- Rental payments $20,128,936
- Facilities and maintenance $9,997,359
- Utilities $7,299,770
- Office space $4,537,376
- Supplies and materials $1,416,462
- Equipment maintenance $885,909
- Printing and production $355,327

A component of the Space and Occupancy funding level is for the Working Capital Fund (WCF) located within Headquarters. The WCF provides a framework for managing certain common administrative services within the Department. An underlying goal is to give program office customers the opportunity, incentive, and information to make cost-effective decisions regarding their use of such services. The DOE WCF Board extended the policy for using program funding to finance some WCF activities. Beginning in FY 2011, NNSA programs will fund a pro rata share by Appropriation activities such as: DOEnet, Financial Statement Audits, Defense Contract Audit Agency (DCAA) Audits, iManage, and Financial Control Reporting Assessment. The following table outlines the specific funding levels funded by the Office of the Administrator Appropriation.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Appropriation	FY 2011 Request
Supplies	562	500	500
Mail Services	401	451	459
Copying Service	446	360	387
Printing and Graphics	563	299	285
Building Occupancy	15,735	15,728	16,045
CIO Operations	3,224	3,159	3,159
Payroll and Personnel	1,513	1,554	1,554
Corporate Training Services	34	428	428
Project Management	281	201	281
I-MANAGE	2,558	2,297	0
Internal Control	1,373	1,370	0
Subtotal, WCF at HQ	**26,690**	**26,347**	**23,098**
WCF Paid by Other NNSA Appropriations	**1,694**	**6,993**	**12,844**
Total, WCF at HQ	**28,384**	**33,340**	**35,942**

International Program

Requests $5,478,477 in FY 2011 for operational costs associated with the international offices in Moscow, Vienna, Tokyo, Kiev, Tbilisi, Astana, Islamabad, and Beijing; all critical to executing the Defense Nuclear Nonproliferation programs. The international office funding supports full operation of the mandatory entitlements for personnel, State Department Capital Security Cost Sharing (CSCS) charges, and the State Department's International Cooperative Administrative Support Services (ICASS) charges.

Training

Supports necessary training and skills maintenance of the NNSA Federal staff of $3,138,414. Includes training for the Future Leaders Program and corporate training managed by the NNSA Chief Learning Officer.

The NNSA corporate training program ensures that all NNSA-wide training needs are met. Corporate training provides funding for the Technical Qualification Program (TQP), leadership and supervisory development programs, retirement planning, and mandatory Equal Employment Opportunity and Diversity training. Corporate travel related to training is also funded.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

Historically Black Colleges and Universities (HBCU)

Requests $4,677,051 for the HBCUs ($1,062,989) and the Massie Chairs of Excellence Program. ($3,614,062).

Permanent Change of Station (PCS)

Requests $2,000,000 in support of PCS moves for Federal personnel.

Security Investigations

Requests $1,000,000 for all Federal field security clearance investigations for the Service Center and Site Offices.

Miscellaneous Other

Requests $1,209,175 for activities required for NNSA's Federal personnel, including minor procurements; the National Archives and Records Administration (NARA); Diversity program conferences and sponsorships; Small Business Administration activities; interpreting services; professional credentials; law library maintenance; NNSA Headquarters Going the Extra Mile (GEM) award program; and other miscellaneous activities.

Reception and Representation

Requests $12,000 for official reception and representation expenses for NNSA activities.

Subtotal, Office of the Administrator	**415,878**	**418,074**	**448,267**
Use of Prior Year Balance	**0**	**-10,320**	**0**
Total, Office of Administrator	**415,878**	**407,754**	**448,267**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
▪ **Salary and Benefits**	
Increase reflects +1.4 percent for the projected cost of living adjustment; +3.3 percent for performance based salary increases, promotions, awards, and benefit escalation.	**+14,505**
▪ **Travel**	
Reflects increase to international travel for Defense Nuclear Nonproliferation (DNN) mission growth, offset by domestic travel efficiencies resulting from NNSA efforts to constrain travel expenses by increasing utilization of the existing video teleconferencing capabilities.	**+583**
▪ **Support Services**	
Increase reflects escalation and support service growth for Nuclear Materials Consolidation support, DNN acquisitions, and increases to the Technical Qualifications program.	**+1,578**
▪ **Other Related Expenses**	
Increase reflects the Office of the Administrator fully funding all NNSA site office space requirements across the nuclear security enterprise, additional funding for new building maintenance and lease requirements at the Service Center, NNSA international expansion under the DNN programs, escalation primarily in information technology and space and occupancy costs, and increased HBCU activities.	**+13,527**
FY 2010 Use of Prior Year Balances	**+10,320**
Total Funding Change, Office of the Administrator	**+40,513**

Funding Profile by Category

	(dollars in thousands/whole FTEs)		
	FY 2009	FY 2010	FY 2011
Headquarters			
Salaries and Benefits	127,766	148,032	152,749
Travel	11,232	11,898	12,873
Support Services	14,675	12,551	13,951
Other Related Expenses	77,314	62,595	69,108
Total, Headquarters	230,987	235,076	248,681
Total, Full Time Equivalents	765	852	852
NNSA Service Center			
Salaries and Benefits	59,119	61,364	65,274
Travel	1,822	1,142	708
Support Services	5,592	5,166	4,556
Other Related Expenses	8,466	6,531	10,876
Total, NNSA Service Center	74,999	74,203	81,414
Total, Full Time Equivalents	458	491	491
Livermore Site Office			
Salaries and Benefits	15,626	16,052	16,743
Travel	423	287	245
Support Services	1,176	959	1,085
Other Related Expenses	1,339	1,616	1,686
Total, Livermore Site Office	18,564	18,914	19,759
Total, Full Time Equivalents	93	97	97
Los Alamos Site Office			
Salaries and Benefits	17,712	17,643	18,874
Travel	347	275	232
Support Services	442	372	397
Other Related Expenses	583	490	518
Total, Los Alamos Site Office	19,084	18,780	20,021
Total, Full Time Equivalents	109	111	111
Sandia Site Office			
Salaries and Benefits	12,708	12,928	13,573
Travel	329	209	279
Support Services	667	563	666
Other Related Expenses	907	652	699
Total, Sandia Site Office	14,611	14,352	15,217
Total, Full Time Equivalents	83	84	84

Funding Profile by Category (continued)

(dollars in thousands/whole FTEs)

	FY 2009	FY 2010	FY 2011
Nevada Site Office			
Salaries and Benefits	14,289	15,218	16,166
Travel	364	311	378
Support Services	869	922	1,041
Other Related Expenses	2,027	1,536	1,900
Total, Nevada Site Office	17,549	17,987	19,485
Total, Full Time Equivalents	90	98	98
Pantex Site Office			
Salaries and Benefits	11,434	12,119	12,797
Travel	242	218	175
Support Services	555	429	557
Other Related Expenses	582	136	867
Total, Pantex Site Office	12,813	12,902	14,396
Total, Full Time Equivalents	77	81	81
Y-12 Site Office			
Salaries and Benefits	12,485	12,765	13,498
Travel	275	231	259
Support Services	1,023	659	902
Other Related Expenses	1,189	1,057	1,363
Total, Y-12 Site Office	14,972	14,712	16,022
Total, Full Time Equivalents	81	81	81
Kansas City Site Office			
Salaries and Benefits	5,707	5,583	6,200
Travel	196	153	114
Support Services	7	6	6
Other Related Expenses	196	139	758
Total, Kansas City Site Office	6,106	5,881	7,078
Total, Full Time Equivalents	39	42	42
Savannah River Site Office			
Salaries and Benefits	5,250	4,940	5,275
Travel	182	188	232
Support Services	372	51	95
Other Related Expenses	389	88	592
Total, Savannah River Site Office	6,193	5,267	6,194
Total, Full Time Equivalents	36	33	33

Funding Profile by Category (continued)

(dollars in thousands/whole FTEs)

	FY 2009	FY 2010	FY 2011
Office of the Administrator			
Salaries and Benefits	282,096	306,644	321,149
Travel	15,412	14,912	15,495
Support Services	25,378	21,678	23,256
Other Related Expenses	92,992	74,840	88,367
Total, Office of the Administrator	415,878	418,074	448,267
Total, Full Time Equivalents	1,831	1,970	1,970

Support Services by Category

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Administrative support	14,363	12,119	12,496
Management support	2,411	2,149	2,582
Technical support			
Other technical support	2,853	1,958	2,478
Security support	2,672	2,606	2,470
ES&H technical support	1,037	859	748
Project management support	1,904	1,877	2,092
Facility representative support	138	110	390
Subtotal, Technical support	8,604	7,410	8,178
Total, Support Services	**25,378**	**21,678**	**23,256**

Other Related Expenses by Category

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Training	3,074	2,879	3,138
Space and Occupancy Costs			
Rental payments	17,147	17,465	20,129
Facilities and maintenance	5,883	4,748	9,997
Utilities	6,213	5,271	7,300
Office space	3,025	2,547	4,537
Internal Control	1,373	1,370	0
I-MANAGE	2,558	2,297	0
Supplies and materials	1,400	1,281	1,417
Equipment maintenance	711	663	886
Printing and production	629	358	355
Subtotal, Space and Occupancy Costs	38,939	36,000	44,621
Other Expenses			
International Offices	3,345	3,490	5,479
HBCU/HSIs	4,368	4,145	4,677
Transfer to Argonne National Lab	10,000	0	0
PCS moves	1,919	2,678	2,000
Other Services	1,721	2,192	2,209
Reception and representation	12	12	12
Subtotal, Other Expenses	21,365	12,517	14,377
Subtotal, Other Related Expenses	60,304	48,517	58,998
Information Technology	29,614	23,444	26,231
Total, Other Related Expenses	**92,992**	**74,840**	**88,367**

Congressional Directed Projects

Funding Profile by Subprogram

	FY 2009	FY 2010	FY 2011
Congressionally Directed Projects	23,312	13,000	0

Description

A research and education partnership program with Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence was initiated by the Congress through Congressionally directed projects in the Office of the Administrator appropriation in FY 2005 and nearly every year thereafter. The NNSA has established an effective program to target national security research opportunities for these institutions to increase their participation in national security-related research and to train and recruit HBCU graduates for employment within the NNSA. The NNSA goal is a stable $10,000,000 annual effort.

In FY 2011, the Office of the Administrator appropriation will provide approximately $4,677,051 to support HBCU activities. Additionally, the Weapons Activities appropriation plans to provide up to $6,000,000; the Defense Nuclear Nonproliferation appropriation plans to provide up to $3,000,000; and the Naval Reactors program plans to fund up to $1,000,000 of HBCU efforts in multiple research areas directly supporting program activities.

HBCU Funding History

Office of the Administrator

Fiscal Year	Congressionally Directed	Other HBCU Activities
2005	22,320	0
2006	3,500	0
2007	0	1,431
2008	22,140	3,463
2009	23,312	4,368
2010	13,000	4,145
2011	0	4,677

Note: Congressionally Directed in FY 2006 totalled $15,000,000 ($3,500,000 OA and $11,500,000 other NNSA appropriations).

Detailed Justification

(dollars in thousands)

	FY 2009 *(non-add)*	FY 2010	FY 2011
Congressionally Directed Projects			
• HBCU, ACE Program at Maricopa Community Colleges (AZ)	952	1,000	0
• HBCU, Morehouse College Energy Science Research and Education Initiative (GA)	1,903	2,000	0
• HBCU, South Carolina Math and Science Initiative (SC)	9,991	10,000	0
• HBCU, Wilberforce (OH)	1,427	0	0
• HBCU, Central State (OH)	1,427	0	0
• HBCU, Educational Advancement Alliance Graduate Program (PA)	4,757	0	0
• HBCU, Marshall Fund Minority Energy Science Initiative (MD)	2,855	0	0
Total, Congressionally Directed Projects	**23,312**	**13,000**	**0**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Congressionally Directed Projects	
Decrease reflects the Congressionally Directed projects in support of HBCU programs in the FY 2010 Energy and Water Development and Related Agencies Appropriations Act (P.L. 111-85). In FY 2011, the Office of the Administrator request plans to provide $4,677,051 ($3,614,062 for the Massie Chairs of Excellence and $1,062,989 for HBCU activities); the Weapons Activities appropriation plans to provide up to $6,000,000; the Defense Nuclear Nonproliferation appropriation plans to provide up to $3,000,000; and the Naval Reactors program plans to provide up to $1,000,000 for HBCU efforts.	-13,000
Total, Congressionally Directed Projects	**-13,000**

Weapons Activities

Weapons Activities

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Weapons Activities

Proposed Appropriation Language

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other incidental expenses necessary for Atomic Energy Defense Nuclear Security Enterprise in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, the purchase of not to exceed one ambulance *and one aircraft*; [$6,384,431,000] *$7,008,835,000*, to remain available until expended. [: Provided, That $357,800,000 is provided to Stockpile Systems activities including $91,956,000 for the B61 Stockpile Systems activities: Provided further, That upon completion of the Nuclear Posture Review and confirmation of the requirement for the B61-12, the NNSA is authorized to reallocate an additional $15,000,000 within the Stockpile Systems activities to support the continuation of the B61-12 non-nuclear upgrade study, with notification to cognizant congressional committees within 15 days of the implementation of this action: Provided further, That, of the amount appropriated in this paragraph, $3,000,000 shall be used for projects specified in the table that appears under the heading ‘‘Congressionally Directed Weapons Activities Projects in the joint explanatory statement accompanying the conference report on this Act.]

Explanation of Change

The FY 2011 Request provides an increase from the FY 2010 appropriation. Increases are provided for stockpile support, science, and infrastructure in support of Department of Defense requirements.

Weapons Activities

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Weapons Activities			
Directed Stockpile Work	1,590,152	1,505,859	1,898,379
Science Campaign	316,690	295,646	365,222
Engineering Campaign	150,000	150,000	141,920
Inertial Confinement Fusion Ignition and High Yield Campaign	436,915	457,915	481,548
Advanced Simulation and Computing Campaign	556,125	567,625	615,748
Readiness Campaign	160,620	100,000	112,092
Readiness in Technical Base and Facilities	1,674,406	1,842,870	1,848,970
Secure Transportation Asset	214,439	234,915	248,045
Nuclear Counterrorism Incident Response	215,278	221,936	233,134
Facilities and Infrastructure Recapitalization Program	147,449	93,922	94,000
Site Stewardship	0	61,288	105,478
Environmental Projects and Operations	38,596	0	0
Defense Nuclear Security	735,208	769,044	719,954
Cyber Security	121,286	122,511	124,345
Science, Technology and Engineering Capability	30,000	0	20,000
Congressionally Directed Projects	22,836	3,000	0
Use/Recission of Prior Year Balances	0	-42,100	0
Total, Weapons Activities	**6,410,000**	**6,384,431**	**7,008,835**

Public Law Authorization:

National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
National Nuclear Security Administration Act, (P.L. 106-65), as amended

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Weapons Activities				
Directed Stockpile Work	1,900,736	1,999,470	2,240,139	2,346,254
Science Campaign	397,460	418,823	416,199	394,766
Engineering Campaign	149,737	134,996	144,920	145,739
Inertial Confinement Fusion Ignition and High Yield Campaign	480,451	475,597	470,994	484,812
Advanced Simulation and Computing Campaign	622,940	616,257	615,420	633,134
Readiness Campaign	81,697	70,747	69,854	72,584
Readiness in Technical Base and Facilities	1,872,546	1,841,325	1,926,568	1,997,764
Secure Transportation Asset	251,272	249,456	252,869	261,521
Nuclear Counterrorism Incident Response	222,914	222,508	235,300	237,986
Facilities and Infrastructure Recapitalization Program	94,000	94,000	0	0
Site Stewardship	101,929	103,536	174,071	205,802
Defense Nuclear Security	730,944	729,609	728,925	740,649
Cyber Security	126,046	125,822	125,707	127,189
Total, Weapons Activities	**7,032,672**	**7,082,146**	**7,400,966**	**7,648,200**

Mission

The Weapons Activities appropriation maintains a nuclear security infrastructure of people, programs, and facilities that provide specialized scientific, technical, and engineering capabilities for stewardship of the nuclear weapons stockpile and other national security needs.

Benefits

Programs funded by the Weapons Activities appropriation benefit the nation by supporting a broad range of national security priorities. The nuclear security enterprise ensures a robust, nationwide infrastructure staffed by a highly specialized and trained scientific and technical workforce. The facilities that make up the enterprise are committed to safe and secure operations, and good stewardship of the environment. The nuclear security laboratories, plants and test sites serve not only as national security assets, but as important educational and community resources as well. The nuclear security enterprise's infrastructure and workforce provide world-leading science, technology, and engineering capabilities. While these are focused on nuclear weapons stewardship and maintenance of our nuclear deterrent, they are strongly leveraged for broader national security mandates and scientific innovation. Programs funded by the Weapons Activities appropriation are also integrated into the nation's homeland security structure through their support of safeguards and security and nuclear counterterrorism and incident response.

Performance

All of the programs within the Weapons Activities appropriation support Secretarial Goal 3 - ***Security: Reduce nuclear dangers and environmental risks.*** NNSA will: maintain the nuclear weapons stockpile and dismantle excess nuclear weapons; transform the infrastructure of the nuclear security enterprise; rebuild the science and technology capabilities of the enterprise to assure continued warhead certification without underground nuclear testing; provide nuclear counterterrorism and emergency response assets in support of homeland security; and maintain comprehensive security for facilities, employees, and information assets.

In addition, select programs within this appropriation support Secretarial Goals 1 - ***Innovation: Lead the world in science, technology and engineering*** and Goal 2 - ***Energy: Build a competitive, low-carbon economy and secure America's energy future.***

NNSA will leverage its nuclear security science, technology, and engineering capabilities to promote solutions to Energy initiatives and support Innovation and education.

Means and Strategies

The Weapons Activities appropriation request represents a renewed path forward for sustaining the nation's nuclear deterrent. This budget reflects a stockpile management program investment strategy consistent with the challenge of (a) transitioning to a smaller nuclear stockpile that remains safe, secure, and effective without underground nuclear testing; (b) strengthening the NNSA science, technology, and engineering base; (c) modernizing the physical infrastructure; and (d) streamlining the enterprise's physical and operational footprint. These investments will strengthen the nation's security while also supporting a reduced reliance on nuclear weapons in the nation's security posture.

The means and strategies to be employed encompass all major aspects of the deterrent: the stockpile itself; the science, technology, and engineering base which underpins the nation's ability to sustain the stockpile as safe, secure, and effective; and the production and laboratory physical infrastructure. Technical issues within the stockpile will be identified and addressed because new weapons systems will not be built. The stockpile management program will undertake life extension work on legacy weapons systems to assure their effectiveness, while enhancing warhead safety and security, without requiring additional underground nuclear tests.

The NNSA science, technology, and engineering (ST&E) capabilities will be strengthened to underwrite the deterrent and continued attention will be given to attracting, training, and retaining a skilled, knowledgeable, and motivated workforce. As the stockpile decreases in size, the role of ST&E within the future deterrent increases in importance.

The current production infrastructure was established during the Cold War, is 50-60 years of age, and decades beyond its original design life. It will be recapitalized to be made more efficient and correctly-sized and able to execute stockpile life extension activities, dismantlement of surplus weapons as the stockpile size decreases, surplus fissile materials management and disposition, and other nuclear security needs.

Proposed funding will continue the Stockpile Stewardship Program as the essential capability needed to assure that the stockpile is maintained in a safe, secure, and effective condition. Over the past 15 years, the nation has made significant investment in stockpile stewardship tools and capabilities, which allow the nuclear weapons stockpile to be annually assessed and certified as safe, secure, and effective, without requiring underground nuclear tests. While challenges remain, the growing knowledge and understanding of the stockpile enabled by these tools have reached a level of maturity that not only replaces the need to conduct underground tests, but surpasses the benefits originally realized by previous testing. The data collected from hundreds of previous nuclear tests, along with continued experimental science, remain available to validate predictive simulations of weapons performance. Many of the gaps are closing -- or are closed -- in understanding the key physics processes, and insights into system and component aging are being realized. These insights will enable better preventative care for the stockpile.

The proposed stockpile management program emphasizes the following specific requirements to be met by NNSA:

- Produce sufficient quantities of W76-1 warheads to meet Navy requirements;
- Complete a life extension of the B61 that meets all safety, security, use control, and reliability objectives;
- Initiate a life extension study to explore the path forward for the W78, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524);
- Modernize plutonium capabilities including the design and construction of the Chemistry and Metallurgy Research Facility Replacement – Nuclear Facility;
- Modernize uranium capabilities with emphasis on the Uranium Processing Facility; and
- Sustain and strengthen the ST&E and surveillance base essential to supporting the stockpile.

The NNSA will conduct research and a wide range of tests, experiments, and computational simulations to assess the continuing safety and reliability of the nation's nuclear weapons stockpile. Overall, technical reviews by the weapons laboratories of the stockpile will encompass laboratory and flight tests of materials, components, and warhead subsystems, as well as numerical simulations. Nuclear weapons analyses will utilize data archived from past underground nuclear tests, along with laboratory experiments that include dynamic experiments with plutonium and other materials.

Working through its nuclear security enterprise, the NNSA will make deliveries of limited life and other components for nuclear weapons stockpile management and refurbishment, according to schedules developed jointly by the NNSA and the Department of Defense (DoD). Dismantlement activities are also carried out in support of this objective in concert with NNSA's commitment to transition to a smaller stockpile that remains safe, secure, and effective.

The NNSA will continue activities that develop or mature critical capabilities needed to achieve nuclear weapons stockpile certification, develop certification processes to replace aged components that can no longer be reproduced, and develop modern surety technologies for insertion in the stockpile. The Campaigns are forward-looking efforts with specific objectives and milestones, planned and executed by integrated teams from the laboratories, the Nevada Test Site (NTS), and the production plants.

The NNSA will continue to oversee and maintain the physical plant infrastructure at the national security laboratories, NTS, and production plants, according to applicable statutes, laws, agreements, and standards. The NNSA will continue to institutionalize responsible and accountable corporate facilities management processes and incorporate best practices from industry and other organizations. This includes implementation of a planning process that results in the submission of Ten-Year Site Plans (TYSPs) that establish the foundation for the strategic planning of the facilities and infrastructure of the enterprise.

The NNSA is a government-owned, contractor-operated enterprise, with the exception of the Secure Transportation Asset (STA) program, which is government-owned and operated. The NNSA works proactively with its contractors, external regulators, and host communities to assure that facilities and operations are in compliance with all applicable statutes and agreements to preclude any adverse impact to the environment, safety, and health of workers and the public and to address emergency management issues while minimizing unscheduled disruption to program activities that could affect performance.

The NNSA will continue to meet transportation requirements resulting from dismantlement and maintenance schedule for the nuclear weapons stockpile and the Secretarial initiative to consolidate the storage of nuclear material. The continued investments in the recruitment and training of the federal agent workforce and their vehicle and equipment requirements will maintain an effective mission capacity.

The NNSA will also provide protection for NNSA personnel, facilities, nuclear weapons, and information from a wide-ranging set of threats, most notably from terrorism attacks in the United States. An important aspect of this strategy is ensuring that sufficient information technology and information management security safeguards are implemented throughout the NNSA nuclear security enterprise. Some activities will be conducted in partnership with DoD, ranging from training in nuclear weapons field maintenance to partnerships in research for science and technology for nuclear security. Stockpile Stewardship activities are synergistic with work undertaken to support other national security missions often referred to as "work for others" activity, sponsored principally by the DoD and Department of Homeland Security (DHS).

Validation and Verification

To validate and verify program performance, the NNSA will conduct various internal reviews and audits. Each year, the NNSA programmatic activities are subject to continuing external independent review by the Congress, the U.S. Government Accountability Office, the Department's Inspector General, the National Security Council, the Defense Nuclear Facilities Safety Board, the Department's Office of Engineering and Construction Management, the Department's Office of Health, Safety and Security, and various scientific groups. Additionally, the NNSA Headquarters senior management and field managers conduct frequent, in-depth reviews of cost, schedule, and scope to ensure projects are maintained on schedule and within budget.

The NNSA Administrator reviews each NNSA program as part of the NNSA's PPBE Evaluation process. These reviews, usually conducted annually, include the NNSA Management Council and focus on both technical and financial information to identify issues, monitor program progress, and make recommendations for corporate improvement. The focus of these reviews is to verify and validate that NNSA programs are on track to meet their long-term goals and annual targets. Periodic program reviews are also conducted (e.g., critical programs such as the Life Extension Programs are reviewed monthly and quarterly program reviews are conducted for all programs). The focus of these reviews is to verify and validate that programs are achieving technical programmatic milestones, within planned scope, cost, and schedule that result in progress toward annual targets and long-term goals. More detailed program reviews are conducted by the program managers for weapons programs, with DoD customers.

The results of all of these reviews are reflected quarterly in the DOE performance tracking system and annually in the NNSA Administrator's Annual Performance Report and DOE Performance and Accountability Report (PAR). Both of the latter documents help to measure the progress that the NNSA programs are making toward achieving annual targets en-route to long-term goals. These documents are at a summary level to help senior managers verify and validate progress towards the NNSA and Departmental commitments listed in the budget.

The NNSA performs validations of approximately 20 percent of its budget on an annual basis. A three-Phase process was implemented in FY 2010 and was used to validate the FY 2011 Budget Formulation

process and estimate. This process consists of Phase I: Validation of the Need for the Program's Proposed Activities (Program Review), Phase II: Validation of the Budget Planning and Formulation Process (Budget Planning and Formulation Process Review), and Phase III: Pricing Validation of Selected Programs (Pricing Review). Budget validation efforts focus on determining consistency with NNSA strategic planning and program guidance, integration of planned activities/milestones with budget estimates, and reasonableness of budget estimates. During the FY 2011 process, the Science Campaign, Secure Transportation Asset, Cyber Security, Defense Nuclear Security, and Elimination of Weapons-grade Plutonium Production programs participated in all three Phases.

Major Outyear Priorities and Assumptions

The outyear requirements for the Weapons Activities total $29,163,984,000 for FY 2012 through FY 2015. The Secretaries of DoD and DOE agree that it is necessary to modernize the nuclear weapons infrastructure of the United States, and this will require the investments over the long term reflected in the FYNSP. Modernization of the infrastructure, including major capital projects, is needed to ensure safe, secure, sustainable and cost-effective operations in support of scientific and manufacturing activities. It is also necessary to bolster key scientific, technical and manufacturing capabilities needed to ensure that the U.S. nuclear weapons stockpile remains safe, secure and effective while avoiding the requirement for new nuclear tests.

Weapons Activities Appropriation

The request for this appropriation is $7,008,835,000, an increase of 9.8 percent over the FY 2010 appropriated level. This level is sustained and increased in the later outyears. Increased funding is requested for programs in direct support of the nuclear weapons stockpile, for scientific, technical and engineering activities related to maintenance assessment and certification capabilities for the stockpile, and for critical infrastructure improvements. The stockpile management program is funded within this appropriation.

Stockpile Support

Stockpile Support (Directed Stockpile Work, Readiness Campaign) is a key component of the stockpile management program that ensures that we meet the commitments made by President Obama, in his April 5, 2009 Prague speech, that "…the United States will maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to our allies…". The FY 2011-FY 2015 budget proposal for Stockpile Support continues significant efforts to meet Administration and Secretarial priorities for the enterprise with the following emphases:

- Ensuring that the nation's nuclear weapons are safe, secure and reliable, without the use of underground nuclear testing; and
- Delivering nuclear weapons with improved safety and security features through the execution of Life Extension Programs (LEPs) for key weapons systems; and
- Meeting DoD production requirements while strengthening management of the nuclear weapons stockpile.

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request	FY 2012	FY 2013	FY 2014	FY 2015
Stockpile Support							
Directed Stockpile Work	1,590,152	1,505,859	1,898,379	1,900,736	1,999,470	2,240,139	2,346,254
Readiness Campaign	160,620	100,000	112,092	81,697	70,747	69,854	72,584
Total, Stockpile Support	**1,750,772**	**1,605,859**	**2,010,471**	**1,982,433**	**2,070,217**	**2,309,993**	**2,418,838**

This budget request is based on the following specific stockpile requirements:

- Produce sufficient quantities of W76-1 warheads to meet Navy requirements;
- Complete a nuclear and non-nuclear life extension of the B61 to meet all safety, security, use control, and reliability objectives;
- Start an additional life extension study for the W78, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524).
- Restores sufficient funds for warhead surveillance and for the science and technology that support stockpile assessment and certification in the absence of nuclear testing.

Science, Technology, and Engineering (ST&E)

Science, Technology and Engineering (Science Campaign, Engineering Campaign, Inertial Confinement Fusion and High Yield Campaign, Advanced Simulation and Computing Campaign, Science, Technology and Engineering Capability) request ensures that we keep the commitment made by President Obama, in his April 27, 2009 address to the National Academy of Sciences, that "Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before…" is the reality of today's security environment that the United States requires an agile and responsive national security science, technology, and engineering funded enterprise to remain protected from the threats of today and the future. Sustaining the national security ST&E capabilities within the NNSA is important for more than the need to assess and monitor the nuclear weapons stockpile. While national ST&E investments are instrumental in transitioning to a 21st century nuclear deterrent strategy, they are also key to a range of national security issues, tools, and solutions. NNSA and its laboratories have the unique capability to take on complex projects requiring both breadth and depth of science as well as an ability to respond to rapidly changing priorities. The FY 2011-FY 2015 ST&E budget proposal meets Administration and Secretarial priorities for the enterprise with the following emphases:

- Sustaining the national security ST&E supported capabilities;
- Strengthening nuclear weapons assessment and life extension through scheduled development of the predictive capability framework;
- Achieving scientific milestones essential to assess and certify the stockpile without underground testing; and
- Supporting key national security issues by maintaining tools and capabilities to find solutions to current and emerging national scientific problems.

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request	FY 2012	FY 2013	FY 2014	FY 2015
Science, Technology and Engineering							
Science Campaign	316,690	295,646	365,222	397,460	418,823	416,199	394,766
Engineering Campaign	150,000	150,000	141,920	149,737	134,996	144,920	145,739
Inertial Confinement Fusion Ignition and High Yield Campaign	436,915	457,915	481,548	480,451	475,597	470,994	484,812
Advanced Simulation and Computing Campaign	556,125	567,625	615,748	622,940	616,257	615,420	633,134
Science, Technology and Engineering Capability	30,000	0	20,000	0	0	0	0
Total, Science, Technology and Engineering	**1,489,730**	**1,471,186**	**1,624,438**	**1,650,588**	**1,645,673**	**1,647,533**	**1,658,451**

The integration of the multi-disciplinary national security science and technology skills within the NNSA provides the nuclear security enterprise the versatility to address urgent national needs on appropriate time scales. It is essential that planning of NNSA scientific, technology, and engineering base takes on a strategic perspective to ensure agile and responsive capabilities. Transparency into these capabilities and the investments made in them is critical. The Secretary challenged the Department to identify science and technology innovations that drive the economy, impact climate change and energy security, and enhance national security. NNSA programs contribute to addressing these challenges.

Despite the classified nature of NNSA's mission, many of the science and engineering activities are unclassified and can, and in some cases already do, involve universities, industry and civilian agencies. Specific actions are being initiated to improve the open communication and facilitate such cooperation. One example is the Livermore Valley Open Campus with both Lawrence Livermore National Laboratory and Sandia National Laboratories-California modified physical space on the government-owned property to provide for easier access by visiting scientists, particularly researchers associated with transportations science (Combustion Research Facility operated by the Office of Science) and high energy density physics (National Ignition Facility).

NNSA ST&E supports several key national priorities. The Administration has made ratification of the Comprehensive Test Ban Treaty (CTBT) and the aggressive pursuit of nonproliferation goals, including securing dangerous nuclear materials world wide. Science and engineering advances are foundational for achieving these goals. NNSA programs have, since 1992, assured confidence in the U.S. nuclear deterrent without nuclear testing and provided high confidence assessments of the capabilities of potential adversaries to guard against technological surprise. NNSA-developed technologies support treaty monitoring and verification as well as broader homeland security detection needs.

The science and engineering basis for assessing and certifying nuclear devices has systematic gaps that are being closed by application of advanced computing, materials research, and foreseeable advances in high energy density physics including fusion ignition. A Predictive Capability Framework identifies specific advances and expected time scales for resolution of questions regarding all aspects of the performance of nuclear weapons. The ST&E activities within the nuclear security enterprise utilize this framework and fund the detailed activities necessary to provide the experimental data, models and

simulation capability, and certification methodologies to be used in concert with historical nuclear test data to gain adequate confidence in the reliability, safety and security of our warheads without nuclear tests. These capabilities are also applied to assess and counter increasingly more advanced threats from adversaries and the possibility of attack or sabotage on nuclear facilities and processes. The same capabilities for assessing our stockpile and detecting nuclear materials are central to assessing foreign or improvised nuclear devices so that threats can be avoided, disabled or attributed. This field of nuclear forensics and counterterrorism is increasingly enabled by NNSA's science and engineering advances.

The applications of ST&E funded capabilities not only advance NNSA's nuclear program, but are increasing used to support related national security and economic goals. The technical approaches for nuclear analysis and security issues developed in NNSA are useful to other national security, scientific, and economic programs. For example, stockpile analysis and assessment by the NNSA has driven advances in computing power that have enabled U.S. leadership and demonstrated progress on complex applied technical problems. These computational powers, and the techniques for its application, have broad value that can be applied to analysis of a wide range of national energy issues. For example, the approach taken for quantifying margins and uncertainty for establishing confidence bounds for systems that are not amenable to statistical testing methods is applicable in many engineering analyses and complex problems. Fusion ignition, under development for investigations of nuclear explosion physics, has potential for nuclear energy applications being analyzed within the Offices of Science and Nuclear Energy. Other parts of the DOE and other agencies require access to the NNSA's capabilities.

To enhance the application of NNSA's capabilities to broad national security and economic goals, NNSA is engaging with the other parts of DOE and other agencies in developing a strategy to make available and support enhancements of NNSA capabilities. Through such joint planning the science and engineering activities within NNSA can be tuned to give value to a greater range of national interests. Specific funding for joint activities is currently small and aimed at technical issues that clearly advance program goals of all of the participants. The emphasis on growing cross-cutting projects will grow in future years.

Infrastructure

The President's FY 2011 Request for Infrastructure (Readiness in Technical Base and Facilities, Secure Transportation Asset, Facilities and infrastructure Recapitalization Program, and Site Stewardship) continues significant efforts to meet Administration and Secretarial priorities for Infrastructure with the following emphases:

- Bringing the plutonium and uranium manufacturing infrastructure up to modern safety and security standards;
- Ensuring environmental compliance and energy and operational efficiency throughout the nuclear security enterprise, while modernizing, streamlining, consolidating, and sustaining the stewardship and vitality of the sites;
- Consolidating environmental, nuclear materials integration, energy projects (to meet Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management), facility deactivation and demolition, and waste management activities into Site Stewardship, and
- Reducing the deferred maintenance backlog for critical facilities that will not be replaced.

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request	FY 2012	FY 2013	FY 2014	FY 2015
Infrastructure							
Readiness in Technical Base and Facilities, Operations and Maintenance	1,359,938	1,538,966	1,449,954	1,330,260	1,285,404	1,233,116	1,275,508
Readiness in Technical Base and Facilities, Construction	314,468	303,904	399,016	542,286	555,921	693,452	722,256
Secure Transportation Asset	214,439	234,915	248,045	251,272	249,456	252,869	261,521
Facilities and Infrastructure Recapitalization	147,449	93,922	94,000	94,000	94,000	0	0
Site Stewardship	0	61,288	105,478	101,929	103,536	174,071	205,802
Environmental Projects and Operatios	38,596	0	0	0	0	0	0
Congressionally Directed Proejcts	22,836	3,000	0	0	0	0	0
Use of Prior Year Balances	0	-42,100	0	0	0	0	0
Total, Infrastructure	**2,097,726**	**2,193,895**	**2,296,493**	**2,319,747**	**2,288,317**	**2,353,508**	**2,465,087**

The FY 2011 budget provides increases for construction of replacement plutonium research and uranium manufacturing facilities. Current plutonium research and uranium manufacturing facilities (CMR facility at LANL and Building 9212 at Y-12 respectively) have significant safety concerns that have been identified by the Defense Nuclear Facilities Safety Board and others, and these facilities need to be closed at the earliest feasible date. Until that time, continued operation requires stringent administrative and safety control measures, which affect the efficiency and cost of operations.

To improve visibility of maintenance at its facilities, NNSA is implementing unique Budget and Reporting codes within Weapons Activities, Readiness in Technical Base and Facilities. This additional information will allow Program Managers and Site Office Managers to make more informed decisions to ensure that maintenance is properly defined, captured, and adequately funded.

Security and Nuclear Counterterrorism

The President's FY 2011 Request continues to meet Administration and Secretarial priorities for Security and Nuclear Counterterrorism (Defense Nuclear Security, Cyber Security, and Nuclear Counterterrorism Incident Response) with the following emphases:

- Defense Nuclear Security (DNS) will provide protection from a full spectrum of threats, most notably terrorism, for NNSA personnel, facilities, nuclear weapons through the use of protective forces and physical protection systems;
- Supporting Cyber Security revitalization, certification and accreditation, and education and training initiatives, and
- Providing nuclear emergency response assets in support of homeland security, and continuing Research and Development efforts for Render Safe, in addition to concentration in collaborative roles in countering nuclear terrorism in support of national security.

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request	FY 2012	FY 2013	FY 2014	FY 2015
Security and Nuclear Counterterrorism							
Defense Nuclear Security	735,208	769,044	719,954	730,944	729,609	728,925	740,649
Cyber Security	121,286	122,511	124,345	126,046	125,822	125,707	127,189
Nuclear Counterterrorism Incident Response	215,278	221,936	233,134	222,914	222,508	235,300	237,986
Total, Security and Nuclear Counterterrorism	**1,071,772**	**1,113,491**	**1,077,433**	**1,079,904**	**1,077,939**	**1,089,932**	**1,105,824**

The President's FY 2011 Request continues the FY 2010 approach to funding security costs. It provides direct funding for the mission base program for Defense Nuclear Security. Although there is a decrease in the Defense Nuclear Security budget it continues to provide physical security protection from a full spectrum of threats. The budget request is based on risk-informed decisions and is fully consistent with the Department's Graded Security Protection policy. Costs of routine security for Work for Others will continue to be provided via full cost recovery. Extraordinary security requirements for Work for Others projects will be direct charged to those customers.

Cyber Security funding sustains NNSA's information infrastructure and upgrades elements to counter emerging cyber threats from external and internal attacks using the latest available technology. Increased support to the Technology Application Development program supports the implementation of risk mitigation processes complex-wide.

Nuclear Counterterrorism and Incident Response funding supports emergency management and response activities that ensure a central point of contact and integrated response to emergencies requiring DOE assistance, including the Nuclear Emergency Support Team, which responds to nuclear terrorist threats. The budget increase is focused in the counterterrorism programs, and enables specialized R&D for technical analysis, equipment, and procedures necessary to maintain the nation's capabilities for research on non-stockpile nuclear weapons designs; e.g., Improvised Nuclear Devices or Radiological Dispersal Devices and the laboratory analysis of their aftermath as well as ensuring that we will be able to meet the expectations of DoD in our role for worldwide render safe support.

Department of Energy (DOE) Working Capital Fund (WCF) Support

The DOE WCF Board has extended the policy for using program funding to finance WCF activities. Beginning in FY 2011, NNSA programs will fund a pro rata share by Appropriation of certain DOE Working Capital Fund activities. FY 2011 projected NNSA program allocations are as follows: DOEnet ($482,000) for DOE telecommunications services; Financial Statement Audits ($4,514,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($3,076,000) for procurement management; iManage ($3,121,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,502,000). The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2011 is projected at $35,942,000.

The NNSA Weapons Activities appropriation projected allocation of the DOE Working Capital Fund for FY 2011 is $8,325,382.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the national security enterprise. The majority of the efforts directly support program activities, and programs funded in the Weapons Activities appropriation plans to fund research with the HBCU totaling up to approximately $6,000,000 in FY 2011, in areas including engineering, material sciences, computational science, disaster modeling, and environmental sciences.

Directed Stockpile Work

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Directed Stockpile Work			
Life Extension Programs			
B61 Life Extension Program	1,854	0	0
W76 Life Extension Program	203,189	223,196	249,463
Subtotal, Life Extension Programs	**205,043**	**223,196**	**249,463**
Stockpile Systems			
B61 Stockpile Systems	90,204	91,956	317,136
W62 Stockpile Systems	1,500	0	0
W76 Stockpile Systems	63,219	56,554	64,521
W78 Stockpile Systems	40,347	48,311	85,898
W80 Stockpile Systems	30,712	27,398	34,193
B83 Stockpile Systems	26,938	33,502	39,349
W87 Stockpile Systems	40,949	48,139	62,603
W88 Stockpile Systems	43,928	51,940	45,666
Subtotal, Stockpile Systems	**337,797**	**357,800**	**649,366**
Weapons Dismantlement and Disposition			
99-D-141-01 Pit Disassembly and Conversion Facility-SRS	24,883	0	0
99-D-141-02 Waste Solidification Building-SRS	40,000	0	0
Weapons Dismantlement and Disposition	52,695	96,100	58,025
Pit Disassembly and Conversion Facility-O&M	69,351	0	0
Subtotal, Weapons Dismantlement and Disposition	**186,929**	**96,100**	**58,025**
Stockpile Services			
Production Support	308,806	300,037	309,761
Research & Development Support	35,049	37,071	38,582
Research & Development Certification and Safety	169,403	166,523	209,053
Management, Technology, and Production	192,072	183,223	193,811
Plutonium Capability	155,053	0	0
Plutonium Sustainment	0	141,909	190,318
Subtotal, Stockpile Services	**860,383**	**828,763**	**941,525**
Total, Directed Stockpile Work	**1,590,152**	**1,505,859**	**1,898,379**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Directed Stockpile Work				
Life Extension Programs				
W76 Life Extension Program	255,000	255,000	255,000	255,000
Subtotal, Life Extension Programs	**255,000**	**255,000**	**255,000**	**255,000**
Stockpile Systems				
B61 Stockpile Systems	337,851	394,027	437,518	512,296
W76 Stockpile Systems	56,418	58,312	55,396	54,038
W78 Stockpile Systems	104,964	156,340	346,923	345,359
W80 Stockpile Systems	31,627	34,566	35,974	36,621
B83 Stockpile Systems	37,160	38,294	42,621	42,059
W87 Stockpile Systems	67,754	64,924	51,898	50,433
W88 Stockpile Systems	61,229	65,094	69,777	68,648
Subtotal, Stockpile Systems	**697,003**	**811,557**	**1,040,107**	**1,109,454**
Weapons Dismantlement and Disposition	**53,327**	**48,446**	**58,102**	**60,089**
Stockpile Services				
Production Support	288,227	271,067	265,429	274,509
Research & Development Support	35,044	34,667	35,497	36,711
Research & Development Certification and Safety	207,133	213,923	214,632	222,777
Management, Technology, and Production	202,020	196,676	198,660	205,454
Plutonium Sustainment	162,982	168,134	172,712	182,260
Subtotal, Stockpile Services	**895,406**	**884,467**	**886,930**	**921,711**
Total, Directed Stockpile Work	**1,900,736**	**1,999,470**	**2,240,139**	**2,346,254**

Mission

The Directed Stockpile Work (DSW) program contributes to national security by enhancing the safety and security and ensuring the reliability of the Nation's nuclear weapons stockpile for a continued effective deterrent, without underground nuclear testing. DSW provides nuclear warheads and bombs for the National Nuclear Security Administration (NNSA), to the Department of Defense (DoD) in accordance with the President's Nuclear Weapons Stockpile Plan (NWSP). The NWSP directs the number and type of weapons for the DoD and NNSA to maintain.

The Nation's nuclear weapons stockpile consists of warheads and bombs whose average age is approximately 25 years. A stockpile management program is needed to ensure that all weapons in the stockpile are safe, secure, and effective. Its components must include stockpile stewardship, enhanced surveillance and assessment, and life extensions that are executed after evaluating a spectrum of possible options. DSW supports many of these stockpile management program requirements. DSW provides evidence of the health of the nuclear weapons stockpile through its bi-annual weapons reliability reports to the DoD and the Annual Assessment to the President. In addition, DSW supports nonproliferation goals and international commitments to eliminate nuclear materials available for military use through the dismantlement and disposition of retired weapons and weapons components.

DSW also interfaces with other mission areas including Campaigns to provide the necessary tools and capabilities to assess the reliability and performance of the Nation's aging stockpile. These include: Science, Engineering, Inertial Confinement Fusion, Readiness, and Advanced Simulation and Computing Campaigns. Readiness in Technical Base and Facilities (RTBF) supports DSW infrastructure sustainment and facility modifications. The Secure Transportation Asset supports DSW through the movement of weapons and components.

DSW works with Defense Nuclear Security to ensure that personnel, facilities, and nuclear weapons remain protected from a full spectrum of threats. Similarly, the Cyber Security program implements a flexible, comprehensive, and risk-based approach to protecting the NNSA information and information assets. The crosscutting mission of DSW increases the need for mature programmatic interrelationships beyond those within the Weapons Activities appropriation, including: Nonproliferation, Nuclear Energy, Environmental Management, and Homeland Security.

These other programs leverage technical capabilities such as those maintained within the materials processing enterprises of plutonium, uranium, and tritium sustainment. Specifically within DSW, the Plutonium Sustainment Program integrates with the overarching plutonium program plans, campaigns, facilities, and the technical base (personnel and skills) and provides a means to maintain the necessary capability required for mission success.

DSW sustains and retains the technical skills and infrastructure critical to the Nation's ability to work with plutonium material across a range of applications. The skills and infrastructure historically retained by the weapons program serve other national missions, such as Pu-238 Heat Source production for the National Aeronautics and Space Administration, Advanced Nuclear Fuels development, production of parts and shapes for scientific experimental purposes, nuclear forensics support, weapons dismantlement demonstration related to mixed oxide (MOX) feed for plutonium disposition, and support to international standards.

DSW derives its nuclear weapons stockpile requirements from the President's NWSP. The NWSP is developed through the Nuclear Weapons Council (NWC), jointly convened by DOE and DoD to develop recommendations to the President. It drives ongoing maintenance activities, warhead life extension needs, stockpile surveillance and assessment, and research and development (R&D) of new technologies needed to support the current and future stockpiles. DSW will, in coordination with the DoD: (1) provide unique people skills, equipment, testers, and logistics support to perform nuclear weapons operations; (2) produce and replace limited life components; (3) conduct scheduled weapons maintenance; (4) conduct surveillance and evaluations to assess weapons reliability and to detect/anticipate potential weapons issues; (5) quantify margins and uncertainties in order to better assess and certify the nuclear stockpile; (6) develop options for enhanced safety, security, and effectiveness for insertion into Life Extension Programs (LEPs)/modifications/alterations; (7) efficiently extend the life of existing weapons systems through authorized modifications to correct technical issues and enhance safety, security, and effectiveness; (8) provide for dismantlement and disposition of weapons and components for systems retired from the stockpile, and (9) sustain the plutonium infrastructure to meet enduring national requirements unique to this special nuclear material.

Benefits

Within DSW, four major activities make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 26 and to the stockpile management program: (1) LEPs;

(2) Stockpile Systems; (3) Weapons Dismantlement and Disposition; and (4) Stockpile Services, which includes Production Support; R&D Support; R&D Certification and Safety; Management, Technology and Production (MTP); and Plutonium Sustainment. Obligations and costs are reported at lower levels, (e.g., R&D and Stockpile Management for each weapon type, and discrete categories under Stockpile Services.)

Life Extension Programs extend the stockpile lifetime of a warhead and the warhead components and enable the Nation's nuclear weapons stockpile and supporting nuclear security enterprise to respond to threats of the 21st century without developing new weapons systems. Activities including R&D and production work are required to ensure weapons continue to meet national security requirements. LEPs not only extend the life of a warhead, but provide the opportunity to further enhance surety by installing enhanced safety and security features.

Stockpile Systems directly execute sustainment activities for the active stockpile. Specifically, weapons-specific R&D assessment and certification activities, weapons component qualification, limited life component exchange activities, surveillance activities, maintenance, feasibility and safety studies, and military liaison work for the B61, W76, W78, W80, B83, W87, and W88 weapons systems. Stockpile evaluation provides the basis for the NNSA assessment through stockpile stewardship in the absence of nuclear testing. In addition, Stockpile Systems includes limited weapons refurbishments below the requirements for separate reporting as a life extension program, and life extension studies prior to approval of full-scale engineering development.

Weapons Dismantlement and Disposition (WDD) activities enable the elimination of retired weapons and weapons components and reduces the security and maintenance burden of legacy warheads and bombs. WDD includes the dismantlement and disposition of retired weapons, weapons components, and supporting functions. Plutonium components removed from weapons get placed, and remain in storage pending final disposition decisions (e.g., processing into oxides for the fabrication of MOX fuel). Success of the WDD program relies heavily on the Secure Transportation Asset, Production Support, and RTBF to provide the base capability for all WDD activities.

Stockpile Services provides the foundation for all DSW operations. Specifically, base capabilities underlying: R&D and production support for multiple warheads and bombs; certification and safety efforts, quality engineering and plant management, technology, maintenance and/or replacement of weapons related equipment, and production services. Stockpile Services also includes the funding associated with Plutonium Sustainment to achieve and maintain a cost-effective plutonium capability. The success of all DSW activities relies on Stockpile Services to enable sustainment of the DSW programs by providing base capabilities.

Planning and Scheduling

The DSW Implementation Plans contain cost, scope, and schedule for work activities. More detailed classified schedules are contained in site R&D and production documents. The Production and Planning Directive (P&PD) delineates current stockpile maintenance, refurbishment, and life extension efforts. These requirements are further promulgated to the national security enterprise through individual weapons Program Control Documents (PCDs) and the Master Nuclear Schedule (MNS).

Weapons Systems Cost Data

A classified annex, which contains the Selected Acquisition Report (SAR) for the W76 LEP, supplements the Weapons Activities portion of the budget.

Annual Performance Results and Targets

(R = Results; T = Target)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 26, Directed Stockpile Work											
Annual Warheads Certification: Annual percentage of warheads in the Stockpile that is safe, secure, reliable, and available to the President for deployment. (Annual Outcome)	R: 100% T: 100%	R: 100% T: 100%	R : 100% T: 100%	R: 100% T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, maintain 100% of the warheads in the stockpile as safe, secure, reliable, and available to the President for deployment.
Stockpile Maintenance: Annual percentage of items supporting the Enduring Stockpile Maintenance completed (Annual percentage of prior-year non-completed items completed). (Annual Output)	R: 84% (100%) T: 95% (100%)	R: 95% (100%) T: 95% (100%)	R: 95% (100%) T: 95% (100%)	R: 95% (100%) T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	T: 95% (100%)	Annually, complete at least 95% of all scheduled maintenance activity (100% of prior-year non-completed items).
W76-1 Life Extension Program (LEP): Cumulative percentage of progress in completing Nuclear Weapons Council (NWC)-approved W76-1 Life Extension Program (LEP) activity. (Long-term Output)	R: 34% T: 34%	R: 38% T: 39%	R: 44% T: 44%	R: 48% T: 48%	T: 52%	T: 56%	T: 61%	T: 65%	T: 69%	T: 69%	By 2021, complete NWC-approved W-76-1 LEP.
B61-7/11 LEP: Cumulative percentage of progress in completing NWC-approved B61-7/11 LEP activity. (Long-term Output)	R: 37% T: 40%	R: 70% T: 70%	R: 90% T: 90%	R: 100% T: 100%	T: N/A	N/A	N/A	N/A	N/A	N/A	By 2009, complete NWC-approved B61-7/11 LEP.
LEP Production Costs: Cumulative percent reduction in projected W76 warhead production costs per warhead from established validated baseline, as computed and reported annually by the W76 LEP Cost Control Board. (Efficiency)	R: Baseline T: Baseline	R: 0.39% T: 0.50%	R: 0.78% T: 1.0%	R: .8% T: 1.0%	T: 1.0%	T: 1.0%	T:1.0%	T : 1.0%	T : 1.0%	T : 1.0%	By 2010, reduce the projected W76-1 LEP warhead production costs per warhead from established validated baseline by 1.0%.

FY 2009 Accomplishments

Life Extension Programs

- Delivered B61-7/11 LEP units to the Air Force on time having completed 100 percent of planned retrofits for FY 2009 at Pantex and 100 percent of production activity at Y-12 for the program.
- Completed W76-1 DoD Design Review and Acceptance Group.
- Completed W76-1 SS-21 Authorization activities for disassemblies and inspections (D&I) and assembly operations in a 5kV environment at Pantex.
- Achieved W76-1/Mk4A telemetered Joint Test Assembly (JTA1) First Production Unit (FPU).
- Received W76-1 Phase 6.6 Authorization.

Stockpile Systems

- Within all Systems (B61, W76, W78, W80, B83, W87, W88):
  - Delivered all scheduled Limited Life Components (LLC) and alteration kits to the DoD;
  - Produced 933 reservoirs at Kansas City Plant (KCP);
  - Filled 825 reservoirs at Savannah River Site (SRS);
  - Produced 356 neutron generators at Sandia National Laboratories (SNL);
  - Shipped 1524 Group Ten kits to DoD used in field maintenance;
  - Shipped 793 Alt 900 kits for reservoir removal;
  - Completed all Annual Assessment Reports and Laboratory Director letters; and
  - Completed sufficient requirements for assessment of the stockpile without nuclear testing.
- Initiated B61 Phase 6.2/2A Refurbishment Study and successfully achieved joint DoD and NNSA approval of Integrated Phase Gate A (Source Requirements).
- Exceeded B61-3/4 Alt 356 production quantities of new spin rocket motors by 12 percent and completed 100 percent of planned spin rocket motor retrofits for B61-7/11 ALT 358.
- Completed W78 Extended Range Flight Test.
- Completed W87 JTA4 First Production Unit and First Flight Test.
- Completed Nuclear Explosive Safety Study and Reauthorization of W88 SS-21 Bay operations.
- Completed rebuilds of four W88s as a result of the Cell Operations Restart Project.
- Achieved approval of W88 SS-21 Cell Hazard Analysis Report.
- Complete Seamless Safety for the 21st Century (SS-21) process implementation and Nuclear Explosive Safety (NES) authorization, improving safety for the disassembly of the W76-0/Mk4 at Pantex, providing improved safety for electro-static discharge (ESD) scenarios (5kV environment).
- Delivered four Los Alamos National Laboratory (LANL) W88/Mk5 Type 126 pits to Pantex.

Weapons Dismantlement and Disposition

- Completed scheduled Canned Subassembly (CSA) dismantlement quantities at Y-12.
- Exceeded scheduled weapons dismantlement quantities at Pantex.
- Completed scheduled disposition of weapons parts at KCP and Pantex.
- Completed scheduled SS-21 activities for the W84.
- Developed shipping options for the B83 components going to Y-12.
- Completed Heritage Program scheduled activities (museum reviews and resolved technical issues).
- Refurbished all required museum items.
- Issued 219 museum inspection reports to eliminate the previous backlog and remain current on reporting.

Stockpile Services

- Met scheduled Surveillance requirements:
  - Completed 90 percent of Pantex surveillance plan (50 assembly/disassembly, 24 JTAs, 19 test-bed builds);
  - Successfully conducted computer tomography of two anomalous Pits;
  - Completed 100 percent of scheduled Pit Non-Destructive Laser Gas Samplings at Pantex for the W76 and the W78;
  - Conducted 96 percent of planned Joint Flight Tests with the DoD (27 JTAs tested);
  - Conducted 66 percent of annual test-bed evaluations (21) at Sandia despite 8 month explosive safety stand down of test facilities;
  - Completed 97 percent of planned CSA destructive (7) and non-destructive (23) evaluations at Y-12; and
  - Completed 100 percent of planned gas transfer system (GTS) evaluations (28) at SRS.
- Conducted 66 percent of planned Pit Destructive Evaluations (4) at LANL and LLNL.
- Completed Product Realization Integrated Digital Enterprise (PRIDE) key deliverables:
  - System of Record (SOR) declared for the Weapons Information System stockpile data base--removing the application from an antiquated IBM mainframe computer and placing it on more secure and efficient Sun V880 clustered servers;
  - Delivered the Quality Evaluation Requirements Tracking System (QERTS) (first application to become operational within NNSA's new Enterprise Secure Network (ESN);
  - Established Sigma 15 classified system network capability at Pantex;
  - Delivered replacement Master Nuclear Schedule LLC application; and
  - Delivered a classified commonly-configured, enterprise-wide model-based mechanical computer aided design production capability.
- Tonopah Test Range (TTR) Operations restarted after explosive safety stand down.
- The Requirements Modernization and Integration (RMI) project completed NNSA supplemental directive (Defense Programs Business Requirements and Processes Manual, NAM 452.3-1) replacing the NNSA Supplemental Directive 56XB, REV 2, Nuclear Weapons Development and Production.
- Established RMI Content Lead Teams streamlining and converting paper based requirements documents into web based requirements:
  - Completed 29 RMI Gate 1 reviews enable conversion of paper requirements into web based requirements and processes.
- Completed 25 RMI Gate 2 reviews enable the formal enterprise-wide review and edit resolution of the converted content from Gate 1.
- Completed production of 5 War Reserve W88 pits.
- Completed design for a new machining lathe with multiple process capabilities.
- Completed equipment upgrades on plutonium welding and gauging equipment.
- Demonstrated new casting process which can provide for reduced costs in wastes and increased efficiency.

Major Outyear Priorities and Assumptions

The outyear requirements for DSW total $8,486,599,000 for FY 2012 through FY 2015. DSW will continue to provide a safe, secure, and effective stockpile by providing major deliverables including: W76 LEP full production; complete B61 Spin Rocket Motor Refurbishment in FY 2012; and, explore life extension options for the W78, consistent with the principles of the Stockpile Management Program

defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524). DSW, if authorized, will continue Phase 6.3 engineering development activities to complete refurbishment of the non-nuclear components of the B61 and execute the nuclear refurbishment scope. If a life extension for the B61 is approved and directed by the NWC, funding requested currently in the outyears under the B61 Stockpile Systems will then be transferred and requested as a life extension under the Life Extension Program activity. Stockpile assessment and sustainment activities, as well as enterprise capabilities sustainment, must continue in order to annually assess the stockpile and meet international obligations. These activities and capabilities provide the improved confidence in the safety, security, and effectiveness of the stockpile without the need to conduct underground nuclear tests. In addition, DSW will continue the reduction of nuclear weapons through the dismantlement and disposition of retired weapons.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Life Extension Program (LEP)	**205,043**	**223,196**	**249,463**

Life extension is a major stockpile management program activity NNSA developed to extend the expected stockpile lifetime of legacy weapons systems for 20 to 30 years. The NNSA, in conjunction with the DoD, executes a LEP following the procedural guidelines of the Phase 6.x process. The Phase 6.x process results in Nuclear Weapons Council recommendations to the President to develop and field replacements for only those components that will extend the life of legacy systems and enhance their safety and security. The President will seek Congressional authorization to expend resources to implement his decisions regarding the options developed during Phases 6.1 (concept assessment) and 6.2 (feasibility and option development). LEP activities include the research, development, and production work required to ensure that weapons systems will continue to meet national security requirements for additional decades into the future or until "global zero" is achieved.

- **B61 Life Extension Program** **1,854** **0** **0**

  The refurbishment designated as Alteration (ALT) 357 was completed in FY 2009 with the refurbishment of the B61 Modifications 7 and 11 Canned Subassemblies (CSA). This program also replaced associated seals, foam supports, cables and connectors, the group X kit (e.g., washers, o-rings, etc.), and limited life components. This budget element did not include any work associated with the current B61 life extension study.

  In FY 2011, there are no programmatic activities associated with the ALT 357.

- **W76 Life Extension Program** **203,189** **223,196** **249,463**

  The W76 LEP will extend the life of the W76 for an additional 30 years. The first production unit (FPU) was completed in FY 2008. The NNSA completes the reentry body assembly and delivery components to the DoD for integration into the Trident II D5 Strategic Weapon System. It is part of the Submarine Launched Ballistic Missile (SLBM) force.

  In FY 2011, the program will execute the Annual Assessment and certification process and the improved manufacturability of the components. Production plants continue War Reserve production and life extension activities by providing materials including the nuclear explosive package; the Arming, Fuzing, and Firing system; 2X Acorn gas transfer system; and associated cables, elastomers, valves, pads, cushions, foam supports, telemetries, and miscellaneous parts. This funding request supports production rates and schedules to meet the current deliverables, in the FY 2009 Requirements and Planning Document signed by the Nuclear Weapons Council, after agreement with the Navy, and in support of the Presidential Stockpile Directive. The disassembly of W76-0 for the LEP feedstock will continue.

  The LEP workload will include: providing laboratory and management support to the Project Officer's Group (POG) and DoD Safety Studies; supporting resolution of Significant Finding Investigations (SFIs); submission of data for surveillance cycle reports; Seamless Safety -21 (SS-21)

maintenance activities at Pantex; disassembling and inspecting the Retrofit Evaluation System Test (REST) and stockpile surveillance flight and laboratory samples; conducting component laboratory tests and flight tests for REST; and stockpile evaluation supported by producing Joint Test Assemblies and test beds. Additionally, the National Laboratories will provide production liaison support at the plants including systems design support for production of piece parts and final assembly by the production plants, support the disassembly of W76-0 for the LEP, initiate necessary production definition changes to improve manufacturability and reuse, and disposition instructions for production and disassembly issues.

The W76 LEP funding will also support trained and cleared personnel, materials, and tooling in order to start scale-up to full production by the end of FY 2013, and with engineering support from the sites to enable manufacturing and productivity improvements. The production rate within the five year window is a function of the weapons age and not the stockpile size. Requirements for FY 2017 and beyond are dependent upon stockpile size.

Stockpile Systems	**337,797**	**357,800**	**649,366**

Weapons surveillance activities are a priority and will be increased in FY 2011 to ensure early knowledge and understanding relative to status of each weapon system and provide increased availability of data to aid in that understanding. Stockpile Systems, directly executes sustainment activities for the active stockpile. Specifically, weapons-specific R&D, assessment and certification activities, weapons component qualification, limited life component exchange activities, surveillance activities, maintenance, feasibility and safety studies, and military liaison work for the B61, W76, W78, W80, B83, W87, and W88 weapons systems. Stockpile evaluation provides the basis for the Annual Assessment and certification through stockpile stewardship which replaced nuclear testing. In addition, Stockpile Systems includes limited weapons refurbishments below the threshold for separate reporting as a life extension program, and life extension studies prior to approval of full-scale engineering development.

Stockpile system funded activities and testing provide critical state-of-health data for Public Law 107-314 “National Defense Authorization Act for Fiscal Year 2003” which mandated Annual Assessment to certify the stockpile without underground testing by establishing a credible baseline of the health of a weapon system.

▪ **B61 Stockpile Systems**	**90,204**	**91,956**	**317,136**

The B61 aircraft delivered gravity bombs are the oldest weapons in the enduring stockpile. The B61 family includes five modifications with two distinct categories. The strategic category includes the B61 Modifications -7 and -11, with Modification-11 being the only active earth penetrating weapon. The non-strategic category includes the B61 Modifications -3, -4, and -10 supporting our extended nuclear commitment. The B61 Stockpile Systems activities have been separated into two subcategories: (1) System Sustainment and (2) Life Extension Study. A detailed description of work activities included in each subcategory and associated funding levels are provided below.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
• **B61 System Sustainment**	**90,204**	**59,456**	**65,495**

In FY 2011, activities are prioritized as follows: (1) all necessary maintenance and limited life component exchanges to keep active stockpile bombs operationally deployed per NWSP requirements; (2) stockpile evaluation activities including disassembly and inspections, system level laboratory and joint flight testing, material and component evaluations, and significant finding investigations; funding levels will be managed by prioritizing component, material and evaluation testing; (3) laboratory assessment and certification activities including analysis and testing supporting annual Weapons Reliability and Annual Assessment Reports, laboratory and management support for Project officers Group (POG) and DoD safety studies, laboratory support for trainer refurbishments; support will be managed by prioritizing funding for new studies, analysis and hydrodynamic testing; and (4) on-going retrofits kits, container procurements for field component exchanges, and Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) pre-builds. This request supports execution of core stockpile stewardship activities, including verification, laboratory, and component surveillance testing; restores component testing of nuclear subsystems, non-nuclear components and initial development of replacement JTA instrumentation to address the approaching instrumentation end-of-life.

• **B61 Phase 6.2/6.2A Study**	**0**	**32,500**	**251,641**

In FY 2011, funding supports a life extension study of the nuclear and non-nuclear components scope, including implementation of enhanced surety, extended service life and modification consolidation. This life extension study in coordination with the B61 Project Officers Group will publish a Phase 6.2A Report and Weapons Design and Cost Report. This report will document the conceptual designs, program costs and schedules associated with the nuclear and non-nuclear refurbishment scope, including development of concepts and costs to replace arming and fuzing components (e.g., neutron generator, power supplies, radars and programmer) to address near term end-of-life and sustainment concerns on the B61 bomb family. The study will evaluate options for improving safety and use control features and ensures compatibility and integration with modern aircraft such as the F-35 Joint Strike Fighter.

Completion of the study will also provide options and a path forward to enable LANL and SNL participation in development of detailed designs to extend the life of the nuclear explosive package which may include an extension of the B61 nuclear primary's life (reusing the existing B61 nuclear pit), potential implementation of multipoint safety, and reuse or remanufacture of the canned subassembly (CSA) and for a complete life extension of the B61 -3, -4, -7, and -10, if directed by the Nuclear Weapons Council.

▪ **W62 Stockpile Systems**	**1,500**	**0**	**0**

The W62 is a warhead used in the Air Force's Mk-12 re-entry vehicle on the Minuteman III intercontinental ballistic missile. Activities will be captured in the Weapons Dismantlement and Disposition budget for safety assessment work.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **W76 Stockpile Systems**	**63,219**	**56,554**	**64,521**

The W76-0 is the warhead integrated into the Trident II D5 Strategic Weapon System. It is part of the Submarine Launched Ballistic Missile (SLBM) force. The W76-0/Mk4 is completed by NNSA as a Reentry Body Assembly and delivered to the DoD.

In FY 2011, activities include: providing laboratory and management support to the DoD Project Officer Group and Safety Studies; laboratory and component surveillance testing; conducting limited life component exchange activities; performing evaluation of Significant Finding Investigations (SFI); closure of one critical SFI necessary to attain critical technical data to complete the Annual Assessment; submitting available data for surveillance cycle reports certifying no need for testing; conducting integrated experiments; supporting the Annual Assessment and certification process; conducting disassembly and inspection of laboratory tests; conducting half of the core stockpile stewardship activities including material, component, and system level testing and all flight test samples; performing all flight tests including producing Type 2Fs; conducting SS-21 maintenance activities at Pantex; and, continuing production of 2011X reservoir and MC4380A neutron generator.

▪ **W78 Stockpile Systems**	**40,347**	**48,311**	**85,898**

The W78 is a warhead integrated into the Air Force's Mk12A re-entry vehicle deployed on the Minuteman III Intercontinental Ballistic Missile (ICBM). It is part of the ICBM force. The W78 Stockpile Systems activities have been separated into two subcategories: (1) System Sustainment and (2) Life Extension Study. A detailed description of work activities included in each subcategory and associated funding levels are provided below.

• **W78 System Sustainment**	**40,347**	**48,311**	**59,898**

The FY 2011 request supports execution of core stockpile stewardship management activities including: laboratory and component surveillance testing; production of the MC 4381 neutron generator; LF7B gas transfer system reservoir; and increased limited life component exchange activities to support Air Force requirements. In addition, the program will conduct system laboratory tests, flight tests and complete weapons reliability reporting, and Annual Assessment and certification activities. This funding will also support production of the required additional MC4381 neutron generators to meet operationally deployed units.

• **W78 Life Extension Study**	**0**	**0**	**26,000**

In FY 2011, additional funding enables a life extension study for the W78, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524). The study will address the nuclear explosives package as well as aging, enhanced surety improvements, increase reliability alignment, extending service life, and alignment with major DoD component (fuze) acquisition program.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
▪ **W80 Stockpile Systems**	**30,712**	**27,398**	**34,193**

The W80 is a warhead used in the Air Launched Cruise Missile deployed by the Air Force and the Tomahawk Land Attack Missile-Nuclear (TLAM-N) deployed by the Navy.

In FY 2011, this activity will include: limited life component production and surveillance activities, including Disassembly and Inspections, Joint Test Assembly and laboratory test bed assembly builds, laboratory testing, and nuclear and non-nuclear component and material testing for the W80 efforts that support weapons reliability reporting, and the Annual Assessment and certification process.

- **B83 Stockpile Systems** **26,938** **33,502** **39,349**

The B83 is an aircraft delivered, strategic gravity bomb deployed by the Air Force.

The FY 2011 funded activities include: (1) component testing of nuclear subsystems, non-nuclear components and initial system integration activities for future Gas Transfer System and neutron generator replacements required to address approaching end-of-life; (2) necessary maintenance and limited life component exchanges to keep active stockpile bombs operational; (3) stockpile evaluation activities including disassembly and inspection, system-level laboratory and joint flight testing, material and component evaluations, and significant finding investigations; required component testing will be managed by prioritizing funding; (4) laboratory assessment and certification activities including analysis and testing supporting annual Weapons Reliability and Annual Assessment Reports, laboratory and management support for POG and DoD safety studies, laboratory support for DoD H1347 bomb hand carts and trainer refurbishments; adjusting support for new studies, analysis and hydrodynamic testing; (5) initiation of development activities to replace the B83 gas transfer system and neutron generator; and (6) KCRIMS requalification activities.

- **W87 Stockpile Systems** **40,949** **48,139** **62,603**

The W87 is a warhead integrated into the Air Force's Mk21 re-entry vehicle deployed on the Minuteman III ICBM. It is part of the ICBM force.

In FY 2011, programmatic activities include; laboratory and component surveillance of the W87; supporting the Annual Assessment process; providing laboratory and management support to the POG and DoD Safety Studies; limited life component exchange activities; supporting resolution of SFIs; conducting core stockpile stewardship activities including material, component, and system level testing; limited production of MC3600A environmental sensing devices, and MC4633 lightning arrestor connectors in support of surveillance rebuilds; design and testing in support of the neutron generator First Production Unit; production of joint test assemblies and test beds; and providing range support and data collection of W87 stockpile flight tests. In addition, these funds are essential to complete design and pre-production efforts for the new NG first production unit scheduled for 2012, and production of firing sets to accomplish repairs and rebuilds of warheads currently at Pantex.

- **W88 Stockpile Systems** **43,928** **51,940** **45,666**

The W88 is integrated into the Trident II D5 Strategic Weapon System. It is part of the Submarine Launched Ballistic Missile (SLBM) force. The W88/Mk5 is completed by NNSA as Reentry Body Assembly and delivered to the DoD.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

In FY 2011, activities include: required laboratory test, and closure of one critical Significant Finding Investigation necessary to attain critical technical data to complete the Annual Assessment; laboratory and management support to the POG and DoD Safety Studies; conducting limited life component exchange activities; submitting available data for surveillance cycle reports; conducting integrated experiments pursuant to the approved plan, as revised; supporting the Annual Assessment and certification process; conducting disassembly and inspection of laboratory tests; conducting half of the core stockpile stewardship activities including material, component, and system level testing of all flight test samples; performing all flight tests including producing Joint Test Assemblies; conducting SS-21 maintenance activities at Pantex; continuing production of 4T reservoir and forging procurements; and rebuild of W88/Mk5 warheads.

Weapons Dismantlement and Disposition	**186,929**	**96,100**	**58,025**
• **Weapons Dismantlement and Disposition**	**52,695**	**96,100**	**58,025**

Weapons Dismantlement and Disposition (WDD) is a critical element of NNSA's integrated effort to transform the enterprise and the stockpile. The WDD program element includes activities that support or perform tasks to reduce the quantity of retired weapons or retired weapons components, including interim storage, surveillance, complete disposition of retired weapons and weapons components, and the international commitment to disposition special nuclear material declared as excess to national security needs. Specific activities include weapons dismantlement, characterization of components, disposition of retired warhead system components, and surveillance of selected components from retired warheads. Other supporting activities specific to retired warheads include: conducting hazard assessments; issuing safety analysis reports; conducting laboratory and production plant safety studies; procuring shipping and storage equipment; and supporting the Tri-laboratory office efforts on dismantlement activities. In addition, for WDD to be successful, supporting programs must receive balanced funding: including Production Support for shipping, receiving, and equipment maintenance; RTBF for infrastructure sustainment and containers; and Secure Transportation Assets for movement of weapons and components.

In FY 2011, dismantlement activities include maintaining the throughput of weapons dismantlements at Pantex and CSA disassembly at Y-12. At Pantex, the WDD program plans include activity for portions of the B53, B61, W80, and B83. Other activities at Pantex include funding to support flexibility to use multi-shift operations to ensure maximum throughput and utilization of resources. Activities at Y-12 include continued Component/CSA disassembly and disposition to reduce the footprint for Enriched Uranium storage and processing. The WDD will continue to support associated component disposition. The funding reflects resources required to complete the dismantlement workload consistent with the dismantlement schedules submitted to Congress. The WDD program element will maintain associated component disposition, and when the scope exceeds the base capability provided by RTBF, support the recycling, recovery and storage of nuclear material. Negotiated component characterization and disposition activities will operate at adjusted rates necessary to prevent storage problems across the enterprise in 2015 and beyond.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
• **Pit Disassembly and Conversion Facility – O&M**	**69,351**	**0**	**0**
• **Pit Disassembly and Conversion Facility (PDCF) Other Projects Costs (OPC)**	**44,356**	**0**	**0**
In FY 2010, PDCF was moved to RTBF, and is included in Defense Nuclear Nonproliferation's (DNN) Fissile Materials Disposition (FMD) Program in FY 2011.			
• **Supporting Activities**	**24,995**	**0**	**0**
▪ **Surplus Plutonium Storage and Transportation**	**22,000**	**0**	**0**
In FY 2010, this activity was moved to RTBF and is included in the DNN/FMD Program in FY 2011.			
▪ **National Environmental Policy Act (NEPA)**	**500**	**0**	**0**
In FY 2010, this activity was moved to RTBF and is included in the DNN/FMD Program in FY 2011.			
▪ **Common Technologies and Integration**	**2,495**	**0**	**0**
In FY 2010, this activity was moved to RTBF and is included in the DNN/FMD Program in FY 2011.			
• **Construction**	**64,883**	**0**	**0**
▪ **99-D-141-01, Pit Disassembly and Conversion Facility (PDCF)**	**24,883**	**0**	**0**
In FY 2010, PDCF was moved to RTBF and is included in the DNN/FMD Program in FY 2011.			
▪ **99-D-141-02 Waste Solidification Building (WSB)**	**40,000**	**0**	**0**
In FY 2010, WSB was moved to DNN/FMD.			
Stockpile Services	**860,383**	**828,763**	**941,525**

Stockpile Services provides the foundation for the production capability and capacity within the nuclear security enterprise. All enduring systems, LEPs, and dismantlements rely on Stockpile Services to provide the base development, production and logistics capability needed to meet program requirements. In addition, Stockpile Services funds research, development and production activities that support two or more weapons-types, and work that is not identified or allocated to a specific weapon-type.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
• **Production Support**	**308,806**	**300,037**	**309,761**

Production Support includes those activities that enable production by providing the capacity to support each internal site-specific production activity including, site-specific personnel and routine functional activities associated with maintaining the basic site capability and work capacity to meet current production requirements. While modernizing the production capabilities to improve efficiency and prepare to meet established future requirements.

In FY 2011, work scope includes Production Management in support of the KCRIMS, an initiative to move the Kansas City Plant to a smaller, more efficient production facility. Ongoing activities focus on: sustaining and modernizing engineering and manufacturing operations; quality supervision and control; tool, gauge, and test equipment procurement, maintenance, and inspection; purchasing, shipping, and material support; increasing production efficiency; and developing and maintaining electronic product-flow information systems. Collectively, these activities directly support implementation of systems engineering concepts, production integration, cost-effective plant manufacturing operational improvements, and improved activity-based costing.

• **Research and Development (R&D) Support**	**35,049**	**37,071**	**38,582**

R&D Support includes ongoing activities that directly support the internal design laboratory site-specific R&D activities, including stockpile studies and programmatic work that provides the necessary administrative or organizational infrastructure.

In FY 2011, activities include: R&D infrastructure support at a specific laboratory, providing the program management of DSW programs and integration of DSW, Campaigns, and RTBF requirements, and support of quality assurance programs for multiple systems.

• **R&D Certification and Safety**	**169,403**	**166,523**	**209,053**

R&D Certification and Safety provides the core competencies and capabilities for R&D efforts not directly attributable to a single specific warhead system. These activities conducted at design laboratories and the Nevada Test Site (NTS) include the basic research required for developing neutron generators and gas transfer systems, surveillance, and base capability for conducting hydrodynamic experiments. An experimental program for plutonium and sub-critical experiments is also included.

In FY 2011, activities include: performing nuclear safety R&D studies and weapons effects studies; preparing and providing the infrastructure for conducting hydrodynamic tests in support of enduring stockpile systems; continuing to support neutron generator development (electronic and small generator types); designing gas transfer systems; continuing to develop digital and analog arming and firing subsystems; hardware qualification; system certification and required computer modeling and simulation activities; continuing stockpile primary, secondary, chemistry, and materials systems

(dollars in thousands)

FY 2009	FY 2010	FY 2011

analysis; annual assessments, development/introduction of modern surety features in support of life extension programs and support of subcritical and other experiments at NTS.

- **Management, Technology, and Production** **192,072** **183,223** **193,811**

  Management, Technology, and Production (MTP) activities are those activities that sustain and improve stockpile management, develop and deliver weapons use control technologies, and production of weapons components for use in multiple weapons systems. Additionally, MTP includes those activities that benefit the nuclear security enterprise as a whole, as opposed to Production Support activities that support internal site-specific production only.

  In FY 2011, MTP will: improve safety and use control technologies; conduct use control and independent assessments; and procure and deliver multi-use weapons components, material, and support equipment. Moreover, MTP will: continue to implement the stockpile Surveillance Transformation Project of the adjusted surveillance testing and advanced diagnostics deployment and gravity weapons flight testing to continue the evaluation of aging weapons to discover problems earlier; implement and maintain enterprise-wide integrated product-realization digital information systems for DSW for design, engineering, manufacturing and quality control releases; deploy new diagnostics delivered by the Enhanced Surveillance Campaign; maintain access to and archive technical knowledge, engineering practices, weapons design, safety, and operating procedure information; and support and conduct activities that deploy, maintain, and evaluate stockpile multi-use components, instrumentation, and ancillary equipment.

- **Plutonium Capability** **155,053** **0** **0**

  Plutonium Capability was renamed as Plutonium Sustainment in FY 2010.

- **Plutonium Sustainment** **0** **141,909** **190,318**

  The Plutonium Sustainment program maintains the plutonium technical base skills which support activities encompassing all capabilities requiring the use and handling of plutonium. In FY 2011, funding assures a plutonium capability, provides the capacity to build up to 10 pits per year, completes the authorized W88 pit build; provides for preventive maintenance and upgrades of key equipment in the areas of metal preparation and welding to support programs requiring plutonium metal; provides the capability to manufacture parts and components for tests, science, and the enduring stockpile; continues the development of technology and manufacturing processes associated with pit types other than the W88; supports the reconstitution of the capability to produce power sources; and provides the necessary foundation to support implementing nuclear weapons safety improvements in life extension programs and/or increased capacity for new production requirements in support of maintaining the nuclear weapons stockpile.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Plutonium Sustainment also supports a share of plutonium facilities at LANL that are not supported by RTBF. This funding is essential for supporting infrastructure investments to ensure both near term availability of facilities as well as to ensure long term viability of the plutonium infrastructure as a national asset.			
Total, Directed Stockpile Work	**1,590,152**	**1,505,859**	**1,898,379**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Life Extension Programs (LEP)	
▪ **W76 Life Extension Program**	
The increase will fund requirements for personnel, materials, and tooling in order to continue scale-up to full production by the end of FY 2013 to meet the NNSA commitment to the DoD. Scale-up activities include engineering support from the sites to enable manufacturing and productivity improvements. The success and scheduled deliverables for the W76 LEP are contingent upon stable funding as reflected in the FY 2012-2015 funding profile.	**+26,267**
Total, Life Extension Programs	**+26,267**
Stockpile Systems	
▪ **B61 Stockpile Systems**	
The increase addresses two key B61 program needs: (1) to restore funding to execute necessary core stockpile stewardship activities, including component testing of nuclear subsystems, non-nuclear components and initial development of replacement JTA instrumentation to address the approaching instrumentation end of life; and (2) to enable funding of both the nuclear and non-nuclear life extension scope for the B61 system. The FY 2011 B61 funding allows implementation of the nuclear scope, including implementation of design concepts to enhance surety, extended service life, and consolidation of B61 modifications. This increase will enable the study to provide options and a path forward for LANL and SNL participation in development of life extension designs for the nuclear explosive package, potential implementation of multipoint safety, and reuse or remanufacture of the canned subassembly (CSA) to extend service life and consolidating B61 Modifications -3, -4, -7, and -10. The FY 2011 request also provides additional funding for a complete life extension of the non-nuclear components including component and system designs to improve safety, use control and aircraft compatibility. The increase in funding is needed in FY 2011 to meet the schedule directed by the Nuclear Weapons Council and will ensure continued support for our extended nuclear deterrence commitment.	**+225,180**
▪ **W76 Stockpile Systems**	
The increase will enable the completion of additional surveillance requirements in FY 2011; including one additional required laboratory test and closure of one critical Significant Finding Investigations (SFI) necessary to attain critical technical data to complete the Annual Assessment.	**+7,967**

	FY 2011 vs. FY 2010 ($000)
▪ **W78 Stockpile Systems** The increase in funding will fund the production of the required additional MC4381 neutron generators to meet operationally deployed quantities and commences a W78 life extension study focusing on the enhanced surety to meet national security requirements, increase reliability, and extend service life. Furthermore, the funds enable the restoration of W78 System laboratory testing with a consideration for a potential component testing of nuclear and non-nuclear subsystems and components and neutron generator production.	**+37,587**
▪ **W80 Stockpile Systems** In FY 2011, the increase will restore surveillance activities, including Disassembly and Inspections, Joint Test Assembly and Laboratory test bed assembly builds, laboratory testing, and nuclear and non-nuclear component and material testing.	**+6,795**
▪ **B83 Stockpile Systems** In FY 2011, the increase restores component testing of nuclear subsystems, non-nuclear components and initial system integration activities for future Gas Transfer System and neutron generator replacements required to address approaching end-of-life.	**+5,847**
▪ **W87 Stockpile Systems** This increase funds the completion of a partial Canned Subassembly Qualification Evaluation and shelf life testing at Y-12. In addition funding supports W87 laboratory and component surveillance. The increase supports design and pre-production efforts for the new neutron generator first production unit scheduled for 2012, and production of limited firing set builds at KCP to accomplish rebuilds of warheads currently at Pantex.	**+14,464**
▪ **W88 Stockpile Systems** The decrease reflects the current production and surveillance schedule for the W88.	**-6,274**
Total, Stockpile Systems	**+291,566**

	FY 2011 vs. FY 2010 ($000)
Weapons Dismantlement and Disposition	
▪ **Weapons Dismantlement and Disposition (WDD)**	
The decrease in funding reflects a reduction in weapons and Component/Canned Subassembly (CSA) dismantlements, associated component disposition, and some weapon specific support for the recycling, recovery and storage of nuclear material that is a by-product of weapons dismantlements. The decrease also reflects a return to baseline funding after a one-time Congressional increase in FY 2010.	**-38,075**
Total, Weapons Dismantlement and Disposition	**-38,075**
Stockpile Services	
▪ **Production Support**	
The increase is mostly attributed to Environmental, Safety, and Health activities that support multiple production lines, and decision support software, analyses and reports needed for improved production efficiency.	**+9,724**
▪ **Research and Development Support**	
Increased funding supports efforts to prepare R&D for the Kansas City Plant's transition to a new facility as described in the KCRIMS transformation plan and provide required laboratory support to the production plants.	**+1,511**
▪ **Research & Development Certification and Safety**	
Increase funding supports efforts for additional activities for subcritical experiments to accomplish plutonium equation-of-state work at NTS, provide base hydrodynamic capabilities for multiple and single weapon hydrodynamic experiments, this is required to maintain hydrodynamic equipment and personnel available to perform the hydrodynamic experiments. Additionally, this will allow a quicker technology maturation to support future life extension programs in the area of safety, security and use control and will allow quicker component development that would include neutron generators, gas transfer systems, power supplies and control systems.	**+42,530**
▪ **Management, Technology, and Production**	
Increased funding supports additional component testing and test equipment procurement, an increase in limited life component (LLC) material acquisition and procurement, and capital equipment expenditures.	**+10,588**

	FY 2011 vs. FY 2010 ($000)
▪ **Plutonium Sustainment** The increase restores the capability to build up to 10 pits per year in the Plutonium Facility-4 (PF-4) at LANL. The increase will permit the completion of W88 pit production requirement, enable a power source production mission and position PF-4 to meet any future Life Extension Program requirements. The change will also enhance the flexibility of the PF-4 operating space to make maximize use of the existing footprint.	**+48,409**
Total, Stockpile Services	**+112,762**
Total Funding Change, Directed Stockpile Work	**+392,520**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	2,038	2,083	2,129
Capital Equipment	39,270	40,134	41,017
Total, Capital Operating Expenses	**41,308**	**42,217**	**43,146**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	2,176	2,224	2,273	2,323
Capital Equipment	41,919	42,481	43,784	44,747
Total, Capital Operating Expenses	**44,095**	**44,705**	**46,057**	**47,070**

Construction Projects[b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
99-D-141-01, Pit Disassembly Conversion Facility	TBD	247,275	24,883	0	0	TBD
99-D-141-02, Waste Solidification Building	244,331	59,749	40,000	0	0	17,582
Total, Construction			**64,883**	**0**	**0**	

[a] Funds are appropriated for Operations and Maintenance, including operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects, therefore FY 2010 and FY 2011 funding reflects estimates based on actual FY 2009 obligations.

[b] FY 2010 funds for PDCF were requested under the Readiness in Technical Base and Facilities Program and WSB funds were requested under the Defense Nuclear Nonproliferation/Fissile Materials Disposition Program. FY 2011 funds for PDCF and WSB are requested under the Defense Nuclear Nonproliferation/Fissile Materials Disposition Program.

Major Items of Equipment *(TEC $2 million or greater)*

(dollars in thousands)

Major Item of Equipment	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2009	FY 2010	FY 2011	Completion Date
SNM Vehicle, Y-12 National Security Complex	6,419	5,419	0	0	1,800	3,619	2012
6 New Ovens #1, Y-12 National Security Complex	5,954	5,302	1,050	3,225	1,027	0	2011
6 New Ovens #2, Y-12 National Security Complex	5,979	5,327	1,030	3,175	942	180	2011
QE Environmental Chamber, Y-12 National Security Complex	3,234	2,722	876	1,008	500	338	2011
Gas Mass Spectrometer, Y-12 National Security Complex	2,200	2,100	2,100	0	0	0	2010
LTTD Oven, Y-12 National Security Complex	3,511	3,011	0	0	500	2,511	2013
Dismantlement Lathe #3, Y-12 National Security Complex	4,700	4,200	0	0	2,200	2,000	2011
Electro Refining System LANL	24,600	8,681	2,077	1,933	2,236	2,434	2012
Total Major Items of Equipment				**9,341**	**9,205**	**11,082**	

Science Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Science Campaign			
Advanced Certification	19,400	19,400	76,972
Primary Assessment Technologies	80,181	83,181	85,723
Dynamic Plutonium Experiments	23,022	0	0
Dynamic Materials Properties	83,231	86,617	96,984
Advanced Radiography	28,535	28,535	23,594
Secondary Assessment Technologies	76,913	77,913	81,949
Test Readiness	5,408	0	0
Total, Science Campaign	**316,690**	**295,646**	**365,222**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Science Campaign				
Advanced Certification	104,704	129,481	129,978	98,908
Primary Assessment Technologies	86,253	85,248	84,327	87,165
Dynamic Materials Properties	97,114	95,980	94,945	98,144
Advanced Radiography	27,132	26,816	26,528	27,421
Secondary Assessment Technologies	82,257	81,298	80,421	83,128
Total, Science Campaign	**397,460**	**418,823**	**416,199**	**394,766**

Mission

The Science Campaign develops improved scientific capabilities and experimental infrastructure to assess the safety, security, reliability, and performance of the nuclear explosives package (NEP) portion of weapons without reliance on further underground testing. It focuses efforts around the development of fundamental knowledge gained through improved experimental capabilities needed to assess the age-aware behavior of the primary and secondary components of the NEP. The development of this capability is needed to predict performance of the NEP under natural aging or life extension changes. The capability is driven by improvements in our science and technology base to continually address and reduce uncertainties, and to provide an objective quantitative measure of confidence in weapons performance. In FY 2010, the responsibility for the maintenance of infrastructure and physical assets of Test Readiness at the Nevada Test Site (NTS), transferred to the Readiness in Technical Base and Facilities (RTBF) program. However, the Science Campaign continues to provide the capabilities for test readiness exercised through the Science Campaign experiments and assessments.

Within the nuclear security enterprise, the Science Campaign focuses scientific and technical efforts to develop and maintain critical capabilities that will sustain the stockpile for the long-term. The Science Campaign deliverables support: (1) annual legacy stockpile assessments; (2) certification statements for Life Extension Programs and potential future weapon modifications; (3) reduced response times for resolving stockpile issues (e.g., Significant Findings Investigations); (4) ability to certify warhead replacement components; and (5) along with Advanced Simulation and Computing (ASC) Campaign,

the development of improved predictive capability that is important to the Quantification of Margins and Uncertainties (QMU).

The Science Campaign improves the understanding of important phenomena, provides confidence that failure modes and margins are properly identified, and reduces uncertainties in predictive capabilities. Another important aspect of the Science Campaign is to ensure that peer-reviewed academic research is supported in disciplines that are of special interest to the stockpile stewardship program. Topical areas include materials under dynamic conditions, low-energy nuclear science, and high-energy-density science. These disciplines form the core disciplines needed by the future stewards of our nuclear stockpile.

The Science Campaign integrates budget and performance by setting Campaign performance targets and national level milestones for primary and secondary predictive capability underpinning stockpile assessments and certifications that reflect national program priorities. The QMU is a developing methodology that is applied to stockpile assessment issues and communicates assessments within a common framework. Margins and uncertainties can be used to define the goals and success criteria of the science efforts. As experience is gained in the development and application of QMU, the results are increasingly being used to identify technical areas requiring improvement and to prioritize resources. The Science Campaign and ASC have principal responsibility for the continued development of the QMU methodology and improved predictive capability, while Directed Stockpile Work (DSW) applies these tools to stockpile assessments.

Benefits

Within the Science Campaign, the Primary Assessment Technologies, Academic Alliances, Dynamic Material Properties, Advanced Radiography, Secondary Assessment Technologies, and Advanced Certification subprograms each make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 27.

The *Advanced Certification* subprogram integrates certain scientific and technological advances from the stockpile stewardship programs, along with input from continuing studies and workshops, in order to: (1) improve the weapons certification process; (2) refine computational tools and methods; (3) promote the advancement of the physical understanding of surety mechanisms; (4) ensure further exploration of failure modes; (5) conduct manufacturing process assessments; and (6) provide for study of strategic system-level requirements. In FY 2011, an increase is requested to utilize the major stockpile stewardship experimental capabilities (DARHT, Nevada Test Site, etc.) for advanced certification goals.

The *Primary Assessment Technologies* subprogram, in conjunction with the ASC Campaign, develops the tools, methods, and knowledge required to certify the nuclear safety and nuclear performance of any primary to required levels of accuracy without nuclear testing.

The *Dynamic Materials Properties* subprogram now includes the scope of work associated with sub-critical experiments at NTS. It focuses on utilizing these experiments as well as the traditional scope of material science laboratory experiments to foster the development of detailed understanding and accurate modeling of the properties and behavior of materials used within the nuclear explosives package.

The *Advanced Radiography* subprogram develops advanced imaging technologies for three-dimensional imagery of imploding mock primaries and simplified experimental geometries with sufficient spatial and temporal resolution to experimentally validate computer simulations of the implosion process and associated physics phenomena so as to tie these results to prior data obtained from full-scale underground nuclear tests. This subprogram also develops pulsed power technologies for dual-use relevant to radiography and equation-of-state (EOS) platform for dynamic material property mission.

The *Secondary Assessment Technologies* subprogram develops the tools, methods, and knowledge required to certify the nuclear performance of secondaries without nuclear testing.

The Science Campaign provides experimental data to validate the models in the ASC simulation codes, as well as numerical methodologies to use in the codes. These physical data and methodologies lend confidence to calculations performed to meet DSW commitments to understand the impact of aging on weapons systems, close Significant Finding Investigations (SFIs), and to perform annual assessments and certifications, as required. The pace of work under the Science Campaign is timed to support a milestone, shared with the ASC Campaign, to release substantially improved simulation codes for primaries and secondaries. This shared code-release milestone will require the incorporation of improved physics models, which require the experimental validation provided by the Science Campaign. These improved physics models include validated models for plutonium EOS and constitutive properties, use of the Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility 2nd axis as a validation tool for mock primaries, and the use of the High Energy Density Physics (HEDP) facilities.

The Science Campaign supports scientific research activities in partnership with other national and international sponsors. During FY 2009, the Science Campaign pursued various collaborations, such as with the Office of Science Basic Energy Sciences for the application of the Advanced Photon Source (APS) and the Linac Coherent Light Source (LCLS) for stockpile relevant science. This approach has and will continue to extend our responsive science capability without requiring major investments in new facilities.

Annual Performance Results and Targets

(R = Results; T = Target)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 27, Science Campaign											
Quantification of Margins and Uncertainties (QMU): Cumulative percentage of progress in development of the QMU methodology to provide quantitative measures of confidence in the performance, safety, and reliability of the U.S. nuclear weapons stockpile. (Long-term Outcome)	R: 40% T: 40%	R: 55% T: 55%	R : 70% T: 70%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By 2008, complete development of 70% QMU methodology to apply quantitative measures of confidence in the performance, safety, and reliability of the nuclear weapons stockpile.
First Principles Physics Models: Cumulative percentage of progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment. (Long-term Outcome)	N/A	R: 36% T: 36%	R: 46% T: 42%	R: 46% T: 50%	T: 60%[a]	T: 63%	T: 66%	T: 69%	T: 72%	T: 75%	By 2020, use modern physics models in assessment calculations to replace the major empirical parameters affecting weapon performance.
Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT): Cumulative percentage of progress towards completing the DARHT to provide data required to certify the safety and reliability of the U.S. nuclear weapons stockpile. (Long-term Outcome)	R: 70% T: 60%	R: 95% T: 80%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By 2008, complete the DARHT facility to provide data required to certify the safety and reliability of the U.S. nuclear weapons stockpile.
Test Readiness: Readiness, measured in months, to conduct an underground nuclear test as established by current NNSA policy. (Long-term Outcome)	R:24 T:24	R:24-36 T:24-36	R: 24-36 T: 24-36	R: 24-36[b] T:24-36	N/A	N/A	N/A	N/A	N/A	N/A	Sustain a 24- to 36-month underground nuclear test readiness through 2009.

[a] Joint Performance Indicator with the Inertial Confinement Fusion Ignition and High Yield Campaign began in FY 2010.

[b] The Test Readiness-related activities were moved from the Science Campaign to RTBF in FY 2010.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Hydrodynamic Testing: Annual percentage of hydrodynamic tests completed in accordance with the National Hydrodynamics Plan, to support the assessment of nuclear performance. (Annual Output)	R: 75% T: 75%	R: 75% T: 75%	R : 75% T: 75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Annually, complete at least 75% of all scheduled hydrodynamic tests in accordance with the National Hydrodynamics Plan.
JASPER Facility Experiments: Annual average cost per test, expressed in terms of thousands of dollars, of obtaining plutonium experimental data on the Joint Actinide Shock Physics Experimental Research (JASPER) facility to support primary certification models. (Efficiency)	R : $308K T : $380K	R: $360K T: $360K	R: $340K T: $340K	R: $340K T: $340K	N/A	N/A	N/A	N/A	N/A	N/A	By 2009 reduce the annual average cost of obtaining plutonium experimental data on JASPER to $340K (80% of the 2004 baseline cost of $425K).
Stockpile Stewardship Science: Annual investment, as measured by total Science Campaign budget, per refereed journal publication or final formal internal report. (Efficiency)[a]	N/A	N/A	N/A	R: $1M T: $1M	T: $970K	T: $940K	T: 910K	T: 880K	T:$850K	T:$820K	By 2015, decrease the annual investment per refereed journal publication or formal final internal report by 18% relative to FY 2009.
Extreme Temperature and Pressure Conditions: Cumulative percentage of progress towards creating and measuring extreme temperature and pressure conditions for the FY 2013 stockpile stewardship requirement. (Long-term Outcome)	R: 70% T: 70%	R: 70% T: 70%	R: 75% T: 75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By 2008, create and measure 75% of the extreme conditions so High Energy Density Physics facilities can be used to provide stockpile stewardship data.
Key Extreme Experiments: Cumulative percentage of progress towards achievement of key extreme experimental conditions of matter needed for predictive capability for nuclear weapons performance. (Long-term Outcome)	N/A	R: 13% T: 13%	R: 18% T: 18%	R: 25% T: 25%	T: 35%	T: 55%	T: 75%	T: 85%	T: 90%	T: 100%	By 2015, achieve a greater than unity value of the average of the ratio of achieved conditions to needed conditions.

[a] New efficiency measure added in FY 2010, to replace successfully accomplished previous measure.

FY 2009 Accomplishments

Primary Assessment Technology

- 2 PHOENIX shots were conducted at NTS.
- Full Toss experiment was performed at NTS with a large suite of measurements and studies.
- Proton radiography at Los Alamos Neutron Science Center (LANSCE) was used to develop instability data.
- FY 2009 Congressional increase initiated or accelerated projects to obtain plutonium nuclear and hydrodynamic data at NTS and the Laboratories.

Dynamic Materials Properties

- EOS data of mixtures was obtained from Z experiments at Sandia National Laboratories (SNL).
- Plutonium aging data was obtained and analyzed as input to the FY 2009 pit lifetime assessments.
- Completed preliminary Diamond EOS.
- Inserted new physics model into baseline codes.
- Measured infrared reflectivity (IR) of shocked tin samples above and below the solid-liquid phase boundary through Dynamic Shock Experiments at the Special Technologies Laboratory (STL).
- Accelerated flyer plate to over 100,000 mph on Z Facility and performed EOS studies to 20 Mbar.
- Employed new preheating technology at Sandia Dynamic Integrated Compression Experimental (DICE) facility for phase boundary measurements.

Advanced Radiography

- Conducted four major proton radiography (pRad) experiments at LANSCE.
- Applied image metrics to hydrodynamic and nuclear data to help evaluate new models.

Secondary Assessment Technologies

- Executed the first National Ignition Facility (NIF) experiments for stockpile stewardship mission.
- Demonstrated the ability to calculate system output with Uncertainty Quantification within predefined ranges of data.
- Demonstrated a new compact x-ray source on Z for use as an above ground experiments (AGEX) platform driver in support of the Stockpile Stewardship Program.

Test Readiness

- Completed Full Toss experiments.

Advanced Certification

- Completed design of Surety hydro tests.
- Demonstrated the quantitative effect of model form uncertainty on prediction uncertainty.
- Accomplished a Complete Catalog of Observed Failures at NTS and the First Generation of Mechanisms, Metrics and Thresholds.

Major Outyear Priorities and Assumptions

The outyear requirements for the Science Campaign total $1,627,248,000 for 2012 through FY 2015. The Science Campaign will improve predictive capability sufficient for NEPs in the current stockpile by FY 2020. The major steps on this path include: fundamental multi-phase Pu EOS and constitutive properties models for primary implosions by FY 2012; models for full primary operation by FY 2015; and models of full secondary performance by FY 2018. The FY 2011 increase to Advanced

Certification includes the accomplishment of additional experiments at the Nevada Test Site, DARHT and other experimental facilities that contribute to analysis and modeling of failure modes and margin-to-failure. The additional efforts will also be extended to regimes that are relevant to analysis of proliferant technical capability and other factors of broader national nuclear security interest.

The Science Campaign is planning future integrated activities to answer key questions on time scales consistent with transformation of the nuclear security enterprise. NNSA is reviewing several outstanding high-level issues, such as: LANSCE refurbishment; the challenging program related to initial conditions for boost (2015); a critical decision point for whether to execute DynEx (scheduled for 2015); continuation of JASPER and other operations at NTS; the requirement to maintain test readiness capabilities as directed by Congress; activities affected by transformation across the nuclear security enterprise (high explosives research across the complex; plutonium R&D activities in Superblock at Lawrence Livermore National Laboratory (LLNL); and managing the balance between research and manufacturing activities at TA-55).

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Advanced Certification	**19,400**	**19,400**	**76,972**

The Advanced Certification Campaign will eliminate systemic gaps in the NNSA certification process through the application of stockpile stewardship campaign work products. It will integrate the scientific and technological advances from stockpile stewardship with input from continuing studies in order to: improve the weapons certification process; refine computational tools and methods; advance the physical understanding of surety mechanisms; understand failure modes; assess new manufacturing processes; and study system requirements. The focus is on large changes, or aggregations of smaller changes in the future stockpile, as opposed to the individual small changes already assessed by the current programs. Advanced Certification will fill the gaps not presently covered under the existing stockpile program. Advanced Certification will develop a rigorous connection between performance effects resulting from changes in such areas as pit modification (including pit re-use), component, or manufacturing changes. Specific activities will include modeling and experiments that address failure modes, as well as the development of a rigorous, peer-reviewed linkage of system level requirements to the associated certification needs for the weapons lifecycle under all relevant conditions. The increase supports the use of DARHT hydrodynamic experiments to examine options for modernized surety. Also supported is the analysis of failure modes and margin-to-failure, including stockpile, non-stockpile, and potential proliferant designs. Experiments will be conducted at DARHT and the Nevada Test Site. This effort supports intelligence community issues and involves close coordination with other government agencies in national security. Failure mode analysis is fundamental to stewardship and the extension to other designs will contribute to counter-terrorism and counter-proliferation assessments.

Primary Assessment Technologies	**80,181**	**83,181**	**85,723**

Primary Assessment Technologies (PAT) will commence the performance of experiments on the DARHT 2nd Axis that will acquire multiple images of an imploding system. This data complements data obtained through experiments to be performed at LLNL's Site 300, and proton radiography experiments at LANSCE. These experiments will be used along with data collected from past underground tests to understand and reduce the uncertainties on the empirically defined parameters that are typically used in legacy weapon performance models. The NNSA has a goal to eliminate one such parameter and to replace it with physics-based models by 2015. The resulting improvements to our models will be used to improve the scientific basis for NNSA annual assessments and address stockpile issues. NNSA will also continue with planned experiments on the PHOENIX. The evaluation of aging effects on the predicted certifiable service lifetime of pits will continue with contributions from Primary Assessment Technologies and DSW. Our current state of understanding of the boost process will be documented by both LLNL and Los Alamos National Laboratory (LANL) in a set of classified, peer-reviewed reports which will subsequently be published in the archival classified weapons physics journal - Defense Research Review (DRR). Finally, the primary assessment plan will be updated to reflect the significant progress over the past two years achieved by the Campaign.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Primary Assessment Technologies also funds the Stewardship Science Academic Alliances (SSAA) and the High Energy Density Plasmas (HEDP) Joint Program. The SSAA program provides financial assistance to approximately 40 academic institutions in two areas of unique relevance to weapon science; low energy nuclear science and materials under extreme conditions. The HEDLP Joint Program supports high-energy density laboratory plasma science.

Dynamic Plutonium Experiments **23,022** **0** **0**

In FY 2010, all activities were consolidated under Dynamic Materials Properties.

Dynamic Materials Properties **83,231** **86,617** **96,984**

Dynamic Materials Properties develops the fundamental knowledge and physics-based models that describe and predict the behaviors of weapon materials in environments of extreme conditions of temperature, stress, strain, and strain rates. Dynamic Materials Properties will have the responsibility for developing the aging and process-aware fundamental plutonium multi-phase EOS and its constitutive properties. These experiments will be conducted at Inertial Confinement Fusion (ICF) facilities, as well as at DOE/Science synchrotron radiation national user facilities. It may also include the establishment of a dedicated beam line to perform dynamic compression experiments on a sector of the Advanced Photon Source (APS) at the Argonne National Laboratory. A series of tests will be executed on various Large Bore Powder Gun (LBPG) samples in different pressure regimes and with different loading characteristics to provide information important to the improvement of EOS models. FY 2011 efforts will continue with proton radiography experiments at LANSCE and collaborative experiments with the United Kingdom.

Other major milestones will include conducting the first isentropic compression experiments to 5 Mbar on Z, completing nuclear cross section measurements on Pu-239 at LANSCE, and completing high fidelity simulations of shock initiation of high explosives at the grain scale by LLNL.

Dynamic Materials Properties also funds the SSAA and the HEDP Joint Program. The SSAA program provides financial assistance to approximately 40 academic institutions in two areas of unique relevance to weapons science; low energy nuclear science and materials under extreme conditions. The HEDLP Joint Program supports high-energy density laboratory plasma science.

Advanced Radiography **28,535** **28,535** **23,594**

Advanced Radiography will be transforming the methods used by the enterprise to perform radiographic and dynamic materials experiments. The majority of the work will be accomplished at DARHT, Site 300, Sandia Area IV, and pRad at LANSCE. Containment of explosively-driven experiments will be a continuing focus and will enable these experiments to have a minimal impact on the environment. The development of radiographic requirements and

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

advances in the analysis and use of radiographic information will be pursued. In FY 2011, this subprogram will continue to support the early stages of development of pulsed-power technologies, advanced compact radiography capabilities and the continued refinement and utilization of the pRad facility at LANSCE.

Secondary Assessment Technologies	**76,913**	**77,913**	**81,949**

The highest priority for Secondary Assessment Technologies is the implementation of a better physics-based energy model. The work will be further refined by performing experiments thru FY 2012 and is expected to lead to a revision of the model by FY 2015. Ongoing experiments will focus on additional secondary performance issues with an improved physics model for these additional issues implemented by 2020. Many experiments that support model development rely on availability of the ICF facilities, NIF, Z, and OMEGA facilities and a significant effort goes toward target fabrication. Secondary assessment also supports improved tools for modeling of weapon outputs.

Secondary Assessment Technologies also funds the SSAA and the HEDP Joint Program. The SSAA program provides financial assistance to approximately 40 academic institutions in two areas of unique relevance to weapons science; low energy nuclear science and materials under extreme conditions. The HEDLP Joint Program supports high-energy density laboratory plasma science.

Test Readiness	**5,408**	**0**	**0**

The responsibility for the maintenance of infrastructure and physical assets at the NTS transferred to the RTBF program in FY 2010.

Total, Science Campaign	**316,690**	**295,646**	**365,222**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Advanced Certification	
Recent external studies have pointed out the need for scientific efforts that help resolve issues fundamental to modern primary performance. The requested increase funds hydrodynamic experiments at DARHT and the Nevada Test Site to examine options for modernized surety. Also supported is the analysis of failure modes and margin-to-failure, including stockpile, non-stockpile, and potential proliferant designs. Data regarding specific materials will be obtained using the tools developed through the other science sub-campaigns in order to reduce remaining uncertainties. This effort also supports Intelligence community issues and involves close coordination with other government agencies in national security. Failure mode analysis is fundamental to stewardship and the extension to other designs will contribute to counterterrorism and counter-proliferation assessments.	**+57,572**
Primary Assessment Technologies	
The increase in funding will accelerate the pace of LANSCE diagnostic development for accurate nuclear cross-section measurement. Increase also funds enhanced development of thermonuclear burn models, and partially restores funding to academic programs.	**+2,542**
Dynamic Materials Properties	
The increase will fund the acceleration of experiments at JASPER at the Nevada Test Site, and restore funding to academic programs.	**+10,367**
Advanced Radiography	
The decrease reflects a reduction to the pace of pulsed power technology and radiographic diagnostic development as DARHT second axis enters an operational mode.	**-4,941**
Secondary Assessment Technology	
The increase funds diagnostics and targets for experiments on NIF and Z.	**+4,036**
Total Funding Change, Science Campaign	**+69,576**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	1,027	1,050	1,073
Total, Capital Operating Expenses	**1,027**	**1,050**	**1,073**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	1,097	1,121	1,146	1,171
Total, Capital Operating Expenses	**1,097**	**1,121**	**1,146**	**1,171**

[a] Funds are appropriated for Operations and Maintenance, including operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects, therefore FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Engineering Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Engineering Campaign			
Enhanced Surety	46,111	42,000	42,429
Weapon Systems Engineering Assessment Technology	16,593	18,000	13,530
Nuclear Survivability	21,100	21,000	19,786
Enhanced Surveillance	66,196	69,000	66,175
Total, Engineering Campaign	**150,000**	**150,000**	**141,920**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Engineering Campaign				
Enhanced Surety	44,019	43,699	48,851	50,523
Weapon Systems Engineering Assessment Technology	16,533	15,199	19,730	20,404
Nuclear Survivability	20,627	18,550	10,334	10,687
Enhanced Surveillance	68,558	57,548	66,005	64,125
Total, Engineering Campaign	**149,737**	**134,996**	**144,920**	**145,739**

Mission

The goal for the Engineering Campaign is to develop capabilities to assess and improve the safety, reliability, and performance of the nuclear explosive package and non-nuclear engineering components throughout a nuclear weapon's lifetime without further underground testing. Additionally, the purpose is to increase our ability to predict the response and have confidence in the design of all components and subsystems to external stimuli (large thermal, mechanical, and combined forces and extremely high radiation fields); the effects of aging; and to develop essential engineering capabilities and infrastructure.

The Engineering Campaign provides the nuclear security enterprise with modern tools and capabilities in engineering sciences and technologies to ensure the safety, security, reliability and performance of the current and future U.S. nuclear weapon stockpile without further underground testing, and provides a sustained basis for stockpile certification and assessments throughout the lifecycle of each weapon. Specific Campaign objectives are enabled by the improved capability for weapon design and engineering assessment including:

- Incorporation of enhanced surety features, independent of any threat scenario, meeting the requirements of National Security Presidential Directive 28 (NSPD-28).
- Quantification of margins and uncertainties (QMU), using state-of-the-art design and assessment tools that rely on Advanced Simulation and Computing codes and experimental facilities acquired in support of the Stockpile Stewardship Program.
- Predictive capability for the effect of aging on performance and lifetime assessments.

- Consolidation of Category I/II Special Nuclear Material (SNM) is supported by providing alternative capabilities and tools.
- Qualification Alternatives to the Sandia Pulse Reactor (QASPR) project to evaluate threats or vulnerabilities more responsively than traditional radiation testing.
- Establishment of responsive lifecycle engineering at demonstrated lower costs.
- World class staff and program in engineering science research & development (R&D).

Benefits

The Engineering Campaign is comprised of four focused subprograms. Each subprogram is a unique contributor to Government Performance and Results Act (GPRA) Unit Program Number 28, and each subprogram's contributions are summarized below:

Enhanced Surety – Provides the most modern surety (safety, security, and use control) by developing advanced initiation, use-denial, and power management options and integrated surety solutions for consideration in scheduled stockpile refurbishments, life extension programs (LEPs), and future stockpile strategies.

Weapon Systems Engineering Assessment Technology – Provides the scientific understanding, experimental capability, diagnostic development and data required to develop and validate engineering computational models; and develop assessment methodology for weapon design, manufacturing, qualification, and certification that are needed by the Directed Stockpile Work (DSW) R&D program to maintain the legacy stockpile, refurbish weapons and transform the stockpile, as required.

Nuclear Survivability – Provides the tools and technologies needed to design and qualify components and subsystems to meet requirements for radiation, space, and other hostile environments; develops radiation-hardening approaches and hardened components; and modernizes tools for weapon outputs.

Enhanced Surveillance – Provides component and material lifetime assessments to support weapon replacement or refurbishment decisions and the Annual Assessment process, and develops advanced diagnostics and predictive capabilities for early detection and assessment of stockpile aging concerns, and for cost effective surveillance transformation.

The Engineering Campaign activities are closely integrated with DSW, Advanced Simulation and Computing (ASC), Readiness, and Science Campaigns, and Readiness in Technical Base and Facilities (RTBF). For instance, DSW provides the requirements for modeling and simulation capability and establishes the corresponding schedule for Engineering Campaign deliverables that support LEPs. Related to the interface with DSW, many of the scientific models recommended for development or improvement by the ASC Campaign come as input from engineering research within the Engineering Campaign. The ASC Campaign also provides the validation and verification (V&V) requirements, for the advanced codes, so that the Engineering Campaign can properly design and conduct the required experiment to validate the computational models. The engineering science basis for enhanced surveillance and nuclear survivability assessments depends on aging and relevant changes in material properties data provided by the Dynamic Materials Properties subprogram of the Science Campaign. Along with baseline data, related test and analysis methods; the Science Campaign input includes margin/uncertainty criteria and sensitivities of performance material properties used to develop aging models and lifetime assessment tools. Integration of the Engineering Campaign and RTBF is vital to

ensure that the proper investment is made in experimental and computational infrastructure needed to meet the Campaign's milestones. Examples of these facilities include the Test Capability Revitalization, the Ion Beam Laboratory, and the Microsystems and Engineering Sciences Applications facility.

Annual Performance Results and Targets

(R = Results; T = Target)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 28, Engineering Campaign											
Microsystems and Engineering Sciences Applications (MESA): Cumulative percentage of the MESA facility project completed (total project cost), while maintaining a Cost Performance Index of 0.9-1.15. (Efficiency)	R: 88% T: 65%	R: 95% T: 75%	R : 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	MESA project construction was completed May 2008 and the contract closeout was completed August 2008.[a]
Enhanced Surety: Cumulative percentage of progress towards an improved initiation system to meet detonation safety requirements for future alterations or modifications to stockpiled weapons, measured by the number of milestones, in the implementation plan, completed. (Long-term Output)	R: 70% T: 65%	R: 70% T: 70%	R: 75% T: 75%	R: 35% T: 35%	T: 41%	T: 47%	T:53%	T: 59%	T: 64%	T: 70%	By 2020, complete the development of threat-insensitive technologies that meet the safety and security requirements and goals of NSPD-28 and the safety acceptance criteria established by the DOE and the DoD. [b]
Enhanced Surveillance: Cumulative percentage of progress towards completion of aging models and assessments, diagnostics, and tools needed for science-based lifetime predictions of specific weapon components and for transformation to more predictive stockpile surveillance, measured by the number of milestones, in the implementation plan, completed. (Long-term Output)	R: 32% T: 32%	R: 40% T: 40%	R: 47% T: 47%	R: 53% T: 53%	T: 57%	T: 62%	T: 64%	T: 68%	T: 71%	T: 75%	By 2022, complete the aging models and assessments, diagnostics, and tools needed to achieve science-based lifetime predictions and stockpile surveillance transformation .[c]

[a] Rebaselined in 2007 for 2009 completion, based on current results to date, priorities, and available resources. Project closeout achieved early, in 2008 vs. 2009.

[b] The scope for the Enhanced Surety Subprogram was redefined in 2008 to include additional features anticipated to be required for weapon systems with a first production unit (FPU) date of 2020. Therefore, the annual targets for FY 2009 and beyond were recomputed and the endpoint target changed to 2020.

[c] The Endpoint Target for the Enhanced Surveillance Subprogram was redefined in 2009 from a 2020 to a 2022 completion, hence the annual targets for FY 2009 and beyond were recomputed.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Weapon Systems Engineering Assessment Technology: Cumulative percentage of progress towards system engineering methodology for assessing and predicting the effects of large thermal, mechanical, and combined forces on nuclear weapons for future alterations or modifications, measured by the number of experimental data sets, in the implementation plan, completed. (Long-term Output)[a]	R: 37% T: 37%	R: 45% T: 45%	R: 53% T: 53%	R: 54% T: 54%	T: 61%	T: 68%	T: 74%	T: 79%	T: 85%	T: 90%	By 2017, complete the development of system engineering methodology for assessing and predicting the effects of large thermal, mechanical, and combined forces on nuclear weapons for future alterations or modifications to stockpiled weapons.[b]
Nuclear Survivability: Cumulative percentage of completion of design and qualification tools for meeting requirements for survivability in intense radiation environments needed for future alterations or modifications to replace the existing proof-testing approach that uses significant amounts of highly enriched uranium, measured by the number of milestones, in the implementation plan, completed. (Long-term Output)	R: 27% T: 27%	R: 40% T: 40%	R : 48% T: 48%	R: 56% T: 56%	T: 65%	T: 63%	T: 66%	T:68%	T: 70%	T: 72%	By 2020, complete the replacement of relevant design and assessment technologies for weapon components allowing future alterations or modifications to meet requirements for survivability in intense radiation environments.[c]

[a] In 2006, during the OMB PART evaluation, this performance indicator was redefined and rebaselined. As a result, the Engineering Campaign extended the endpoint target and recomputed annual targets for FY 2007 and beyond; and FY 2005-2006 results are recomputed against new baseline targets.

[b] In 2009, this Endpoint Target was adjusted from 2014 to 2017 to reflect the reduction in scope resulting from the FY 2010 to FY 2011 budget decrement.

[c] In 2009, this Endpoint Target was adjusted from 2014 to 2020 to reflect the reduction in scope resulting from the FY 2010 to FY2011 budget decrement.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Ion Beam Laboratory: Cumulative percentage of the Ion Beam Laboratory (IBL) project completed (total project cost), while maintaining a Cost Performance Index of 0.9-1.15. (Efficiency)	N/A	N/A	N/A	R: 38.3% T: 31%	T: 62%	T: 86%	T: 95	T: 100%	N/A	N/A	By 2013, complete 100% of the IBL project while maintaining a Cost Performance Index of 0.9-1.15. (IBL line item construction funding completed in FY 2010).[a]

[a] The IBL efficiency measure was introduced in 2009. Although the scope and funding has been shifted to the RTBF program, the Engineering Campaign will continue to be the program sponsor, and will continue to report against this performance measure.

FY 2009 Accomplishments

Enhanced Surety

- Demonstrated all of the components of an advanced initiation system.
- Demonstrated highest priority surety sensor technologies against a subset of relevant Stockpile-to Target-Sequence (STS) environments.
- Filled a tritium prototype unit at Savannah River National Laboratory (SRNL), which records weekly validating data in support of advanced power technology development.
- Completed a feasibility study exploring fast initiation of new energetic materials and system power and response time requirements.
- Conducted parametric material studies on Multi-Point Safety (MPS) options at Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) through collaboration with the United Kingdom in efforts to bracket technologies supporting NSPD-28.
- Demonstrated system implementation of verifiable execution on a single prototype unit.

Weapon Systems Engineering Assessment Technology

- Completed initial development and demonstration of the 6-DOF (Degrees-of-Freedom) vibration test capability for component testing utilizing a DSW relevant configuration.
- Completed initial validation experiments of spatial correlation of wall pressure fluctuations in a supersonic turbulent boundary layer, relevant to Re-entry Vehicles/Re-entry Bodies (RV/RB).
- Characterized the as-built stress state of a high-fidelity high explosive system.

Nuclear Survivability

- Modeled and calculated appropriate scenarios for the two specific threats (NWM21-4 and NWM21-6) for the W87 Nuclear Explosive Package (NEP).
- Assessed QMU techniques and methods used by DSW and determined their applicability to the methods and procedures used in assessing the survivability of U.S. nuclear weapon systems.
- Installed and began using the INRAD test stand in the Plutonium Facility.
- Reviewed system thermal response to neutron environment study.
- Completed and documented the QASPR silicon circuit prototype exercise.
- Further development and utilization of techniques to measure impulse generation in materials due to x-ray deposition.

Enhanced Surveillance

- Provided input for the annual certification on component and material aging for each weapon system.
- Demonstrated new capabilities for the next system tester (W78 and W87) at the Weapons Evaluation Test Laboratory.
- Completed the development of a W78 firing set structural dynamic model to be used for identifying transfer functions needed for mechanical margin and robustness testing.
- The maturation of built-in self test hardware is proceeding to the desired Technical Readiness Level – 6 (TRL-6) sufficient for LEP consideration.
- Improved component aging models for Canned Sub-Assemblies (CSA), polymers, high explosives (HE), and initiation systems were developed or used to support lifetime assessments and developed initial framework for inputting aging signatures into quantitative predictive models for assessing uncertainties.

- Updated and completed, the component lifetime, aging, compatibility, and reuse assessments for the CSA, metals, polymers, and ceramic materials in non-nuclear components, mechanical safe and arming devices, getters, silicone elastomers and polyurethane for NEPs, firesets, environmental sensing devices (ESDs), lightning arrestor components (LACs), use control, polymers, diagnostics, O-rings, materials and electronic interfaces.
- Completed Qualified Engineering Release (QER) of Off-line Solid Phase Micro Extraction (SPME) and transferred the diagnostics to core surveillance.
- Evaluated Nuclear Magnetic Resonance (NMR) ProFiler for surveillance of silicone pad and cushion.
- Demonstrated development of the enhanced onionskin test for HE.
- Completed Acoustic Resonance Spectroscopy (ARS) testing and analysis for potential implementation by core surveillance.
- Documented software utilization and improvements for application to computed tomography efforts in core surveillance.
- Documented development and fabrication of Schlieren diagnostic including additional hardware selection and procurement.
- Developed methods for ultrasonic inspection of W80 and W78 reservoirs to TRL-7.
- Completed installation at Pantex of 1-2 mil Computed Tomography hardware for evaluating pits.

Major Outyear Priorities and Assumptions

The outyear requirements for the Engineering Campaign total $575,392,000 for FY 2012 through FY 2015. Decreases through this period are due to the reallocation of funding to support other priorities within the Stockpile Stewardship Program. In addition, completion of QASPR, which was originally scheduled for FY 2014, may be extended due to budget priorities. Priority will be given to surety and surveillance activities to support future LEPs, alterations, and modifications.

Outyear priorities will also include the accomplishment of technologies and tools in support of nuclear survivability efforts related to alterations/modifications and LEPs. The nuclear survivability of weapons requires R&D efforts in developing and qualifying technologies and associated tools and materials to ensure designs are in place when required. The Engineering Campaign will continue to transform surveillance, including the methodology for detecting aging signatures through advanced diagnostics.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Enhanced Surety	**46,111**	**42,000**	**42,429**

Enhanced Surety pursues a multi-technology approach to develop viable technology options for insertion meeting weapon system designers' specifications during stockpile alterations, modifications, and replacements. This approach is also applicable to other future envisioned refurbishments and stockpile improvement projects needed, meeting both NNSA and Department of Defense (DoD) requirements. Multi-technology development and integration opens the design space and offers opportunity for synergistic improvements to other weapon components.

In FY 2011, the focus is on four multi-site development efforts. SNL, along with the SRNL, will continue to mature power management options with the intent to deliver a near-term viable option for LEPs. Prototypical hardware production of security sensor technologies will be transferred from SNL to the Kansas City Plant. LANL will, with SNL, continue to mature integrated surety solutions, which integrates external surety elements with the weapon, thus allowing the weapon to have the capability to better react to external activities addressing current threat scenarios. Development of MPS options for the next insertion opportunity will continue at LANL and LLNL through enhanced collaborations with the United Kingdom incorporating system integration through SNL.

Weapon Systems Engineering Assessment Technology	**16,593**	**18,000**	**13,530**

The Weapon Systems Engineering Assessment Technology (WSEAT) subprogram uses engineering computational models in collaboration with the ASC Campaign to predict weapon system response to three STS environments: normal, abnormal, and hostile. The activity also supports manufacturing the development of critical components and subsystems; e.g., neutron generators, gas transfer systems, and microsystems. The subprogram objective is to establish the capability to predict engineering margins by integrating numerical simulations with experimental data. Validated computational tools are required to explore the operational parameter space of the nuclear weapons stockpile. Exploration of operational parameter space identifies failure modes and boundaries, thus establishing engineering margins.

In FY 2011, the subprogram will focus on producing data sets for model validation in support of current weapon alterations and modifications and legacy stockpile support. Combined efforts between the ASC Campaign Verification and Validation, and Physics and Engineering Models programs is a key principle of WSEAT, and provides validated modeling and simulation capability for multi-scale and multi-physics problems encountered in qualification and certification activities. Work will continue at a decelerated rate on non-intrusive instrumentation and high explosive structural property measurements supporting model development for improved assessments of structural response, and margins for insensitive high explosive main charge materials.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Nuclear Survivability	**21,100**	**21,000**	**19,786**

The tools and technologies developed by the Nuclear Survivability subprogram are required to assess changes made to the stockpile through scheduled refurbishments; weapon replacement activities; surveillance discoveries; natural aging; or the introduction of new materials, technologies, or designs. The scope of the subprogram includes developing scientific models for understanding radiation effects; generating experimental data to validate computational tools; understanding radiation-hardened design strategies; evaluating new and evolving stockpile candidate technologies for radiation hardness capabilities in a generalized, weapon-relevant configuration; studying radiation hardening aging phenomena for the long-term stockpile; and improving laboratory radiation sources and diagnostics to support code validation and hardware qualification experiments. In conjunction with the DoD, the subprogram also develops the tools to calculate the output and performance of modern weapons needed to define some of the most stressing and damaging nuclear environments. This computational capability is critical to the DoD threat assessments and effectiveness assessments as required by the Atomic Energy Act. These improvements in modeling are transformational and will allow quicker response in analyzing both threats and warhead survivability issues.

In FY 2011, planned activities include continued development of tools and technologies to support QASPR. These tools will support alterations/modifications to the enduring stockpile (or future strategic systems) and will assist in the development of scientific models for understanding radiation effects phenomenology and generating experimental data to validate computational tools. In addition, the subprogram will develop technologies and tools required to support the next reentry system LEP and/or AF&F replacement per the P&PD. Similarly, major R&D efforts are required for system generated electromagnetic pulse phenomena design and qualification tools; technology development for hardening materials; as well as development of qualification tools for those materials in areas of thermomechanical shock, thermostructural response, and impulse generation; and circuit response predictive capabilities.

Enhanced Surveillance	**66,196**	**69,000**	**66,175**

The decrease reflects a manageable curtailment in the development of certain stockpile surveillance diagnostics, non-destructive techniques, component and material evaluation methods, joint test assembly technology, and embedded evaluation sensors and instrumentation. Additionally, some aging and lifetime studies will be re-scoped to protect the quality of information necessary to support ongoing LEP activities.

Total, Engineering Campaign	**150,000**	**150,000**	**141,920**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Enhanced Surety	
The slight increase reflects an initiative to continue technology development and maturation at a pace to meet the next viable insertion opportunity.	**+429**
Weapon Systems Engineering Assessment Technology	
The decrease reflects a manageable reduction in scope consistent with program priorities within the Stockpile Stewardship Program. Efforts will focus on producing data sets for model validation in support of current weapon alterations and modifications and legacy stockpile support. Some lower priority experiments and studies will be executed at a reduced rate and/or delayed to future years.	**-4,470**
Nuclear Survivability	
The decrease reflects a deceleration of continued efforts within the QASPR program. Specifically, within the fiscal year, technology thrusts will continue to shift from a legacy material based methodology to an assessment of 21st century semiconductor materials. As legacy material efforts approach completion, the methodology of QASPR will be applied to material evaluations aimed at answering questions of practicality in continuing exploration of non-legacy materials in FY 2011 and beyond. Efforts targeted for non-legacy materials will be decelerated.	**-1,214**
Enhanced Surveillance	
The decrease reflects a manageable curtailment in the development of certain stockpile surveillance diagnostics, non-destructive techniques, component and material evaluation methods, joint test assembly technology, and embedded evaluation sensors and instrumentation. Additionally, some aging and lifetime studies will have less rigor, impacting the quality of information available to make decisions on reuse and replacement of components for LEPs.	**-2,825**
Total Funding Change, Engineering Campaign	**-8,080**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	5,763	5,890	6,020
Total, Capital Operating Expenses	**5,763**	**5,890**	**6,020**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	6,152	6,287	6,425	6,566
Total, Capital Operating Expenses	**6,152**	**6,287**	**6,425**	**6,566**

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, the program no longer budgets separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Inertial Confinement Fusion Ignition and High Yield Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Inertial Confinement Fusion Ignition and High Yield Campaign			
Ignition	100,535	106,734	109,506
NIF Diagnostics, Cryogenics, and Experimental Support	66,201	72,252	102,649
Pulsed Power Inertial Confinement Fusion	8,652	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	3,053	4,000	4,000
Facility Operations and Target Production	203,282	269,929	260,393
NIF Assembly and Installation Program	55,192	0	0
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**436,915**	**457,915**	**481,548**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Inertial Confinement Fusion Ignition and High Yield Campaign				
Ignition	110,222	74,410	71,479	73,886
Support of Other Stockpile Programs	17,240	39,637	35,522	49,154
NIF Diagnostics, Cryogenics, and Experimental Support	74,104	83,878	82,921	76,117
Pulsed Power Inertial Confinement Fusion	5,000	5,000	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	4,000	4,000	4,000	4,000
Facility Operations and Target Production	269,885	268,672	272,072	276,655
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**480,451**	**475,597**	**470,994**	**484,812**

Mission

The Inertial Confinement Fusion (ICF) Campaign provides an important component of the scientific and technical understanding required to assess the safety, security, and reliability of the Nation's nuclear weapons without nuclear testing. The program provides this capability through the development and use of advanced experimental tools, including state-of-the-art laser and pulsed power facilities. Science-based weapons assessments and certification requires that these advanced experimental tools have the capability to create and study matter under extreme conditions that approach the high-energy density (HED) environments found in a nuclear explosion.

Virtually all of the energy from a nuclear weapon is generated while in the high energy density (HED) state. High-energy density physics (HEDP) experiments on ICF facilities are required to validate the advanced theoretical models that are used to assess and certify the stockpile without nuclear testing. The National Ignition Facility (NIF) will extend HEDP experiments to include access to thermonuclear burn conditions in the laboratory, a unique and unprecedented scientific achievement.

The ICF Campaign, a vital component of the National Nuclear Security Administration's (NNSA) responsive infrastructure, supports NNSA's Stockpile Stewardship Program (SSP) through three strategic objectives:

- Achieve thermonuclear ignition in the laboratory and develop it as a routine scientific tool to support stockpile stewardship.
- Develop advanced capabilities including facilities, diagnostics, and experimental methods that can access the HED regimes of extreme temperature, pressure, and density required to assess the nuclear stockpile.
- Maintain the U.S. preeminence in HED science and support broader national science goals.

The importance of laboratory thermonuclear ignition to the national nuclear weapons program was one of the earliest motivations of the ICF program. A major focus of the ICF Campaign over the past decade has been the construction of the National Ignition Facility (NIF), which is required to achieve the principal program objective: to achieve thermonuclear ignition experiments in the laboratory. The NIF, located at the Lawrence Livermore National Laboratory (LLNL), is a 192 beam, high-energy, high-power laser system capable of delivering up to 1.8 megajoules of energy in a single pulse with a few nanoseconds duration. The NIF construction project was completed in March 2009 and provides NNSA extraordinary opportunities for significant scientific progress and discovery in the areas of thermonuclear ignition and matter under extreme HED conditions. Creating laboratory conditions of extreme densities and temperatures relevant to HED phenomena occurring in nuclear detonation is one of the most challenging requirements for science-based weapons certification.

Other advanced HED experimental capabilities within the ICF Campaign include the pulsed power Z-machine at the Sandia National Laboratories (SNL) and the OMEGA Laser Facility at the University of Rochester's Laboratory for Laser Energetics (LLE). Both facilities have recently undergone significant improvements. The Z-machine was refurbished and upgraded to provide more shot capacity and higher current. The new performance levels of the Z-machine are required for important weapons materials measurements. At LLE, a high-energy, short pulse capability was added to the existing 60 beam, 30 kilojoule OMEGA laser system. The OMEGA Extended Performance (EP) can produce high energy x-rays which are required for the advanced radiography capability needed in many weapons physics experiments. The combined capability is referred to as the OMEGA Laser Facility.

The National Ignition Campaign (NIC) is a multi-site integrated effort which focuses on achieving thermonuclear burn in the laboratory. Through FY 2012, the entire effort in Ignition and NIF Diagnostic Development subprograms is devoted to the NIC and about 75 percent of Facility Operations and Target Production. This includes all ignition experimental activity at NIF and the preparatory activity at OMEGA and ignition target development and fabrication. The partners in the NIC include LLNL, LLE, Los Alamos National Laboratory (LANL), SNL, and General Atomics (GA). The NIC has two primary objectives: (1) Perform the first ignition experimental campaign on the NIF beginning in FY 2010, and; (2) Transition the NIF from project completion to routine facility operations by the end of FY 2012.

Because of the importance of the NIC and its specific focused goal of ignition, NNSA designated it as an Enhanced Management Program requiring adherence to a rigorous set of project management standards including a formal execution plan. The execution plan describes the multi-year NIC scope,

schedule, and budget baseline. Reporting on a large number of milestones, earned value reporting, and a formal change control process are among the management tools used to track progress against the NIC baseline. The NIC Execution Plan was submitted to Congress in late FY 2005 and progress reports on the status of the NIC technical programs to achieve ignition are provided to Congress quarterly.

A new JASON review of NIC was conducted in 2009 to assess progress since its previous review in 2005 and to evaluate preparations for the first ignition experiments in FY 2010. The 2009 review concluded that impressive, steady progress has been made but substantial scientific and technical challenges remain.

Early experimental work at NIF will continue to focus on assessing uncertainties in the physics understanding of ignition and adjusting or "tuning" the important parameters (e.g., laser beam pointing) to achieve the best set of ignition conditions. Early experiments will provide information such as: the coupling efficiency of the laser energy to the target; the timing of the shocks used to compress and heat the fuel; and the ablation rate and symmetry of the capsule as the implosion proceeds. The first ignition campaign began in late FY 2010 and will be followed by two additional campaigns (in FY 2011 and early FY 2012) that will vary the important parameters and obtain data to validate physics models in the burning plasma regime. This will further the understanding of ignition and allow a reproducible ignition platform to be optimized for SSP applications.

The ICF program is now utilizing experience acquired in the initial phase of NIF operation to constantly refine its plan for the FY 2011 and FY 2012 campaigns and the logistics required to implement those campaigns. The ICF program is planning for a very intense unprecedented level of campaign activity in FY 2011. Rapid reconfiguration of the laser in response to the results of tuning experiments will present a challenging operational task. This combined with the continuing installation and upgrade of diagnostics indicates the need for some increase in manpower.

For the SSP, ignition and thermonuclear burn will allow routine access to physical regimes hitherto unavailable in the laboratory. In addition, the demonstration of thermonuclear ignition will be of major importance for the Department of Energy's (DOE) energy and fundamental science missions.

Benefits

Within the ICF Campaign, there are 6 subprograms, each of which makes a unique contribution to Government Performance and Results Act (GPRA) Unit Program Number 29.

- The Ignition subprogram includes advanced theoretical modeling, systems engineering, target and experiment design, and experiments on ICF facilities.

- The Support of Other Stockpile Programs subprogram develops experimental capabilities in the HED regime and applies these tools and methodologies to resolve important stockpile questions. This is a vital area of collaboration between the ICF and Science Campaigns.

- The NIF Diagnostics, Cryogenics, and Experimental Support subprogram supports specialized technologies needed for the first ignition experiments and for the execution of other HED experiments on the NIF. Efforts include the design, development, and engineering of a complex

array of diagnostic and measurement systems. This subprogram also includes design and construction of the NIF cryogenic target system.

- The Pulsed Power Inertial Confinement Fusion subprogram supports the assessment of Z-pinches for achieving fusion ignition and high yield, developing diagnostics for use at NIF, Z, and other HEDP facilities, and provides for materials measurements for ICF target design.

- The Joint Program in High Energy Density Laboratory Plasmas (HEDLP) subprogram funds joint activities with the Office of Science to steward the study of laboratory HED plasma physics. Both the HED physics activities within the Stockpile Stewardship Academic Alliances and the National Laser User Facility (NLUF) program at LLE, previously funded under the University Grants/Other ICF Support budget category, are now funded within the Joint Program. The NNSA portion of the joint program is funded via both the ICF and the Science Campaigns.

- The Facility Operations and Target Production subprogram supports experimental operations at NIF, OMEGA, and Z, as well as activities in target research, development, and fabrication.

In concert with the Science Campaign, the ICF Campaign provides experimental data required to validate weapons-relevant physics models that form the basis of weapons simulation design codes. These codes along with the advanced, high-performance computing platforms developed within the Advanced Simulation and Computing (ASC) Campaign are used within the SSP for the required annual assessment and certification of the U.S. nuclear stockpile. Coordination of the efforts of the Science, ICF, and ASC Campaigns is achieved, in part, through the Predictive Capability Framework (PCF) planning to prioritize and schedule major activities. The data, analysis methodologies, models and simulation codes developed by the Defense Programs' science effort also lend confidence to and support the analysis performed to meet Directed Stockpile Work (DSW) commitments. These commitments include understanding the impact of aging weapons systems, closing Significant Findings Investigations (SFIs) identified from surveillance or other sources, and certifying refurbished devices resulting from life extension programs (LEPs).

In addition to supporting NNSA's national security mission, ICF capabilities also serve DOE's missions to develop advanced energy systems (Office of Fusion Energy Sciences) and to further our understanding of fundamental science (Office of Basic Energy Sciences).

Annual Performance Results and Targets

(R = Results; T = Target)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 29, Inertial Confinement Fusion Ignition and High Yield Campaign											
Demonstrate Ignition at National Ignition Facility: Cumulative percentage of progress towards demonstrating ignition (simulating fusion conditions in a nuclear explosion) at the National Ignition Facility (NIF) to increase confidence in modeling nuclear weapons performance. (Long-term Outcome)	R: 71% T: 73%	R: 80% T: 80%	R : 86% T: 86%	R: 93% T: 93%	T: 100%	N/A	N/A	N/A	N/A	N/A	By 2010, complete first attempt to demonstrate ignition on the NIF.
National Ignition Facility (NIF) Construction: Cumulative percentage of construction completed on the 192-laser beam NIF. (Long-term Output)	R: 88% T: 87%	R: 94% T: 94%	R : 99% T: 98%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	By 2009, complete NIF construction.
National Ignition Facility (NIF) Equipment Fabricated: Cumulative percentage of equipment fabricated to support ignition experiments at NIF. (Long-term Output)	R: 45% T: 45%	R: 63% T: 63%	R : 82% T: 82%	R: 95% T: 95%	T: 100%	N/A	N/A	N/A	N/A	N/A	By 2010, complete fabrication of cryogenics and diagnostics equipment to support ignition experiments on the NIF.
Stockpile Stewardship Experiments at ICF Facilities: Annual number of days available to conduct stockpile stewardship experiments, totaled for all ICF facilities. (Annual Output)[a]	R: 691 T: 400	R: 403 T: 270	R : 558 T: 240	R: 500 T: 200	N/A	N/A	N/A	N/A	N/A	N/A	By 2009, increase ICF facility availability to 200 total days per year.

[a] Fluctuations in numbers resulted from termination of Nike Operations at NRL in 2009, refurbishment of ZR at SNL in 2007 (no shots), and availability of NIF beginning in 2010. The goal to increase ICF facilities availability to 200 was achieved in FY 2009.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Z Facility Experiments: Annual average hours per experiment required by the operational crew to prepare the Z facility for an experiment. (Efficiency)	R: 10.3[a] T: 11	R: 0 T:11	R : 10.59 T: 11	R: 8.17 T: 9.5	N/A	N/A	N/A	N/A	N/A	N/A	By 2009, reduce the operational crew preparation time per Z facility experiment to 9.5 hours. (2004 Baseline equivalent of 11 hours/experiment).[a]
Nuclear Explosive Package Assessment: Cumulative percentage of progress in replacing key empirical parameters in the nuclear explosive package assessment with first principles physics models assessed by validation with experiment. (Long-term Outcome)[b]	N/A	N/A	N/A	N/A	T : 60%	T: 63%	T: 66%	T:69%	T:72%	T:75%	By 2020, use modern physics models in assessment calculations to replace the major empirical parameters affecting energy balance, boost initial conditions, amount of boost, secondary performance, and weapons output. (Share with Science Campaign.)
Predictive Capability for Nuclear Weapons Performance: Cumulative percentage of progress towards achievement of key extreme experimental condition of matter needed for predictive capability for nuclear weapons performance. (Long-term Outcome)[c]	N/A	N/A	N/A	N/A	T : 35%	T: 55%	T: 75%	T: 85%	T: 90%	T: 100%	By 2015, achieve greater than unity value of the average of the ratio of achieved conditions to needed conditions. (Share with Science Campaign)
Cost Reduction: Cumulative percentage of operating cost reduction from 2009, adjusted for inflation, utility costs, and laboratory indirect costs, all ICF facilities combined. (Efficiency)[c]	N/A	N/A	N/A	N/A	T : 1%	T: 2%	T: 3%	T: 4%	T: 5%	T: 6%	By 2019, achieve a 10% cost reduction in combined ICF facilities.

[a] Additional radiation safety procedures required revision of annual and endpoint targets by +2 hours in 2006. Facility did not operate in 2007 due to major refurbishment.

[b] Joint Performance Indicator with Science Campaign developed during 2008 OMB PART Review.

[c] New efficiency measure developed during OMB PART Review in 2008.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
High Particle and Radiation Environments: Annual percentage of shots/experimental implosions in which the facility and diagnostics meet the minimum requirements for obtaining data in high particle and radiation environments. (Annual Output)[a]	N/A	N/A	N/A	N/A	T: 30%	T: 40%	T: 50%	T: 60%	T: 70%	T: 72%	By 2017, 95% of the shots conducted annually will meet the minimum data requirements.
Z-Materials: Annual percentage of data points that are provided by experimental capabilities meeting the requirements of model development for measuring properties of high-Z materials under weapons-relevant conditions. (Annual Output)[c]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	T: 30%	T: 45%	T: 60%	By 2016, 100% of the data points for high-Z material will meet the model development requirements.
Fusion Ignition Shots: Annual percentage of fusion ignition shots that are provided by experimental capabilities meeting the yield and yield variation requirements consistent with weapons physics models and uncertainty analyses. (Annual Output)[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	T: 50%	T: 70%	T: 80%	By 2015, 80% of the shots will meet the yield and yield variation requirements.
Experimental Capabilities: Annual percentage of data points that are provided by experimental capabilities meeting the model development and validation requirements to understand degradation of ignition yield due to hydrodynamics effects. (Annual Output)[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	T: 30%	T: 40%	By 2017, 100% of the data points will meet the model development and validation requirements.

[a] New Performance Indicator developed during OMB PART Review in 2008.

FY 2009 Accomplishments

National Ignition Campaign

- Precise measurement of power balance on eight NIF beams at Target Chamber Center showed that the NIF meets the power balance requirements for ignition pulse shapes.
- Ninety-six continuous phase plates that shape the beam spot for optimal illumination of the ignition target were installed.
- The Ignition Target Alignment System was installed and commissioned.

Diagnostic installation

- Other activity focused on installing and commissioning diagnostics and other equipment required for the first NIC experiments, including: Dante soft x-ray spectrometer, FFLEX hard x-ray spectrometer, Full Aperture Backscatter System (FABS), and the Near Backscatter Imager (NBI). The first of a suite of Neutron Time-of-Flight (NTOF) detectors that will measure the neutron yield, bang time[a], and down-scattered neutron spectrum, was installed on the NIF target chamber.

Preliminary NIC experiments

- The initial NIC experiments on the NIF focused on measuring the temperature in a hohlraum similar to the one that will be used to drive ignition targets. Initial tests of hohlraum performance have yielded drive temperatures greater than 300 electron volts which demonstrates extremely encouraging progress toward ignition requirements.

Ignition Diagnostic Development

- On the OMEGA Laser Facility at LLE, cryogenic implosion experiments produced the highest neutron yields to date in these implosions. The first short pulse x-ray radiograph of an imploding cryogenic deuterium target was obtained. Radiographic images showed the evolution of the shell compression near peak burn along with the core self emission which provides important validation of some diagnostic methods that will be applied in actual ignition experiments at NIF.
- A Magnetic Recoil Spectrometer (MRS), developed through collaboration between the Massachusetts Institute of Technology (MIT) and LLE, measured the down-scattered neutron spectrum from the implosion of a cryogenic deuterium-tritium (DT) target on OMEGA. The down-scattered neutron spectrum is used to determine the compressed fuel's areal density.
- LANL scientists fielded a gamma ray detector on OMEGA that will be used to measure the time of fusion burn on the NIF. A liquid scintillator based neutron time-of-flight detector demonstrated detection of the down-scattered neutron signal without residual afterglow from the primary neutron signal from a cryogenic DT target implosion on OMEGA. This validates the use of NTOF detectors for down-scattered neutron measurements on the NIF. The technique that will be used on NIF for convergent shock timing was validated on OMEGA.

Target Development and Production

- The cryogenic ignition target production capability was fully qualified, demonstrating high precision targets meeting the point design specifications in quantities consistent with the experimental

[a] Bang time, a term commonly used within the ICF community, is generally defined as the time interval from the beginning of the driver generated pulse to the time of maximum neutron generation.

schedule. Cryogenic layers meeting ignition requirements were formed using a cryogenic mixture of hydrogen and tritium.

Ignition Planning and Review

- A JASON review of the NIC was conducted in January 2009. The review provided an assessment of the progress of the NIC and its readiness to perform the crucial ignition experiments in FY 2010. The review concluded that impressive, steady progress has been made but suggested that substantial scientific and technical challenges remain.

NIF Project

- The NIF was completed in accordance with its approved baseline on March 27, 2009. All Project Completion Criteria have been met.
- The NIF performed a 192-beamline shot in March, 2009 that produced a record 1.1 megajoules of ultraviolet (3ω) light. Target shots in July 2009 delivered more than 600 kilojoules (kJ) (3ω) to hohlraum targets similar to those that will be used in the first ignition experiments.

OMEGA Laser Facility

- A multi-institutional team captured a radiograph of a shock wave propagating in a solid Aluminum target. The shock wave was generated by one of OMEGA EP's long pulse ultraviolet beams and the x-ray source was generated by a high energy short pulse delivered by a second OMEGA EP beamline interacting with a Samarium target.
- The first OMEGA Laser Facility User's Group Workshop was held at LLE with 100 scientists from twenty-nine universities and laboratories, 4 countries, and NNSA attending. The workshop facilitated communication among the users and with the facility and provided feedback on ways to improve operations and capabilities for users. This workshop was an important component of the ICF Program's plan to evolve all its facilities into national user capabilities.
- As of the third quarter of FY 2009, the OMEGA Laser Facility performed 1,140 target shots with high availability and effectiveness. Users included scientists from LANL, LLE, LLNL, SNL and various universities, as well as the Atomic Weapons Establishment (United Kingdom) and Commissariat a L'energie atomique, CEA (France).

Z Facility

- Full capability of the refurbished Z-machine has been demonstrated; for example the maximum current was increased from 18 to 26 mega-amperes. The refurbishment of Z has improved shot-to-shot reproducibility (within +/- 0.5 percent for the current pulse shape), provided more precise current shaping, and a longer, variable pulse length. The operation of Z has been demonstrated at the rate consistent with 220 shots per year.
- Advanced ICF pulsed power concepts have been tested in experiments that produced significant neutron yields[a]. Isentropic compression experiments at Z have been used to measure the equation-of-state of beryllium (Be) and diamond in parameter ranges required by ICF target design and have also been used to demonstrate magnetic drive pressures of 6 megabar (Mbar). Magnetically

accelerated flyer plates have been used to perform equation-of-state studies in sapphire to pressures of 20.7 Mbar.

- SNL, in collaboration with LANL, completed an important Stockpile Stewardship experiment on the refurbished Z-machine obtaining pressure-density data for tantalum at pressures up to 4 Mbar. The refurbished Z also provided data on the strength of beryllium, an important material used in both ICF capsules and other defense applications. The melt phase of diamond was studied with accuracies of one percent.

Other ICF Accomplishments:

- The Naval Research Laboratory (NRL) demonstrated operation of the Electra electron beam amplifier at 90,000 shots continuous operation for 2.5 Hz and 50,000 shots at 5 Hz. The total shots with Electra have now exceeded 1 million. Electra is an important prototype for the pump of a laser that could be used in an Inertial Fusion Energy (IFE) Experiment.
- LLNL operated the front-end laser on their diode-pumped, solid-state Mercury laser system in an autonomous mode (computer-controlled and diagnosed) for over 15 million shots.

Joint Program in High Energy Density Laboratory Plasmas (HEDLP)

- In FY 2008, the joint program issued a solicitation that supports academic and national laboratory research in HEDP. Over 135 proposals were received indicating a strong interest in the field. In FY 2009, 24 proposals were selected for initial funding.

Major Outyear Priorities and Assumptions

The outyear requirements for the ICF Campaign total $1,911,854,000 for FY 2012 through FY 2015. The achievement of ignition and thermonuclear burn and its application to the major unresolved issue in weapons physics will remain the highest priority within the ICF Campaign. Once NIC has successfully achieved ignition and thermonuclear burn in the laboratory subsequent experiments will be designed to provide a reproducible ignition platform that can be exploited by the SSP to address important weapons physics questions.

After the completion of NIC at the end of FY 2012, NIF will be capable of supporting routine operations for ignition and other HED experiments in support of SSP. Capabilities will include: certified data systems supporting experimental operations; optics and targets management systems; target production capability for the baseline ignition platform and some HED targets for SSP experiments; a second operational cryogenic target positioner; an initial set of radiation-hardened diagnostics; and a third set of continuous phase plates. In FY 2013 and beyond, the ICF Program will pursue an increasingly broader range of HED experiments (both ignition and non-ignition) required by the weapons certification process. This will include work in materials dynamics, plutonium equation-of-state and constitutive properties, hydrodynamics, x-ray opacities, and understanding the boost process. Pursuit of this agenda of vital weapons deliverables will require an increasingly sophisticated array of diagnostics, including a variety of measurement systems that can operate in the ignition or near-ignition environment. This in turn will require major investment to be shared by ICF, the Science Campaign, and other parts of the weapons community.

[a] The neutrons are a product of fusion, thus the number of neutrons produced serves as an index of efficiency of fusion.

The ICF Campaign will continue to provide some funding for the operations of its HED physics capabilities (facilities and technical expertise) to support emerging and future needs of the NNSA's national security mission. These needs may include advanced ignition concepts (such as fast ignition or various forms of direct drive) or other HED capabilities. This modest commitment to the basic science of HED may expand in response to various priorities, such as energy initiatives. Following the achievement of thermonuclear ignition, the Department anticipates that the relative importance of these potential missions and the role of the various ICF Campaign program elements and facilities supporting these missions will be reevaluated and modified to meet national needs and priorities.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Ignition	**100,535**	**106,734**	**109,506**

This subprogram is the central focus of the effort to produce thermonuclear fusion in the laboratory and to utilize ignition to address key weapons issues. The effort performs detailed theoretical designs (in both 2 and 3 dimensions) of the complete performance of ignition targets. Ignition target design is part of a very close coupling of ICF with the Advanced Simulation and Computing Campaign (ASC) and the Science Campaign. In close collaboration with the Science Campaign, this subprogram also includes experimental design, the development of specific, experimental methods focused on achieving ignition and systems engineering improvements.

Regardless of the specific status of ignition, FY 2011 will present a very demanding agenda of work in the ignition effort. Results from the first ignition attempts in 2010 will be analyzed in detail, and the intensive process of tuning laser and target parameters for optimum performance will continue. There will also be a need for continual reevaluation of the diagnostic measurement systems, including possible plans for upgrades, re-calibration, and other adjustments.

The first ignition campaign (spanning FY 2010 to FY 2011) will attempt to compress, implode, and ignite a layered DT capsule with a ~1.3 megajoule energy pulse from the NIF.

An important component of work in ignition will be continual support experiments at OMEGA. Crucial operations such as re-calibration, tuning, and adjustment of diagnostics and experimental techniques will occur there.

This ignition subprogram will also closely collaborate with the Science Campaign effort to perform vital HED (non-ignition) weapons physics experiments on the NIF and OMEGA in FY 2011.

NIF Diagnostics, Cryogenics and Experimental Support	**66,201**	**72,252**	**102,649**

This subprogram supports specialized technologies needed for the first ignition experiments and for the execution of other HED experiments on the NIF. This effort includes the design, development, and engineering of a complex array of diagnostic and measurement systems. These systems provide the vital data generated in ignition experiments and include the associated information technology subsystems needed for data acquisition, storage, retrieval, visualization, and analysis. The data generated will be utilized to tune the ignition process and to provide key information required by the weapons SSP.

The intensive activity in ignition during FY 2011 will be mirrored in a very active period of installation, calibration, and utilization of the diagnostic systems. Coordination of this activity with ignition target experiments will represent a major logistics and systems planning effort. Additionally, a

(dollars in thousands)

FY 2009	FY 2010	FY 2011

significant portion of the effort in this subprogram during FY 2011 will be in the design of experiments, and diagnostics aimed at utilizing ignition conditions to answer specific Weapons Program SSP questions.

The NIF Diagnostics, Cryogenics and Experimental Support subprogram also includes design and construction of the NIF cryogenic target system. This very complex experimental system is required to produce a precise frozen layer of DT nuclear fuel on the inner wall of an ignition capsule. This layer is required for ignition to occur.

Other activities performed in the Experimental Support subprogram include: (1) the development and activation of optical systems required to produce the optical spatial beam smoothing needed in ignition experiments and subsequent campaigns; (2) integration and experimental commissioning of the NIF target area; and (3) installation and qualification of both the tritium handling system and the personnel and environmental protection systems.

Pulsed Power Inertial Confinement Fusion **8,652** **5,000** **5,000**

This subprogram funds computational target design, experiments, and experimental infrastructure to assess pulsed power as a means to achieve thermonuclear fusion in the laboratory. The program also advances the science and technology of megajoule-class pulsed power systems to improve efficiency, reliability, precision and repetition rate, and to reduce costs. In addition, experiments in pulsed power advance fundamental research in high-energy-density plasmas, laboratory astrophysics, and planetary science. In FY 2011, activities will focus on utilizing the new diagnostics (neutron and x-ray imaging) to demonstrate consistent fusion conditions that can be utilized in variety of applications.

Joint Program in High Energy Density Laboratory Plasmas **3,053** **4,000** **4,000**

High Energy Density Laboratory Plasmas (HEDLP) is a joint program with the Office of Science to support basic high energy density physics research. This subprogram provides support for external users at the University of Rochester OMEGA facility as well as a joint solicitation for HEDLP research to be performed at universities and DOE laboratories. For FY 2011, NNSA will contribute funding from the ICF and Science Campaigns.

Facility Operations and Target Production **203,282** **269,929** **260,393**

This subprogram supports operations of ICF facilities including NIF, OMEGA, and Z, in a safe and secure manner. It also supports target and sample fabrication, including the very sophisticated targets required for ignition. As mentioned in the descriptions of the Ignition and the NIF Diagnostics, Cryogenics and Experimental Support subprograms, FY 2011 will be dominated by intense activity in the pursuit of ignition and its development for specific weapons applications. Coordination of ignition experiments, diagnostic installation and upgrades, and continued refinement of the laser itself will be a major challenge.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

More than 300 shots are being planned on the NIF in FY 2011, and there will be a continuing strong requirement for SSP work on the OMEGA and Z facilities. Accomplishment of the full agenda of weapons SSP deliverables is possible only with these 3 facilities working in concert.

Other activities carried out in the Facilities Operations and Target Production subprogram include: (1) support for shot directors and operational staff; (2) engineering sustainment; and (3) support staff for the final optics inspections system and its associated optics conditioning, initiation and mitigation processes to increase the lifetime of optics exposed to ultraviolet light.

NIF Assembly and Installation Program	**55,192**	**0**	**0**

This funding element supported the activities associated with integration, planning, assembly, installation, and activation of the NIF. The NIF Assembly and Installation Program also provided the staffing, training, and procedures for the NIF operations; work essential to deliver a facility ready for transition from construction project to fully capable experimental facility. Following project completion in FY 2009, this effort was transferred to the Facility Operations and Target Production subprogram in FY 2010.

Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**436,915**	**457,915**	**481,548**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Ignition	
Funding supports the intense increase in ignition activity involving real-time experimental data analysis theoretical interpretation. There will be a significant increase in design activity related to the upgrade of diagnostics as ignition is approached.	**+2,772**
NIF Diagnostics, Cryogenics, and Experimental Support	
Supports the significant increase in experimental activity as data at or near ignition is produced. The increase in resources is essential for re-calibrating, refining, and upgrading diagnostic systems that are exposed to an increasingly severe flux of gamma rays and neutrons. Also supports the final refinements of the cryogenic system as the first ice layered targets are imploded and finally, the increase supports logistic activity associated with installation, calibration, and utilization of the diagnostic systems all in coordination with an intense period of ignition experimentation. Additionally, the funding increase supports the initiation of a dedicated effort in ignition-based weapons physics experiments. The majority of resources will be devoted to the design of diagnostics that are capable of functioning in the harsh (radiation and particle) environment created by igniting plasmas. This effort will provide direct coupling between the ignition effort and other portions of the Weapons Program.	**+30,397**
Facility Operations and Target Production	
In FY 2011, the request reduces operations in weapons physics at Omega and Z while maintaining ignition experiments.	**-9,536**
Total Funding Change, Inertial Confinement Fusion Ignition and High Yield Campaign	**+23,633**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	400	409	418
Capital Equipment	12,218	12,487	12,762
Total, Capital Operating Expenses	**12,618**	**12,896**	**13,180**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	427	436	446	456
Capital Equipment	13,043	13,330	13,623	13,923
Total, Capital Operating Expenses	**13,470**	**13,766**	**14,069**	**14,379**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Advanced Simulation and Computing Campaign

Funding Schedule by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Advanced Simulation and Computing Campaign			
Integrated Codes	138,917	140,882	165,947
Physics and Engineering Models	49,284	61,189	62,798
Verification and Validation	50,184	50,882	54,781
Computational Systems and Software Environment	156,733	159,022	175,833
Facility Operations and User Support	161,007	155,650	156,389
Total, Advanced Simulation and Computing Campaign	**556,125**	**567,625**	**615,748**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Advanced Simulation and Computing Campaign				
Integrated Codes	167,327	163,752	163,887	168,143
Physics and Engineering Models	66,541	65,019	64,626	66,438
Verification and Validation	54,168	52,879	52,300	53,835
Computational Systems and Software Environment	175,833	175,833	175,833	180,912
Facility Operations and User Support	159,071	158,774	158,774	163,806
Total, Advanced Simulation and Computing Campaign	**622,940**	**616,257**	**615,420**	**633,134**

Mission

The goal of the Advanced Simulation and Computing (ASC) Campaign is to provide leading edge, high-end simulation capabilities to meet weapons assessment and certification requirements including weapon codes, weapons science, computing platforms, and supporting infrastructure. The ASC Campaign serves as the computational surrogate for nuclear testing to determine weapon behavior.

As such, ASC simulations are central to our national security. Our ability to model the extraordinary complexity of nuclear weapons systems is essential to establishing confidence in the performance of our aging stockpile. The ASC tools enable comprehensive understanding of the entire weapons lifecycle, from design to safe processes for dismantlement. The ASC simulations play an essential role in simulating device performance to ensure that systems in the stockpile meet all specifications in the "stockpile-to-target sequence." In the absence of testing, only through ASC simulations can the National Nuclear Security Administration (NNSA) determine the effects of changes to current systems, as well as calculate confidence levels of future untested systems.

The ASC tools are also used to address areas of national security beyond the U.S. nuclear stockpile. Through coordination with other government agencies, ASC plays an important role in supporting nonproliferation, emergency response, nuclear forensics and attribution activities. Resources have been used to characterize special nuclear material (SNM) and devices. The ASC simulation capabilities have been used by Department of Homeland Security (DHS) to assess various mitigation strategies, and the results have been published in peer-reviewed journals. There is a growing effort to enhance the

capabilities of these tools, such as the identification of a perpetrator or supporting state through forensic analysis of post-explosion radionuclide debris.

Benefits

The ASC Campaign is comprised of five subprograms that support activities in the areas of weapon codes, weapon science, computational infrastructure, and computing center operations. Each subprogram is a unique contributor to Governmental Performance and Results Act (GPRA) Unit Program Number 30.

The ASC Program's primary customer is Directed Stockpile Work (DSW). ASC codes and computing infrastructure are the means by which DSW work such as design, analysis, baselining, and Significant Findings Investigations (SFI) closure are performed. Stockpile work, science and simulation are bound together through the Predictive Capability Framework. In the context of simulation, predictive capability can best be understood in contrast to Baseline models that were based on the underground test results and which employed sophisticated approaches to interpolation within the underground data or minimal extrapolation. A predictive capability enables accurate simulations of device behavior outside the parameter space spanned by the underground test data. Historically, the codes were carefully calibrated to give results consistent with the diagnostics fielded in Nevada. As long as the calculated configurations were close to the as-tested regime, one could be confident in the results. When aging or flaws in the as-built reality are added into the mix, the simulations must depart from the parameter space spanned by the baseline. Then we must have recourse to models and numerical representations of the physics and engineering that capture reality. We must be able to simulate behavior, to predict responses and performance outside the range of the test data, the last of which were collected in 1992.

As an example of how ASC, the Campaigns and DSW work in a collaborative fashion to tackle problems of the national security enterprise (NSE) was when a significant fraction of the Red Storm compute time in FY 2008 was instrumental in planning a Navy operation to destroy an errant satellite, which posed a terrestrial threat if allowed to reenter the Earth's atmosphere in an uncontrolled manner. ASC provided the computational simulation technology and compute resources. The Engineering Campaign provided phenomenology experiments and diagnostics for sub-scale validation tests. DSW/STA funded the test hardware. Critical contributions from each of these programs resulted in a successful proof of concept, with rapid design and fabrication of prototype hardware. Conceptual design and testing of this hardware is now underway.

The Predictive Capability Framework (PCF) is an integrated roadmap that reflects the responsive scientific capabilities needed to deliver a predictive capability to the nuclear security enterprise. Participants of the PCF include Defense Science, ASC, Engineering, DSW Research & Development, and Inertial Confinement Fusion Ignition and High Yield Campaign. The PCF identifies a list of long-term integrated goals and links the progress in the predictive capabilities to the progress in the five enabling capabilities, four of which (theory/model capabilities, code/algorithm capabilities, computational facilities, and Quantification of Margins and Uncertainties (QMU) and Verification & Validation (V&V) capabilities) are developed by the ASC program. With the pending completion of major new experimental facilities and entry into peta-scale high performance computing, the PCF represents a new phase of science-based stockpile stewardship – one better aligned to the challenges of an aging and changing stockpile.

Additionally, the ASC program and the Office of Science recognize their common interests in computing and the need to begin exploration into the path toward exascale computing. Federal program managers have commissioned a Federal executive board and laboratory steering committee to develop a common plan on what it will take to achieve exascale computing by the end of the decade. Like the NSE laboratories, the Office of Science laboratories are key players in developing tools to make high-performance computing systems more usable and efficient. Therefore, the two organizations seek to form two institutes, the Institute for Advanced Architectures with Sandia and Oak Ridge, and the ABLE (Argonne, Berkeley, Livermore Exascale) Institute to capitalize on the expertise across the complex in advanced systems and computational sciences. The ASC program is also engaged in the SciDAC (Scientific Discovery through Advanced Computing) program to capitalize on the Office of Science investments in new science advanced by academia and other laboratories.

Annual Performance Results and Targets

(R = Results; T = Target)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 30, Advanced Simulation and Computing Campaign											
Adoption of ASC Modern Codes: The cumulative percentage of simulation runs that utilize modern ASC-developed codes on ASC computing platforms as measured against the total of legacy and ASC codes used for stockpile stewardship activities. (Long-term Outcome)[a]	R: 50%	R: 63% T : 63%	R: 72% T: 72%	R: 80% T: 80%	T: 85%	T: 90%	T: 95%	T: 100%	N/A	N/A	By 2013, ASC-developed modern codes are used for all simulations on ASC platforms. Adoption of Modern ASC Codes will enable a responsive simulation capability for the nuclear security enterprise. This measure is meant to show how quickly ASC codes are being adopted by the user community in place of legacy codes.
Reduced Reliance on Calibration: The cumulative percentage reduction in the use of calibration "knobs" to successfully simulate nuclear weapons performance. (Long-term Outcome)[a]	R: 2%	R: 8% T : 8%	R: 16% T: 16%	R: 25% T: 25%	T: 30%	T: 35%	T: 40%	T: 45%	T: 50%	T: 55%	By 2024, several major calibration knobs affecting weapons performance simulation have been replaced by science-based, predictive phenomenological models. Reduced reliance on calibration will ensure the development of robust ASC simulation tools, These tools are intended to enable the understanding of the complex behaviors and effect of nuclear weapons, now and into the future, without nuclear testing.
ASC Impact on SFI Closure: The cumulative percentage of nuclear weapon Significant Finding Investigations (SFIs) resolved through the use of modern (non-legacy) ASC codes, measured against all codes used for SFI resolution. (Long-term Outcome)[a]	R: 10%	R: 25% T : 25%	R: 37% T: 37%	R: 50% T: 50%	T: 60%	T: 65%	T: 70%	T: 80%	T:85%	T:100%	By 2015, ASC codes will be the principal tools for resolution of all SFIs. This demonstrates how valuable the ASC tools are for meeting the needs of the weapon designer's analysts by documenting the impact on closing SFIs.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Code Efficiency: The cumulative percentage of simulation turnaround time reduced while using modern ASC codes. (Efficiency)[a]	R: 6%	R: 7% T : 7%	R: 13% T: 13%	R: 13% T: 13%	T: 15%	T: 20%	T: 27%	T: 34%	T: 42%	T: 50%	By 2015, achieve a 50% reduction in turnaround time, as measured by a series of benchmark calculations, for the most heavily used ASC codes. To show code efficiency by demonstrating that simulation time decreases as the ASC codes mature.

FY 2009 Accomplishments

Predictive Capability

- There has been a consistent annual increase in the cumulative percentage of simulation runs that utilize modern ASC-developed codes on our computing platforms as measured against the total of legacy codes used for stockpile stewardship activities. Current target is for 80 percent of these problems to be run with modern codes.
- An ASC tri-lab team completed a multiyear effort to identify and develop verification test problems to assess the numerical performance of models and algorithms implemented in ASC codes to demonstrate whether the numerical results of the discretization algorithms in physics and engineering simulation codes provide correct solutions of the corresponding continuum equations.
- Large, fully resolved simulations of turbulence mixing have exercised the ASC Program's scientific and computational science capabilities, revealing new and unexpected physics in the study of mixing.

Simulation for the Stockpile

- The ASC program's Red Storm supercomputer at SNL was instrumental in planning a Navy operation to destroy an errant satellite, which posed a terrestrial threat if allowed to reenter Earth's atmosphere in an uncontrolled manner.
- The Los Alamos forensics team successfully identified a device in a blind nuclear forensics exercise organized by Nuclear Weapons Incidence Response's Office of Emergency Response and the Defense Threat Reduction Agency in October 2008. This success was enabled by use of validated Los Alamos ASC codes and new metrics to guide identification of the device technology.
- Sandia's SIERRA software was used to simulate the first ever T-bone crash at 55mph involving two Safe Guards Tractor/Armored Trailer vehicles. This study leveraged ASC computers and codes to study a broader class of National Security applications beyond traditional weapons performance assessments.

High-Performance Computer Platforms

- DAWN, the initial delivery system of the Sequoia contract, was delivered to Livermore on March 27. The equipment for this 500 teraflop BlueGene/P system was fully delivered, installed, configured, and executed via a synthetic workload all in well under 3 months.
- The ROADRUNNER petascale machine was delivered to LANL in 2008, becoming the first supercomputer capable of sustained 1 petaFLOPS performance. In 2009, 10 Open Science projects were chosen from 29 proposals to use Roadrunner during system and code stabilization phase.

ASC Collaborations

- ASC and the Advanced Scientific Computing Research (ASCR) program in the Office of Science are currently working out a research, development and engineering collaboration to usher in Exascale computing at the end of the new decade.
- ASC established the NNSA Alliance for Computing at Extreme Scale (ACES) institute between LANL and SNL, devoted to providing high performance capability computing assets required by NNSA's stockpile stewardship mission. SNL and ORNL are also collaborating through the Institute for Advanced Architectures and Algorithms (IAA), aimed at maintaining our global leadership in Science and Technology, and future competitiveness.

Major Out-year Priorities and Assumptions

The outyear projections for the Advanced Simulation and Computing (ASC) Campaign total $2,487,751,000 for FY 2012 through FY 2015. Simulation is pervasive throughout the nuclear weapons enterprise. ASC will continue to support annual assessments, certification, and SFI resolution through provision of simulation codes and high-performance computing resources. Replacement of older institutional models with more physics-based representations will take place. The laboratories will continue incorporation of verification and validation activities into software development and simulation that will move the existing culture toward an environment that considers Quantification of Margins and Uncertainties. Final deliveries of existing platforms procurements will take place.

The out-year funding profile will enable a stronger simulation program and inject a renewed scientific rigor back into the program essential to supporting the implementation of the Comprehensive Test Ban Treaty (CTBT). Developing robust peer review among the national security laboratories as we move away from the test base is essential to the continued pursuit of CTBT. Comprehensive uncertainty quantification calculations in 3D will provide the confidence necessary to make reliable progress toward the predictive capability necessary to address stockpile aging issues. In the next decade, predictive capability and DSW simulation deliverables will demand ever more powerful and sophisticated simulation environments. This request will position the national security laboratories to take advantage of future platform architectures to more efficiently steward the stockpile.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Integrated Codes (IC)	**138,917**	**140,882**	**165,947**

This subprogram primarily addresses the improvement of weapons system simulations to predict, with reduced uncertainties, the behavior of devices in the stockpile. It also enables analysis and design for future warhead modifications and stockpile options. The products of this subprogram are the large-scale integrated simulation codes that are needed for Stockpile Stewardship Program (SSP) maintenance, the Life Extension Program (LEP), Significant Finding Investigation (SFI) closure, and a host of related requirements, including dismantlements. Specifics include the maintenance of the legacy codes; continued research into engineering code applications and manufacturing process codes; investigation and development of future non-nuclear replacement components; algorithms, computational methods and software architectures; advancement of key basic research initiatives; and explorations into emerging code technologies and methodologies. This subprogram also includes university partnerships that foster continued collaborations such as the Predictive Science Academic Alliances Program (PSAAP) and Computational Science Graduate Fellowship (CSGF) Program. The functional and performance requirements of this subprogram are established by designers, analysts, and code developers. It also relies upon the Physics and Engineering Models subprogram for the development of new models to be implemented into the modern codes. The subprogram also engages the Verification and Validation (V&V) subprogram in assessing the degree of reliability and level of uncertainty associated with the outputs from the codes.

The FY 2011 activities include the following: develop coupled multi-physics capabilities for device simulation based on scientific representation of device behavior with a reduced reliance on calibration to underground test data; produce more accurate numerical methods for treating complex geometries in 2-D and 3-D computer codes; develop the capability to simulate effects of replacement components and analyze various Stockpile-to-Target Sequence scenarios and modifications; accelerate code performance through more powerful numerical algorithms and improved approximations; maintain interactions with academic colleagues in computer science, computational mathematics, and engineering; conduct basic research relevant to the ASC Campaign in computer science, scientific computing, and computational mathematics; and continued support of the CSGF program.

The request supports the code development at the level needed for robust peer review as we move to support the implementation of the Comprehensive Test Ban. The request assures viable programs at both physics labs to fully support peer review for refurbishments, SFIs, modifications, and annual assessments as deemed necessary by the Subject Matter Experts (SMEs). It also positions the code developers to efficiently and effectively execute the ASC Code strategy for a rich, sustainable portfolio of simulations codes for the Complex.

The age of our stockpiled weapons and the dearth of designers with test experience in the NSE make it a National imperative that we maintain the technical expertise, apply scientific rigor to the code development process, and understand the physical processes that are being modeled.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Physics and Engineering Models (PEM)	**49,284**	**61,189**	**62,798**

This subprogram develops microscopic and macroscopic models of physics and material properties, improved numerical approximations of transport, and models for the behavior of other critical phenomena. This subprogram is charged with the development, initial validation, and incorporation of new models into the Integrated Codes. Therefore, it is essential that there be a close interdependence between these two subprograms. There is also extensive integration with the experimental programs of the SSP, mostly funded and led by the Science Campaign.

The FY 2011 activities include: develop and implement the Equation of State and constitutive models for materials within nuclear devices; improve understanding of phase diagrams and the dynamic response of materials; continue physics-based modeling for plutonium aging; explore fundamental chemistry models of high explosives; improve representation of corrosion, polymer degradation, and thermal-mechanical fatigue of weapons electronics; improve models of melting and decomposition of foams and polymers in safety-critical components; support of the Stockpile-to-Target-Sequence requirements by improving models of microelectronic and photonic materials in hostile environments.

The request supports a model development portfolio for scientific exploration in key areas towards achieving predictive simulation capability including: plutonium aging, nuclear physics, atomic physics, equation of state, materials, high explosives, mix and burn, engineering performance.

Verification and Validation (V&V)	**50,184**	**50,882**	**54,781**

This subprogram provides a rigorous, defensible, scientifically based measure of confidence and progress in predictive simulation capabilities. The V&V subprogram applies systematic measurement, documentation, and demonstration of the ability of the codes and the underlying models in various operational states and functional regimes to predict behavior. V&V is developing and implementing Uncertainty Quantification (UQ) methodologies as part of the foundation to the QMU process of weapons assessment and certification. V&V also drives software engineering practices to improve the quality, robustness, reliability, and maintainability of the codes that evaluate and address the unique complexities of the stockpile.

In FY 2011, V&V will focus on UQ assessments that include: integral V&V assessment; catalog of Top Adjustable Parameters in Weapons Physics Simulations; expansion of the Primary Metric Project test suites to include more relevant Nevada Test Site events; and development of first events of the Secondary Calculational Assessment Methodology Project.

In light of the QMU methodology put forth by the NNSA to be applied to annual assessments, we must have a healthy V&V program to perform UQ. More generally, as nuclear test data is becoming less relevant with an aging stockpile and as weapons designers with test experience leave the complex, it becomes increasingly important that the codes of the complex are verified and validated so future generations of designers are comfortable relying on these foundational tools.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Computational Systems and Software Environment (CSSE)	**156,733**	**159,022**	**175,833**

CSSE builds integrated, balanced and scalable computational capabilities to meet the predictive simulation requirements of the NNSA. It strives to provide users of ASC computing resources a stable and seamless computing environment for all ASC-deployed platforms. The complex and diverse demands of the ASC performance and analysis codes and the scale of the required simulations require the ASC Campaign to be far in advance of the mainstream high-performance computing community. To achieve its predictive capability goals, the ASC Campaign must continue to invest in and consequently influence the evolution of computational environments. The CSSE provides the stability that ensures productive system use and protects the large investment in simulation codes.

A balanced and stable computational infrastructure is a key enabling technology for delivering the required computing capabilities. Along with the powerful capability, capacity and advanced systems that the campaign fields, the supporting software infrastructure that is deployed on these platforms include many critical components, from system software and tools, to Input/Output (I/O), storage and networking, post-processing visualization and data analysis tools, to common computing environments. The immediate focus areas include moving toward a more standard user environment and improving its usability, deploying more capacity computational platforms, planning for and developing peta-scale computing capability, and making strategic investments to meet program requirements at an acceptable cost.

The FY 2011 activities include continuing acquisition of Sequoia at LLNL and Zia at LANL (with SNL) and beginning acquisition of capacity systems through TLCC II. Maintenance will continue on LANL's Roadrunner and the Sequoia Initial Delivery (ID) system at LLNL. ASC will continue to operate high-performance capacity computing scalable units to meet growing demands especially in the area of modern (QMU-based) weapons certification and assessment. CSSE will also maintain a common, usable, and robust application-development and execution environment for ASC-scale applications and platforms; produce an end-to-end, high-performance I/O, networking-and-storage archive infrastructure encompassing ASC Campaign platforms and operating systems, large-scale simulations, and data-exploration capabilities. ASC will provide a reliable, available, and secure environment for distance computing through system monitoring and analysis, modeling and simulation, and technology infusion. Development and deployment will continue on high-performance tools and technologies to support visual and interactive exploration of massive and complex data. The Campaign will provide system management of the ASC Campaign computers and their necessary networks and archival storage systems. This includes the deployment of effective data management, extraction, delivery, and archiving, as well as efficient remote or collaborative scientific data exploitation. Continued development and deployment of scalable data manipulation and rendering systems that leverage inexpensive, high performance commodity graphics hardware will continue. Additionally, ASC will stimulate research and development efforts through advanced architectures that explore alternative computer designs, promising dramatic improvements in performance, scalability, reliability, packaging, and cost.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

The request will permit the acquisition of 25 percent to 30 percent more computational resources to be applied to capability class problems, jobs that use a major portion of the system. Similarly, demand for capacity class resources, those problems which require smaller jobs but a higher number of runs, has exceeded planned capacity platform acquisitions. The request will be used to procure an additional 15 percent to 20 percent more computing resource capacity.

Facility Operations and User Support	**161,007**	**155,650**	**156,389**

This subprogram provides necessary physical facility and operational support for reliable production computing and storage environments as well as a suite of services enabling effective use of ASC Tri-Laboratory computing resources. Facility operations include planning, integration and deployment, continuing product support, software license and maintenance fees, procurement of operational equipment and media, quality and reliability activities and collaborations. Facility Operations also covers physical space, power and other utility infrastructure, and Local Area Network/Wide Area Networking for local and remote access, as well as requisite system administration, cyber-security and operations services for ongoing support and addressing system problems.

The scope of the User Support function includes planning, development, integration and deployment, continuing product support, and quality and reliability activities collaborations. Projects and technologies include computer center hotline and help-desk services, account management, web-based system documentation, system status information tools, user training, trouble-ticketing systems, and application analyst support.

The FY 2011 activities maintain continuous and reliable operation and support of production computing systems and all required infrastructure to operate these systems on a 24-hour a day, 7-day a week basis, with an emphasis on providing efficient production quality stable systems. Facility Operations operate laboratory ASC computers and support integration of new systems ensuring that the physical plant has sufficient resources, such as space, power, and cooling, to support future computing systems. User Support provides the authentication and authorization services used by applications for the purposes of remote access and data movement across ASC-related locations. ASC will also develop and maintain a wide-area infrastructure (e.g., links and services) that enable remote access to ASC applications, data, and computing resources, to support computational needs at the plants permitting distant users to operate on remote computing resources as if they were local. The subprogram will provide analysis and software environment development, support for ASC laboratory computers and provide user services and helpdesks for ASC laboratory computers.

Total, Advanced Simulation and Computing Campaign	**556,125**	**567,625**	**615,748**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Integrated Codes	
The increase funds code development for robust peer review as we move away from the test base. This is necessary to assure viable programs at both physics labs to support adequate peer review.	**+25,065**
Physics and Engineering Models	
The increase supports a model development portfolio for scientific exploration in key areas - including plutonium aging, nuclear physics, atomic physics, equation of state, materials, high explosives, mix and burn, engineering performance - towards achieving predictive simulation capability.	**+1,609**
Verification and Validation (V&V)	
The increase will address uncertainty quantification (UQ) and individually addressing the key factors contributing to simulation uncertainties.	**+3,899**
Computational Systems and Software Environment	
The increase supports capability and capacity computing to restore predictive simulation and computing capabilities necessary for viable, stockpile programs at both physics laboratories.	**+16,811**
Facility Operations and User Support	
The slight funding increase will ensure continued reliable operation and support of production computing systems and all required infrastructure to operate these systems on a 24-hour a day, 7-day a week basis, with an emphasis on providing efficient production quality stable systems.	**+739**
Total Funding Change, Advanced Simulation and Computing Campaign	**+48,123**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[b]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	4,388	4,485	4,584
Capital Equipment	47,395	48,438	49,504
Total, Capital Operating Expenses	**51,783**	**52,923**	**54,088**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	4,685	4,788	4,893	5,001
Capital Equipment	50,593	51,706	52,844	54,007
Total, Capital Operating Expenses	**55,278**	**56,494**	**57,737**	**59,008**

Readiness Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Readiness Campaign			
Stockpile Readiness	27,869	5,746	18,941
High Explosives and Weapon Operations	8,581	4,608	3,000
Nonnuclear Readiness	32,545	12,701	21,864
Tritium Readiness	70,409	68,246	50,187
Advanced Design and Production Technologies	21,216	8,699	18,100
Total, Readiness Campaign	**160,620**	**100,000**	**112,092**

Outyear Funding Profile by Subprogram[a]

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Readiness Campaign				
Tritium Readiness	81,697	70,747	69,854	72,584
Total, Readiness Campaign	**81,697**	**70,747**	**69,854**	**72,584**

Mission

The Readiness Campaign selects and matures production technologies critical to component manufacturing to meet the Planning and Production Directive schedule and war reserve requirements. Technologies apply to materials, manufacturing, acquisition, and inspection and testing for replacement components inserted in a nuclear bomb and ballistic missile weapons in the field and returned for refurbishment and for joint test assemblies. Production technology maturation is required in order to manufacture reliable components using non-legacy materials and for new weapon features for enhanced surety. The Readiness Campaign is dedicated to investing in technologies that will be used in more than one application to conserve development resources and reduce production uncertainty.

The Readiness Campaign capabilities are integral to completing weapons system component design and manufacturing. Successful completion of Directed Stockpile Work (DSW) milestones for war reserve production relies upon the timely introduction of production capabilities funded under the Readiness Campaign. To coordinate the timed delivery of new manufacturing capabilities with first use scheduled weapon activities, Readiness Campaign program managers integrate planning and prioritization during two annual planning meetings, as well as during numerous ad hoc meetings throughout the planning year. The Readiness Campaign, the Engineering Campaign, the Advanced Simulation and Computing Campaign, and the Science Campaign coordinate investments and bring advanced technology to the nuclear enterprise. The Readiness Campaign considers Readiness in Technical Base and Facilities (RTBF) schedules in order to select technologies and coordinate insertion of production capabilities to reduce facility operation costs.

The Readiness Campaign relies upon the materials management organization responsible for establishing the life cycle management of accountable nuclear materials by identifying, assessing, and

[a] Planning for non-Tritium Readiness subprograms activities in the outyears is currently under review.

prioritizing material needs and availability for use in meeting strategic defense goals. Materials management identifies shortfalls as well as efficiencies and productivity improvements in material processing capabilities that are required to support material feed requirements. The Readiness Campaign program, through its interaction with the materials management organization, addresses deployment of technology development investments needed for such requirements.

Benefits

Within the Readiness Campaign, there are five subprograms: Stockpile Readiness, High Explosives and Weapon Operations, Nonnuclear Readiness, Tritium Readiness, and Advanced Design and Production Technologies; each make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 32, the stockpile, and the nuclear security enterprise. Collectively, these five subprograms provide key technology-based capabilities needed to manufacture weapons and sustain the manufacturing infrastructure.

Stockpile Readiness develops and deploys manufacturing capabilities and special processes for components containing special materials and advanced component qualification and acceptance.

High Explosives and Weapon Operations develops, enhances, and deploys capabilities for the production of high explosive and other energetic components, the requalification of weapons components for assembly, and the assembly and disassembly of war reserve nuclear weapons.

Nonnuclear Readiness develops and deploys new capabilities to manufacture electrical, electronic, electromechanical and other nonnuclear components that synchronize and initiate weapon detonation when required, while preventing unauthorized and inadvertent activation to enhance weapon surety.

Tritium Readiness reestablished and operates the tritium production capability to sustain the nuclear weapons stockpile. The Tritium Readiness sub-program funds all of the activities, including Tritium Extraction Facility costs, associated with the production of tritium to meet all defense program demands for tritium including production, research and development, and required reserves. The subprogram continues testing and design development and tritium release management activities to increase production capacity to planned levels.

Advanced Design and Production Technologies develops enterprise-wide technology-based capabilities that underpin a responsive and agile production complex, applies component manufacturing materials and techniques across multiple systems, and provides foundational support to ongoing production operations. Foundational support includes activities for final product acceptance, in-process monitoring for quality control, establishing integrated manufacture-to-design and vendor qualification systems, and enterprise resource planning-type systems for production sites.

Annual Performance Results and Targets

(R = Results; T = Target)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** .32, Readiness Campaign											
Critical Capabilities Deployed: Cumulative number of critical immediate and urgent capabilities deployed to support our Directed Stockpile Work (DSW) customer's nuclear weapon refurbishment needs derived from the Production Readiness Assessment Plan. (Long-term Output)	R: 16 T: 15	R: 20 T: 20	R: 22 T: 22	R: 24 T: 24	T: 25	T: 27	N/A	N/A	N/A	N/A	By 2011, deploy 27 critical immediate and urgent capabilities to support Directed Stockpile Work nuclear weapons refurbishment deliverables.
Reduce Cycle Times: The number of capabilities deployed every other year to stockpile programs that will reduce cycle times at least by 35% (against baselined agility and efficiency). (Annual Outcome)	N/A	R: 1 T: 1	R: 0 T: 0	R: 1 T: 1	T: 0	T: 1	N/A	N/A	N/A	N/A	Deploy at least one new capability to a stockpile program every other year that reduces cycle time by at least 35% until FY 2011.
Tritium Production: Cumulative number of Tritium-Producing Burnable Absorber Rods irradiated in Tennessee Valley Authority reactors to provide the capability of collecting new tritium to replace inventory for the nuclear weapons stockpile. (Long-term Output)	R: 240 T: 240	R: 480 T: 480	R: 720 T: 720	R:960 T: 960	T: 960[a]	T: 1,200	N/A	N/A	N/A	N/A	By 2011, complete irradiation of 1,200 Tritium-Producing Burnable Rods (to provide tritium for nuclear weapons.)
Tritium Extraction Facility (TEF): Cumulative percentage of Tritium Extraction Facility (TEF) project completed (total project cost), while maintaining a Cost Performance Index of 0.9 - 1.15. (Efficiency)	R: 97% T: 96%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By 2007, complete 100% of TEF project, while maintaining a Cost Performance Index of 0.9-1.15. (TEF line item construction funding completed in 2006.)
Percentage of Investment: Percentage of annual investment in the ADAPT, Stockpile Readiness,	N/A	N/A	Baseline	R: 2.5% T: 2.5%	T: 2.5%	T: 2.5%	N/A	N/A	N/A	N/A	Through 2011, on an annual basis, at least 2.5% of the annual investment in the Production

[a] Irradiation of TPBARs occurs every 18 months, or 1.5 years, in approximately October or March. For FY 2010, the irradiation cycle started in September of 2009 and will then complete in March of 2011. Thus there is no increment to the number of TPBARs irradiated.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Nonnuclear Readiness, and High Explosive and Weapons Operations subprograms in development of capabilities that forecast within three years of production deployment operational cost savings of at least two times the development and deployment cost compared to pre-deployment operations. (Efficiency)											Subprograms ADAPT, SR, HEWO, & NNR will yield cost savings equaling at least twice the development and deployment costs, after three years of operation.

FY 2009 Accomplishments

Stockpile Readiness

- Deployed infrared Debonding equipment for safer, lower exposure, and up to three-times faster separation of adhesively bonded parts for reuse.
- Developed lithium manufacturing capability for direct material manufacturing and component reuse.
- Installed, tested, and deployed explosion-proof environmental chamber for more accurate test results with higher reliability than the legacy equipment.

High Explosives and Weapon Operations

- Demonstrated enhanced formulation capabilities to easily reproduce booster and detonator grade materials using computational fluid dynamics to characterize the flow field and effects of specific variables on the product granulation.
- Deployed an Advanced Inventory and Materials Management system using radio frequency identification (RFID) tags to track tooling in a limited area application in real time between three plant locations. Deploying the RF ID system will result in cost savings of up to $50,000 per year by eliminating errors associated with manual entry of tooling moves and eliminating searches for missing tooling and classified tooling that is due for calibration.

Nonnuclear Readiness

- Specialized ceramic capacitors for a compact fireset achieving a 15 percent increase in the energy density for use in lower profile fireset housings freeing space for enhanced surety features.
- Contracted with a just-in-time supplier of electronic parts advancing requirements for avoidance of counterfeit parts, considered for an enterprise wide consolidated solution to purchasing electronics to reduce costs and mitigate the risk of counterfeit parts.
- Automated continuous Gas Monitor calibration process to replace a 4-week manual calibration cycle; required active units reduced three-fold and personnel safety risk reduced by better monitoring and higher equipment availability.
- Designed and prequalified micro-modular telemetry hardware to reduce the design to fly time (and cost) for all future weapon telemetry systems.

Tritium Readiness

- Extracted tritium at the TEF from 240 Cycle 8 TPBARs.
- Completed irradiation of 368 MK 9.2 design Tritium Producing Burnable Absorber Rods (TPBARs) in Tennessee Valley Authorities (TVA) Watts Bar during Cycle 9.
- Fabricated 240 MK 9.2 design TPBARs and delivered to TVA's Watts Bar reactor for Cycle 10.
- Completed in-reactor irradiation tests at Idaho National Laboratory's Advanced Test Reactor to examine the oxidation rates of alternative TPBAR liner materials and determine in-reactor permeation reduction factor performance for coated cladding.

Advanced Design and Production Technologies

- Added the B83 and W76 to the B53 and the W84 on the list of supported weapon systems entered in the Collaborative Authorization for the Safety-Basis Total Lifecycle Environment (CASTLE). CASTLE implements cross-site Safety-basis standardizations and enforced data consistency, which facilitates Nuclear Weapon Operations Safety-basis development in a collaborative, multi-disciplinary team environment and streamlines development of the Hazard Analysis Report (HAR) for the Authorization Basis.

- Advanced technology of the chip slapper detonators to enable detonator miniaturization. The process reduces flow time (fewer operations and less human touch time) and costs.
- Propagated from the W88 Joint Test Assembly achievement in FY 2008, achieved Qualification Engineering Releases (QER) for the PT4188 Joint Test Assembly (JTA) tester on telemetries for five JTA programs; W78, W87, W76-1, and W88; and is on track to achieve qualification for W80 in July 2009. Once the W80 qualification is done, the Telemetry Tester Design Department at Pantex will have achieved four QERs in the period of one year, which normally is developed and qualified in a one to two year time period. Using modular concepts, reuse strategies, and TestWorks principles, the Telemetry Tester Design Department has successfully accelerated the tester development process to support JTA flight test schedules.

Major Outyear Priorities and Assumptions

The outyear funding for the Tritium Readiness Subprogram totals $294,882,000 for FY 2012 through FY 2015. The Tritium Readiness subprogram will produce tritium to meet inventory requirements, as well as continue development to increase the allowable production rate from each nuclear reactor. In FY 2012, there are a number of multi-year TPBAR component contract awards (approximately $19,000,000), which were previously awarded in FY 2009. In FY 2013, the program can exercise a contract option for five years of TPBAR transportation services (approximately $17,000,000). The previous option was exercised in FY 2008.

While there is no outyear funding for non-Tritium subprograms, the plans for technology maturation for production capabilities such as those traditionally developed and deployed by the Readiness Campaign are currently being reviewed to plan support for these activities. The outyear funding plan for the Tritium Readiness subprogram is being developed based on analysis of ongoing work and status of contracts for manufacturing, irradiation, transportation, and extraction.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Stockpile Readiness	**27,869**	**5,746**	**18,941**

The Stockpile Readiness subprogram ensures the availability of future manufacturing capabilities for the production of weapon components containing special materials.

In FY 2011, the Stockpile Readiness subprogram will complete work on improved component testing to provide substitute materials for joint test assembly use (all weapons), eliminating hazardous materials for increased safety, and reducing costs. It will advance manufacturing technologies in order to meet planned production schedules for the systems that use lithium parts. It will complete manufacturing parameter studies to document the fogbank manufacturing process impacting yield and schedules for the W76-1 production run, the W78 and future systems that will require that material. It will provide design and process technology technical expertise for the production and testing of gas transfer system reservoirs and system technology improvements for tritium processing to meet the limited life component production schedules for units scheduled to be shipped to the field in FY 2011 to meet Department of Defense commitments. The subprogram will begin work on: 1) establishing the electronic bomb book technology for first use in support of the W76-1 Life Extension Program (LEP) production and subsequent use future weapons systems scheduled by the Production and Planning Directive; and, 2) alternate configuration technology for lithium parts to reduce footprint, surveillance, and disposal costs for parts and reduce the impact of storage constraints on weapons operations.

High Explosives and Weapon Operations	**8,581**	**4,608**	**3,000**

The High Explosives and Weapon Operations subprogram deploys technology enhancements for existing capabilities, and develops and deploys new capabilities for high explosive and other energetic component production, component requalification, nuclear weapon assembly and disassembly, material and War Reserve component logistics and inventory control, and special nuclear material interim storage and staging.

In FY 2011, the High Explosives and Weapon Operations subprogram will fund the work scope for establishing acquisition specifications and inspection technologies to meet design agency requirements for insensitive high explosive components.

Nonnuclear Readiness	**32,545**	**12,701**	**21,864**

The Nonnuclear Readiness subprogram develops and deploys product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers.

In FY 2011, the Nonnuclear Readiness subprogram will deliver: 1) new neutron generator testers required to maintain production of limited life components scheduled by the military for insertion into weapons in the field and in refurbishment. Testers are designed for higher efficiency and lower

maintenance, reducing overall costs and increasing reliability; 2) new electronic and mechanical (including detonators, strong links, etc.) testers, and 3) final process for acquisition of vendor-manufactured and commercial-off-the-shelf parts assuring high quality, scheduled delivery, and dependable reliability to maintain component production to meet Department of Defense schedules for part replacements in field and refurbished weapons.

The subprogram will complete electronic neutron generator production technology development that will replace ferro-electric neutron generator in selected weapons to increase weapons response reliability over the life of the weapon. It will continue plastic and mechanical component production development requested by DoD to increase reliability over the lifetime of the weapon. Plastic component production accommodates lifetime extension features for refurbished weapons. Mechanical component production development focuses on smaller components to allow introduction of surety advancements within the limited weapon spaces available.

Tritium Readiness **70,409** **68,246** **50,187**

The Tritium Readiness subprogram operates the Departmental capability for producing tritium to maintain the national inventory needed for the nuclear weapons stockpile. Irradiation of Tritium-Producing Burnable Absorber Rods (TPBARs) in the Tennessee Valley Authority's (TVA) Watts Bar nuclear reactor began in October 2003. Plans are being initiated to bring additional production capacity on line using TVA's Sequoyah Unit #1 and #2 reactors to meet tritium production requirements specified in the Nuclear Weapons Stockpile Plan signed annually by the President.

In FY 2011, the Tritium Readiness subprogram will fabricate and deliver the next load of TPBARs for irradiation at TVA's Watts Bar nuclear reactor for Cycle 11. The Tritium Extraction Facility (TEF) will continue in Responsive Operations mode to conserve costs and will extract the second batch of rods from Cycle 9. Rods from Cycle 10 will be consolidated into a shipping container and trucked to the TEF. Preparations will continue at TVA for starting TPBARs in Sequoyah Unit 1 the following year, including fabrication of TPBARs and testing of handling equipment. Sample fixtures will be fabricated in preparation for insertion in the Idaho National Laboratory Advanced Test Reactor in FY 2012 to gain increased understanding of pellet performance in an irradiation environment. Lithium pellet production will begin FY 2011 following the qualification of a new lithium powder and production process in FY 2010.

Advanced Design and Production Technologies **21,216** **8,699** **18,100**

The Advanced Design and Production Technologies subprogram includes funding to select, mature, develop, integrate, and demonstrate cost-effective, new technology and enhanced design-through-production-based capabilities needed by Directed Stockpile Work and RTBF programs. The technology supports the current legacy weapons and associated activities that drive transformation for the national security enterprise and for the weapons stockpile.

In FY 2011, the Advanced Design and Production Technologies subprogram will deliver advanced initiation system production technology that addresses desired Department of Defense surety features. The subprogram will continue development work for the Collaborative Authorization for the Safety-

(dollars in thousands)

FY 2009	FY 2010	FY 2011

basis Total Lifecycle Environment to further the nuclear security enterprise ability to respond to authorization basis questions and operations changes quickly during disassembly and assembly operations at Pantex and Y-12. This has a demonstrable return on investments. The subprogram will begin work on standard designs for nondestructive evaluation test objects for the nuclear security enterprise-wide use to increase accuracy and decrease cost of component inspection and acceptance, with application to surveillance activities. As this work is not planned to continue in FY 2012 or beyond, plans will be optimized to deliver usable modules to the nuclear security.

The subprogram will continue development of common standards and approaches for digital radiography, common component testing standards, and advanced nondestructive evaluation capability for the nuclear explosive package part geometry to replace obsolescing film radiography and to increase accurate comparison to design requirements, decrease rework, and reduce cost and waste associated with destructive testing.

Total, Readiness Campaign	**160,620**	**100,000**	**112,092**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Stockpile Readiness	
The increase provides for lithium part production manufacturing advances at the Y-12 National Security Center that are integral for meeting current production schedule; to expedite completion of the electronic bomb book technology for first use in W76 LEP production; and to deploy advanced alternate technology for lithium parts configuration for storage efficiency and consolidation.	
Funding increased to ensure technical capabilities remain at the Savannah River site to develop and deploy design and process technology for production and testing of gas transfer system reservoirs. Gas transfer systems are limited life components and thus are produced on an ongoing basis to maintain replacement schedules in the field and for life extension program production.	**+13,195**
High Explosives and Weapon Operations	
Funding slightly reduced to support DSW B61 scope and higher priority projects in Nonnuclear Readiness, Stockpile Readiness, and Advanced Design and Production Technologies subprograms.	**-1,608**
Nonnuclear Readiness	
Funding increased to begin plastic component production development and mechanical component production development to support weapons systems refurbishment. Development of parts using advanced plastic materials will provide desired military features and increased reliability over the weapon lifetime. Increased reliability translates into less weapon maintenance and fewer field refurbishments over the life of the weapon, which in turn reduces stockpile costs. The focus in developing production methods for mechanical components is on making smaller components than currently produced. Smaller components allow addition of surety advancements within the limited available weapon spaces adding desired military features that increase stockpile surety.	**+9,163**
Tritium Readiness	
This decrease in funding is due to the cyclical nature of the fixed-price contracting approach taken by the program for the manufacture and irradiation of tritium producing burnable absorber rods and other materials. There are no major procurements expected during FY 2011.	**-18,059**

	FY 2011 vs. FY 2010 ($000)
Advanced Design and Production Technologies	
Funding in this subprogram has increased to advance development work for the Collaborative Authorization for the Safety-basis Total Life Cycle Environment (CASTLE). The CASTLE project will reduce the cycle time for changes required during weapons operations at Pantex, resulting in lower costs and increased safety confidence. The increase will also provide for development of common standards and approaches for digital radiography. Advanced digital radiography development will ensure that digital-based component certification has the same or better integrity as film-based at high energies before obsolescence. In addition, the increase will assist the nuclear security enterprise to complete development of common component testing standards and advanced nondestructive evaluation capability for the nuclear explosive package part geometry. Proving that nondestructive evaluation provides at least as accurate and reliable data set as destructive evaluation will reduce certification cycle time and eliminate the cost of destroying and disposing of multiple produced units.	**+9,401**
Total Funding Change, Readiness Campaign	**+12,092**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	275	281	287
Capital Equipment	11,089	11,333	11,582
Total, Capital Operating Expenses	**11,364**	**11,614**	**11,869**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	293	299	306	313
Capital Equipment	11,837	12,097	12,363	12,635
Total, Capital Operating Expenses	**12,130**	**12,396**	**12,669**	**12,948**

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Major Items of Equipment *(TEC $2 million or greater)*

(dollars in thousands)

Major Item of Equipment	Total Project Cost (TPC)	Other Project Cost	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2009	FY 2010	FY 2011	Completion Date
Microwave Deployment, Y-12 National Security Complex	17,721	0	14,628	1,697	5,934	2,335	797	FY 2012
Multi-axis Orbital Machining Center, Y-12 National Security Complex	3,786	0	3,441	2,500	-438	0	0	FY 2009
Coordinate Measuring Machine # 3, Y-12 National Security Complex	5,510	0	5,210	5,700	0	-490	0	FY 2010
Total Major Items of Equipment					**5,496**	**1,845**	**797**	

Readiness in Technical Base and Facilities

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Readiness in Technical Base and Facilities			
Operations of Facilities			
Kansas City Plant	89,871	156,056	186,102
Lawrence Livermore National Laboratory	82,605	86,670	80,106
Los Alamos National Laboratory	289,169	311,776	318,464
Nevada Test Site	92,203	79,583	80,077
Pantex	101,230	131,602	121,254
Sandia National Laboratory	123,992	104,133	117,369
Savannah River Site	92,762	128,580	92,722
Y-12 National Security Complex	235,397	229,774	220,927
Institutional Site Support	56,102	120,129	40,970
Subtotal, Operations of Facilities	1,163,331	1,348,303	1,257,991
Program Readiness	71,626	73,021	69,309
Material Recycle and Recovery	70,334	69,542	70,429
Containers	22,696	23,392	27,992
Storage	31,951	24,708	24,233
Subtotal, Operations and Maintenance	**1,359,938**	**1,538,966**	**1,449,954**
Construction	314,468	303,904	399,016
Total, Readiness in Technical Base and Facilities	**1,674,406**	**1,842,870**	**1,848,970**

Outyear Funding Schedule by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Readiness in Technical Base and Facilities				
Operations of Facilities	1,178,512	1,129,208	1,061,276	1,097,791
Program Readiness	48,492	47,998	63,541	65,713
Material Recycle and Recovery	61,678	63,673	63,386	65,554
Containers	22,043	23,100	22,971	23,757
Storage	19,535	21,425	21,942	22,693
Subtotal, Operations and Maintenance	**1,330,260**	**1,285,404**	**1,233,116**	**1,275,508**
Construction	542,286	555,921	693,452	722,256
Readiness in Technical Base and Facilities	**1,872,546**	**1,841,325**	**1,926,568**	**1,997,764**

Mission

The goal of the Readiness in Technical Base and Facilities (RTBF) program is to operate and maintain National Nuclear Security Administration (NNSA) program facilities in a safe, secure, efficient, reliable, and compliant condition, including facility operating costs (e.g., utilities, equipment, facility personnel, training, and salaries); facility and equipment maintenance costs (e.g., staff, tools, and replacement parts); and environmental, safety, and health (ES&H) costs; and plan, prioritize, and construct state-of-the-art facilities, infrastructure, and scientific tools within approved baseline costs and schedule. The

RTBF program provides unique contributions to the Government Performance and Results Act Unit Program Number 33.

Benefits

The RTBF program achieves this goal so that NNSA program facilities are operationally ready to execute nuclear weapons stockpile stewardship tasks on time in support of DSW and the Campaigns. Work scope and costs include program contractor facility operations; facility and equipment maintenance; ES&H activities; the capability to recover and recycle plutonium, highly-enriched uranium, and tritium to support a safe and reliable nuclear stockpile; and specialized storage and containers sufficient to support the requirements of the weapons stockpile.

To support program requirements and efficient operations, RTBF is funding specific projects and emergent priority maintenance activities in mission critical and mission dependent facilities through the Institutional Site Support (ISS) subprogram. ISS projects focus on sustaining facilities and modern equipment that support programmatic missions while reducing operating costs. ISS projects will also fund selected projects to prepare for facility consolidation and foot print reduction activities.

The RTBF program provides resources for NNSA program facilities to maintain readiness to execute nuclear weapons stockpile stewardship tasks on time, as identified by DSW and the Campaigns. RTBF Operations of Facilities maintains mission critical and mission dependent infrastructure to sustain the stockpile for the long term and keep the facilities and capabilities in a safe, secure, and reliable state of readiness. The RTBF Construction Program plays a critical role in revitalizing the nuclear weapons manufacturing and research and development infrastructure.

The RTBF program is closely aligned with other program elements within Weapons Activities, including the Facilities and Infrastructure Recapitalization Program (FIRP), Campaigns, and the Directed Stockpile Work (DSW) Program. RTBF partners with FIRP to restore nuclear security enterprise facilities and infrastructure to the right condition, consistent with mission requirements. RTBF funds current operations and maintenance of the complex and makes capital investments to sustain the complex into the future. RTBF ensures appropriate levels of maintenance are performed for designated mission critical and mission dependent facilities. RTBF partners with DSW and the Campaigns by having the necessary facilities and capabilities in place to assure DSW program work can be accomplished.

The RTBF Construction Program is important to the future operations of the nuclear weapons manufacturing and research and development infrastructure. Construction investments support design and construction of facilities that support the nuclear security enterprise, improving the responsiveness and/or functionality of the infrastructure and its technology base. In FY 2011, RTBF Operations of Facilities subprogram will continue to execute the necessary work scope to allow continued safe operation and reduce operational risks at Building 9212 at Y-12 and the Chemistry and Metallurgy Research (CMR) Facility at LANL.

The revised Department of Energy (DOE) Order 413.3A "Program and Project Management for Acquisition of Capital Assets" requires External Independent Reviews (EIR) for Capital Asset Projects greater than $100,000,000. Examples of EIR costs include conducting Performance Baseline EIRs prior to Critical Decision-2 (CD-2) to validate cost and schedule baseline estimates and conducting

Construction/Execution Readiness EIRs, which are performed for all Major System projects prior to Critical Decision-3 (CD-3). In addition, projects less than the $100,000,000 threshold will be subjected to an Independent Project Review (IPR). Beginning in FY 2009, EIRs are funded within the Office of Management (Engineering and Construction Management) to ensure the "external" and "independent" nature of EIR audits on project performance baselines. Funds appropriated under RTBF operating accounts, Project Engineering and Design projects, and construction projects may be used to provide assessments of the planning and execution of the associated RTBF projects.

The FY 2008 Consolidated Appropriations Act (P.L. 110-161) directs the Department to manage all projects in excess of $100,000,000 total cost in full compliance with DOE Order 413.3A. The NNSA RTBF Program is in compliance with the requirements of the DOE Order 413.3A.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 33, Readiness in Technical Base and Facilities											
Mission-Essential Facilities: Enable NNSA missions by providing operational facilities to support nuclear weapon dismantlement, life extension, surveillance, and research and development activities, as measured by the percent of scheduled versus planned days mission-critical and mission-dependent facilities are available without missing key deliverables. (Annual Outcome)	R: 98.1% T: 90%	R: 99% T: 90%	R: 98% T: 95%	R: 95% T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	Annually, mission-critical and mission dependent facilities are available at least 95% of scheduled days.
Facility Condition Index (FCI) for Mission Critical Facilities: Annual NNSA complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance costs per replacement plant value, for all mission-critical facilities and infrastructure. (Annual Outcome).[a]	R: 6.7% T: 7.4%	R: 6.5% T: 6.8%	R: 4.26% T: 5%	R: 3.37% T: 5%	T: 5%	T: 5%	T: 5%	T: 5%	T: 5%	T: 5%	Annually, maintain the mission-critical facilities and infrastructure at an FCI level of 5% or less.

[a] Measure was developed in FY 2007 from prior single measure to reflect change in facility designation (mission essential to mission critical and mission dependent).

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
FCI for Mission Dependent Not Critical Facilities: Annual NNSA complex-wide aggregate Facility Condition Index, as measured by deferred maintenance costs per replacement plant value, for all mission-dependent, not critical facilities and infrastructure.[a]	N/A	N/A	R: 8.92% T: 8.25%	R: 6.91% T: 8.75%	T: 8.60%	T: 8.45%	T: 8.3%	T: 8.15%	T: 8.0%	T: 8.0%	By 2014, improve mission dependent, not critical facilities and infrastructure to an FCI level of 8% or less, then maintain at this level annually.
Major Construction Projects: Execute construction projects within approved costs and schedules, as measured by the total percentage of projects with total estimated cost (TEC) greater than $20M with a schedule performance index (ratio of actual work performed to scheduled work) and a cost performance index (ratio of actual cost of work performed to budgeted cost of work) between 0.9-1.15. (Efficiency)	R: 90% T: 75%	R: 100% T: 80%	R: 67% T: 85%	R: 74% T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	By FY 2009, annually achieve 90% of baselined construction projects with TEC greater than $20M with actual SPI and CPI of 0.9-1.15 as measured against approved baseline definitions.

[a] Measure was developed in FY 2007 from prior single measure to reflect change in facility designation (mission essential to mission critical and mission dependent).

FY 2009 Accomplishments

- Exceeded corporate facility availability goals to support DSW and Campaign activities as RTBF facilities were available 97.5 percent of scheduled days.
- Exceeded the industry "best in class" target of 5 percent Facility Condition Index (FCI) for mission-critical facilities resulting in increased operational effectiveness and efficiency.
- Provided transportation container support for DSW and NNSA missions to support Life Extension Program (LEP) and Stockpile Stewardship programs.
- Established the baseline and started acquisition and installation of equipment for the Chemistry and Metallurgy Research Replacement Radiological Utility/Office Building (RLUOB) at LANL.
- Completed the Tritium Facility Modernization Project at LLNL.
- Closed Wing 4 of CMR at Los Alamos National Laboratory.
- Downgraded 9201-5 and 9404-4 at Y-12 from a Category II nuclear facility to a chemically hazardous facility.
- Packaged 63 percent and shipped 55 percent of Category I/II materials from LLNL in support of nuclear material de-inventory goals.
- Received Certificate of Compliance for the new 9978 container that provides NNSA the ability to ship plutonium and other actinides in this Department of Transportation 6M Specification replacement container.
- Completed the Safety Analysis Report for Packaging (SARP) for a new Type A(F) container with the Office of Environmental Management.
- Developed the technical basis necessary to justify a joint agreement between the US and France to refurbish and jointly fund and operate criticality experiment facilities to meet two broad technical needs: fissionable solution and horizontal split table critical experiments.
- Successfully restarted the water-moderated critical experiment at Sandia National Laboratories in Albuquerque. This provides important integral measurements to support burn-up credit studies and provide integral data for 7 percent enriched (U-235) nuclear fuel.

Major Outyear Priorities and Assumptions

The outyear projections for RTBF are $7,638,203,000 for FY 2012 through FY 2015. The trend in the five-year period is increasing, mostly in construction funding, to support the investment needed to address the continued aging of the NNSA complex, which continues to be a challenge due to escalating requirements and costs associated with nuclear facility safety and compliance. To address these challenges, the RTBF program will reduce operational cost at Lawrence Livermore National Laboratory through the de-inventory of Category I and II nuclear materials, and assure the minimum set of scientific capabilities exist at Nevada Test Site to support the Stockpile Stewardship Program. In addition, RTBF intends to manage available infrastructure support resources to prioritize and fund selected projects and maintenance activities that will consolidate program activities, reduce program footprint, and replace/refurbish process equipment as needed to support priority program work.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Operations of Facilities	**1,163,331**	**1,348,303**	**1,257,991**

Operates and maintains NNSA-owned programmatic capabilities in a state of readiness, ensuring each capability (workforce and facility) is operationally ready to execute programmatic tasks identified in Campaigns and DSW. Operates the program infrastructure and facilities in a safe, secure, reliable, and "ready for operations" manner. Facility-specific activities include, but are not limited to, maintenance; utilities; environment, safety and health; implementation plan actions to address safety issues; and implementation of rules, such as the Beryllium Rule 10CFR850, Chronic Beryllium Disease Prevention Program (CBDPP); and maintenance of the Authorization Basis (AB) for each facility per 10CFR830. Infrastructure-support activities include facility-related costs that are not associated with the ongoing operations of facilities, such as conceptual design reports; other project-related costs for line items; National Environmental Policy Act (NEPA) activities; institutional capital equipment and general plant projects; and facility startup, standby, and decommissioning and decontamination (D&D), which includes costs associated with maintaining facilities in a standby status for possible further use or D&D. Maintains current and future operations with a smaller workforce, growing maintenance needs, and increasing regulatory requirements. Provides new and upgraded facilities and capabilities. Seeks cost efficiencies through the consolidation of facilities and functions. Develops an integrated maintenance program that includes routine maintenance, capital renewal, and extraordinary maintenance items that are impacting cost and performance.

Across the complex over $350,000,000 is spent annually on maintenance. This does not include the buy down of deferred maintenance accomplished through line item construction projects, general plant projects, expense funded projects, or capital equipment purchases and the Facility Infrastructure Recapitalization Program. Consistent with Departmental guidance, NNSA has prioritized all program facilities into three categories: mission critical, mission dependent and non-mission dependent. Aligned with program requirements, Defense Programs has established a graded scale for more stringent maintenance expectations in mission critical facilities. The industry accepted standard maintenance metric is Facility Condition Index (FCI), which tracks deferred maintenance as a percentage of Replacement Plant Value. Funding is prioritized to meet or exceed the NNSA goal of maintaining the FCI for mission critical facilities at 5 percent. Based on current planning, the NNSA goal for mission dependent facilities is 8.45 percent in FY 2011, with expectations to drive the goal for mission dependent facilities to 8 percent by FY 2014. The Work Breakdown Structure (WBS) is utilized to plan and track maintenance across the Complex, and, depending upon the site, maintenance funding may be direct, indirect, or a combination of both. Costs for each site are reported quarterly to NNSA/DOE through the Integrated Facility and Infrastructure (IFI) Report. A budget and reporting code has been established to track direct funding and costs for maintenance activity.

▪ **Kansas City Plant (KCP)**	**89,871**	**156,056**	**186,102**

Operates and maintains the KCP in a state of readiness, prepared to execute programmatic tasks identified in the DSW and Campaigns programs. Funding includes costs for Facilities Management, Maintenance, Utilities, ES&H, Capital Equipment, General Plant Projects (GPP), and Expense-funded projects. FY 2011 funding will support continued operation and required maintenance costs at the current facility and continued transition into a new facility with minimum

disruptions as laid out in the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) transformation plan. This is resulting in a short-term increase to the Operations of Facilities budget while we transition to the new facility and provide minimum required support to the current facility. Funding for KCRIMS supports long lead procurements, critical capital purchases and unique facility upgrades for utility and interior requirements. In anticipation of the move to a new facility, the RTBF program has allowed the deferred maintenance at KCP to grow.

Also in FY 2011, efforts will continue on execution of the comprehensive project plan to establish a Kansas City based Supply Chain Management Center to gain efficiencies and savings from consolidation of procurement systems, supplier management, and contracting agreements.

- **Lawrence Livermore National Laboratory (LLNL) 82,605 86,670 80,106**

  Operates and maintains the LLNL facilities in a state of readiness and keeps the facilities and capabilities safe and secure in order to minimally support the DSW and Campaign programs. Activities include: newly generated waste, building and building system maintenance; utilities; maintenance of programmatic equipment; ES&H; actions to address safety issues; and implementation of nuclear safety rules. The maintenance program is indirectly funded and costs are reported quarterly through the IFI Report. Also included is infrastructure support and minor RTBF activities not specifically allocated to a facility or facility group.

- **Los Alamos National Laboratory (LANL) 289,169 311,776 318,464**

  Operates and maintains the LANL facilities in a state of readiness to ensure that mission-essential capabilities in critical nuclear facilities and other facilities and infrastructure are available to conduct the scientific, computational, engineering, and manufacturing activities of the Stockpile Stewardship Program in a safe, secure, compliant, and cost effective manner. Direct-funded facilities include: the Engineering, Manufacturing Systems and Methods Shops, Tritium, Dynamic Experimentation, LANSCE, Waste Management, Nuclear Materials Technology (TA-55), Chemistry and Metallurgy Research (CMR), and Beryllium Technology. Work scope includes conventional facility management, infrastructure and utilities, and operation and maintenance of special equipment. Also supporting solid waste risk reduction activities, TA-55 Seismic and Fire Safety Engineering, CMR Risk Mitigation and Consolidation and Radioactive Liquid Waste Facility System upgrade/replacement. In cases where replacement facilities are planned, such as the CMR, the program is allowing deferred maintenance to grow. The maintenance program is funded through both indirect and direct mechanisms and costs are reported quarterly through the IFI Report.

  Also supported are the development and implementation of Authorization Basis (AB) modifications needed to reduce the risk and extend the life of the CMR until the CMR Replacement facility is operational. Operations of Facilities also funds general infrastructure support activities such as Other Project Costs for Line Items, General Plant Projects, and AB activities. Funding is also included for the Payment-in-Lieu-of-Taxes for Los Alamos County (approximately $225,000) and the Los Alamos Pueblo Project (approximately $800,000 per year).

(dollars in thousands)

FY 2009	FY 2010	FY 2011

CMR Hazard Reduction activities will be funded in FY 2011 to continue to reduce hazards and maintain the facility until the mission work can be transferred to the Chemistry and Metallurgy Research Replacement (CMRR) Facility.

In FY 2011, funding for the Advanced Recovery and Integrated Extraction System (ARIES) work scope, and activities associated with the feed stock for the Mixed Oxide (MOX) Fuel Fabrication Facility are transferred to the Defense Nuclear Nonproliferation Appropriation.

- **Nevada Test Site (NTS)** **92,203** **79,583** **80,077**

Funding preserves support for critical missions and programs by operating the Device Assembly Facility (DAF) (including Critical Experiment Facility (CEF) enduring operations), Nuclear Counter Terrorism activities at NTS, U1a Complex, and the Joint Actinide Shock Physics Experimental Research (JASPER) Facility. Funding is also provided to maintain the remainder of the NTS site in a min-safe operating condition. Work scope includes conventional facility management, infrastructure and utilities, and operation and maintenance for special nuclear material handling and test equipment.

- **Pantex Plant** **101,230** **131,602** **121,254**

Operates and maintains the Pantex Plant in a state of readiness, prepared to execute programmatic tasks identified in the DSW and Campaign programs. Allows the Pantex Plant to function effectively by providing for facility management and significant staff support to engage in plant and maintenance engineering, facility utilization analysis, modification and upgrade analysis, and facilities planning and condition determinations. Also provides for maintenance activities, including preventative, predictive, corrective, and general maintenance. The maintenance program is direct funded and costs are reported quarterly through the IFI Report. Provides for utilities costs for the utilities management program, utility-related engineering, an energy-savings program, and operation and distribution of utility services. Work activities include: the collection and treatment of wastewater; steam distribution and condensate return; electrical distribution; natural gas distribution; compressed air; and water production, treatment, distribution to support domestic, industrial, and fire protection needs; AB documentation; safety and health assurance including Radiation Safety, Nuclear Explosive Safety, Occupational Medicine, Industrial Hygiene, and Industrial Safety; emergency management and environmental protection, waste management, and waste minimization activities.

Other Project Costs associated with line item projects include research and development, Conceptual Design Plans and Reports, Design Criteria, Project Execution Plans, NEPA documentation, Construction Project Data Sheets, maintenance procedures to support facility startup, initial operator training, commissioning costs, operational readiness reviews, and readiness assessments. FY 2011 also transfers funds for the ARIES work scope and activities associated with the feed stock for MOX Fuel Fabrication Facility to the Defense Nuclear Nonproliferation Appropriation.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Sandia National Laboratories (SNL)**	**123,992**	**104,133**	**117,369**

Operates and maintains the SNL facilities and capabilities in a safe, secure, reliable, state of readiness. The dominant cost driver for these capabilities/facilities is the staff required to keep the mission critical capabilities operational. RTBF Operations of Facilities funds Major Environmental Test facilities as defined by the NNSA's Record of Decision (including the electromechanical, abnormal and normal environments), Microelectronics Development Laboratory, Tech Area IV Accelerators, Tech Area V Nuclear Reactor facilities, Electromagnetic Test Facilities, Materials Characterization Laboratories, and Waste Management Activities. The work scope includes capital equipment needed by the mission critical capabilities, specific facility infrastructure needs, conventional facility management and operation, and maintenance of mission critical equipment at these facilities. The maintenance program is primarily indirectly funded and costs are reported quarterly through the IFI Report. Site Waste Management Activities are also indirectly funded.

Funding in FY 2011 also supports the Tonopah Test Range (TTR) in Nevada providing unique capabilities to air drop nuclear bomb test units. These capabilities allow TTR to support DSW's ability to perform surveillance testing on nuclear bombs and their compatibility with U.S. Air Force bombers and fighters and funds the Primary Standards Laboratory (PSL) in New Mexico to provide unique measurement and calibration sources for nuclear weapons facilities nationwide, many of which are unavailable through any other source. PSL supports the ability of many sites across the nuclear weapons enterprise to calibrate and operate unique weapon monitors and detectors.

▪ **Savannah River Site (SRS)**	**92,762**	**128,580**	**92,722**

Operates and maintains the NNSA related portion of SRS in a state of readiness, prepared to execute programmatic tasks identified in the DSW and Campaigns programs including facilities management and support activities that maintain the facilities and infrastructure for mission operations. Preventive, predictive, and corrective maintenance of process and infrastructure equipment and facilities are performed. The maintenance program is funded through both indirect and direct mechanisms and costs are reported quarterly through the IFI Report. ES&H activities are conducted to ensure the well being of SRS workers, the public, and the environment. Contracted costs of providing utilities to the Tritium Extraction Facility, establishing a startup of an unloading line to establish unloading capabilities for new systems, and high priority Capital Equipment and GPP are also included. Capital Equipment and GPP that meet base maintenance and infrastructure needs are planned and executed to maintain the safety, utility, and capability of the process facilities.

In FY 2011, the request reflects the transfer of Pit Disassembly and Conversion Facility (PDCF) OPCs to the Defense Nuclear Nonproliferation Appropriation. In addition, FY 2011 specific activities will focus on costs associated with high priority Capital Equipment and GPP and to address single point failures in the tritium stripper systems.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Y-12 National Security Complex**	**235,397**	**229,774**	**220,927**

Funds operation and maintenance of Y-12 mission facilities in a state of readiness, in which each facility is operationally ready to execute programmatic tasks within multiple mission elements. Provides for management of the thirteen production and production support facilities and related facility systems, including newly generated waste. These facilities are operated to ensure compliance with ES&H requirements and DOE orders, and to ensure the availability of the facilities for all Defense Programs programmatic objectives. An Authorization Basis (AB) is maintained for each facility, including development of AB documentation to meet the requirements of 10CFR830 Nuclear Safety Rule, annual updates of AB documentation, and unreviewed safety question determinations as applicable.

The Building 9212 Production Facility has implemented the Integrated Work Plan (IWP) process to manage the work scope within the available resources and funding levels. The IWP process is a management tool that integrates multiple systems in order to prioritize the total work scope using a uniform method and quantifies and manages overall risk within the facility. A Facility Risk Review (FRR) has been completed for Building 9212. The FRR identified the risks associated with the operation of the facility and processes that must be mitigated in the interim until the new Uranium Processing Facility Project is available to ensure continued operation of metal production to support DSW missions including Life Extension Programs. The Operation of Facilities will continue to fund maintenance and associated activities to mitigate the risk of continued operations in Building 9212. The deferred maintenance will continue to grow in cases where replacement facilities are planned or constructed, such as the construction of the Highly Enriched Uranium Materials Facility. The maintenance program is funded through both indirect and direct mechanisms and costs are reported quarterly through the IFI Report.

▪ **Institutional Site Support (ISS)**	**56,102**	**120,129**	**40,970**

Supports corporate activities across the nuclear security enterprise including, but not limited to: planning, coordinating, program management and performance monitoring, occurrence reporting systems, quality assurance working groups, system engineering, program risk management, enterprise modeling, independent and internal technical reviews and assessments and activities. Examples of assessments and reviews include analyses of evolving production requirements and forecasting of nuclear material supply and demand. Funding is also provided for specific projects to meet changing programmatic requirements while improving operational efficiency, reducing active footprint, and lowering operating costs. Specific projects for FY 2011 are competitively selected during the execution year to achieve program goals, and are representative of the types of activities that need to be accomplished to address maintenance needs, to sustain facilities, and provide modern equipment that support programmatic missions while reducing operating costs. ISS will also fund selected projects to prepare for facility consolidation and footprint reduction activities. ISS also includes funding held at Headquarters for contractor support and other corporate activities.

In FY 2011, ISS will fund the storage and security costs of Sodium Debris Material at Idaho National Laboratory until the Qualification Alternatives to the Sandia Pulsed Reactor is complete.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Program Readiness	**71,626**	**73,021**	**69,309**

Program Readiness implements a multi-year strategy to provide capabilities (skilled worker expertise, advanced technologies, and innovative approaches) that support the Campaigns and DSW aspects of Stockpile Stewardship. These crosscutting investments address needs beyond any single facility, campaign, or nuclear system and are essential to achieving the objectives of Stockpile Stewardship. Since FY 2010, Program Readiness has funded Test Readiness activities to ensure that an underground nuclear test can be executed as directed by Presidential Directive.

- The Nevada Test Site Program Readiness activities sustain resources to meet the certification of the nuclear stockpile as well as Test Readiness. A broad range of activities are supported from addressing the Nevada State Regulatory environmental compliance issues that resulted from years of nuclear testing activities in Nevada to geologic studies performed by the US Geological Survey Department that are required to field high-hazard experiments by the National Laboratories.

- The Pantex and Kansas City Program Readiness supports the training, development, and technical apprenticeship of new associates for critical skills, along with the technical resource pipeline and production assurance required to sustain critical production and engineering capabilities in support of DSW.

- The Sandia Program Readiness provides the capabilities needed for integrated and engineered Nuclear Warhead Certification. These include people readiness that nurtures world class and peer-reviewed critical nuclear weapons expertise and technology readiness that develops and matures the science, technology, engineering, modeling, simulation, and skills needed to certify all non-nuclear materials, components, and mechanisms through the warhead lifecycle.

- Program Readiness also supports the Nuclear Criticality Safety Program (NCSP). The NCSP provides sustainable expert leadership, direction, and the technical infrastructure necessary to develop, maintain and disseminate the essential technical tools, training and data required to support safe, efficient fissionable material operations within DOE. The NCSP is a continually improving, adaptable, and transparent program that communicates and collaborates globally, such as with the French Atomic Energy Commission (CEA), to incorporate technology, practices and programs responsive to the technical needs of those responsible for developing, implementing, and maintaining nuclear criticality safety throughout the DOE.

Material Recycle and Recovery (MRR)	**70,334**	**69,542**	**70,429**

Provides for recycling and the recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement of weapons and components. Supports the implementation of new or improved processes for fabrication and recovery operations, material stabilization, conversion, and storage. MRR supports the process of recycling and purifying materials to meet specifications for safe, secure, and environmentally acceptable storage, and to meet the directive schedule for tritium reservoir refills. MRR is principally accomplished at Y-12, LANL, and the SRS Tritium Facility.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

- At LANL, activities include response to material stabilization/decontamination/repackaging, nuclear materials information management, the Special Recovery Line, a small amount of generic criticality safety support, and nuclear materials planning and reporting.

- At the SRS Tritium Extraction Facility, activities include recovery and purification of tritium, deuterium, and helium-3 gases from reservoir recycle gas, hydride storage vessels, and facility effluent cleanup systems. Gas mixtures are enriched to support the LEP and Stockpile Services goals.

- At Y-12, activities include Purification and Conversion to UO_3, Acid Removal and Waste processing, Conversion of Enriched Uranium Oxide to Metal Buttons, Material Transport and Storage, Processing Enriched Uranium Chips and Scraps, Chemical Conversion of Lithium, and Salvage Operations and Filter Teardown. All of these activities are required to provide materials needed for Stockpile Stewardship and to ensure safe and secure handling of materials on-site. In addition, MRR includes: the Central Scrap Management Office that manages the receipt, storage, and shipment of enriched uranium scrap; the Precious Metals Business Center, which provides a cost effective service to many users within the DOE complex; and deactivation of Building 9206.

For FY 2011, ongoing activities such as uranium stabilization, decontamination, and repackaging, and tritium recycling in support of LEPs and the limited life program will continue. Recycling and recovery activities will be supported by DSW when the scope exceeds the base capability provided by the MRR program.

Containers **22,696** **23,392** **27,992**

Provides for shipping container research and development, design, certification, re-certification, test and evaluation, production and procurement, fielding and maintenance, decontamination and disposal, and off-site transportation authorization of shipping containers for nuclear materials and components supporting both the nuclear weapons program and nuclear materials consolidation. New container systems are developed to improve safety, security, ability to be maintained, meet updated regulatory requirements, and accept a broader array of contents to minimize the number of specialized containers that have to be maintained. These efforts will include efficiencies provided by close coordination of planning and operations with users/customers. Supports nuclear material consolidation, and de-inventory activities to ensure needed transportation containers are certified and available to accommodate proposed material movements. This includes supporting the de-inventory of LLNL Category I and II nuclear materials through the certification and supply of containers. DSW also provides support for container activity when weapon system scope exceeds the level initially identified by the container subprogram.

Storage **31,951** **24,708** **24,233**

Provides for effective storage and management of national security and surplus pits, Highly Enriched Uranium (HEU), and other weapons and nuclear materials. Funding includes the cost of receipt, storage, and inventory of nuclear materials, non-nuclear materials, HEU, enriched lithium, and components from dismantled warheads. Provides programmatic planning for nuclear material

requirements, including analysis, forecasting, and reporting functions, as well as emergent analyses of nuclear materials as designated by the NNSA and others.

- At Pantex, activities include long-term storage of special nuclear materials, which involves planning, engineering, design, and start-up activities; processing and repackaging materials for safe storage; storage activities for the strategic reserve; national security inventory thermal monitoring and characterizations; disposition of legacy materials; and nuclear materials management, including planning, assessment, and forecasting nuclear material requirements. Pit Disassembly and Inspection Surveillance includes surveillance activities associated with pits in storage. Activities include weight and leak testing, visual inspections, and radiography.

- At the Y-12, activities include the overall management and storage of uranium, lithium, and other nuclear and weapons materials, including the nation's strategic reserve of HEU. In addition, the Y-12 Nuclear Materials Management, Storage, and Disposition program provides programmatic guidance and support of these materials and services throughout the Nuclear Security Enterprise. This program also provides the long-term planning and analysis of materials required for the Y-12 manufacturing strategy in support of the nuclear weapons stockpile.

For FY 2011, the Storage program will continue to provide effective storage and management of national security and surplus pits, HEU, and other weapons and nuclear materials. The Nuclear Materials Integration subprogram under Site Stewardship will also be supported by having the requisite facilities available so they can execute their responsibility.

Construction	**314,468**	**303,904**	**399,016**

The RTBF Construction subprogram plays a critical role in revitalizing the nuclear weapons manufacturing and research and development infrastructure. Investments from this program will improve the responsiveness and/or utility of the infrastructure and its technology base. The subprogram is focused on two primary objectives: (1) identification, planning, and prioritization of the projects required to support the weapons programs, and (2) development and execution of these projects within approved cost and schedule baselines.

The RTBF Construction budget request includes significant increases for the Chemistry and Metallurgy Research Replacement (CMRR) Facility and Uranium Processing Facility (UPF) consistent with the commitment to the replacement of plutonium research and uranium manufacturing facilities.

The Chemistry and Metallurgy Research Replacement (CMRR) Facility at LANL will relocate and consolidate mission-critical analytical chemistry, material characterization, and actinide research and development activities that directly support Stockpile Stewardship and other programs. The project will involve completion and startup of the Radiological Utility/Office Building (RLUOB) with associated equipment and will establish a baseline for the CMRR Nuclear Facility and begin construction at a date determined by the baseline plan.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

The Uranium Processing Facility Project (UPF) at the Y-12 Complex will replace deteriorating 50-year-old facilities that do not meet current standards, are increasingly expensive to maintain, and are technologically obsolete. When complete, the UPF will allow a substantial reduction in the footprint of the secure area of the site and associated maintenance and security costs. The UPF will support the nation's nuclear weapons stockpile, down blending of enriched uranium in support of nonproliferation, and provide uranium as feedstock for fuel for naval reactors. In FY 2011, funding will be used for long lead procurement of equipment with delivery lead times over 24 months and will allow for site preparation work consisting of excavation of the building foundation and preparation of the surrounding area for full construction start in FY 2012.

The Transuranic (TRU) Waste Facility Project at LANL, will allow the site to comply with an Order of Consent with the State of New Mexico which requires the cleanup and vacating of Technical Area 54. The TRU Waste Facility will receive, process, and ship wastes to the Waste Isolation Pilot Plant (WIPP). The facility will support all operations at LANL that generate TRU waste.

The TA-55 Reinvestment Project Phase II at LANL is a follow-on project to Phase I. The project consists of refurbishment/replacement of major facility and infrastructure systems at the LANL Plutonium Facility which are nearing the end of their service life and require increased maintenance, are out of compliance with current regulations, and/or are at increased risk of causing facility shutdown.

The Test Capabilities Revitalization –II project (09-D-404) at Sandia National Laboratory is presently being reevaluated.

The Radioactive Liquid Waste Treatment Facility Upgrade (RLWTF) at LANL replaces a system that is over 40 years old with diminishing reliability. The facility will support laboratory operations at 12 technical areas, 63 buildings, and 1,800 sources of radioactive liquid waste.

The High Explosive Pressing Facility (HEPF) at Pantex will replace the current facility which is nearing the end of service life. The new facility will improves safety, quality, and efficiency of material movement. The existing aged facilities, infrastructure, and equipment are in poor condition and continue to fail creating significant risk in the current and future capability to produce high explosive hemispheres in sufficient quantities to support mission requirements.

Total, Readiness in Technical Base and Facilities	**1,674,406**	**1,842,870**	**1,848,970**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Operations of Facilities	
▪ **Kansas City Plant (KCP)**	
This increase supports activities above base operations and required maintenance at KCP associated with the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) transformation project and the Supply Change Management Center. Increased funding for KCRIMS supports long lead procurements, critical capital purchases and unique facility upgrades for utility and interior requirements. These efforts are critical to the ability of the NNSA to exit Kansas City Plant (at the Bannister complex) and transition into a smaller, more efficient Greenfield facility.	**+30,046**
▪ **Lawrence Livermore National Laboratory**	
The decrease results from operational savings through the de-inventory of LLNL Category I and II nuclear materials.	**-6,564**
▪ **Los Alamos National Laboratory**	
The increase in funding is for solid waste risk reduction activities, seismic and fire safety engineering at TA-55, consolidation and mitigation of CMR risk and other project costs for the RLWTF, all of which are partially offset by the transfer of funding from RTBF to Defense Nuclear Nonproliferation for the Advanced Recovery and Integrated Extraction Systems (ARIES) work scope.	**+6,688**
▪ **Nevada Test Site**	
Maintains funding for physical and operational infrastructure in order to operate essential experimental facilities. The slight increase reflects additional funding for the operation of the Critical Experiment Facility in DAF.	**+494**
▪ **Pantex Plant**	
The decrease results from the transfer of funding from RTBF to Defense Nuclear Nonproliferation for ARIES work scope.	**-10,348**
▪ **Sandia National Laboratories**	
The increase reflects support of the capability to air drop nuclear bomb test units at TTR and support PSL's capability to provide unique measurement and calibration sources for nuclear weapons facilities nationwide.	**+13,236**
▪ **Savannah River Site**	
The decrease is due to the transfer of PDCF OPCs to Defense Nuclear Nonproliferation.	**-35,858**
▪ **Y-12 National Security Complex**	
The decrease adjusts funding to meet operational levels in support of current Production and Planning Directive (P&PD) workload.	**-8,847**

	FY 2011 vs. FY 2010 ($000)
Institutional Site Support	
The decrease is primarily associated with the nonrecurring request in FY 2010 for direct support of management and operating contractor pension costs. The request also reflects minor shifts in programmatic priority.	**-79,159**
Total, Operations of Facilities	**-90,312**

Program Readiness

The decrease reflects minor shifts in programmatic priorities associated with test readiness funding. **-3,712**

Material Recycle and Recovery

Provides for ongoing activities including the stabilization and decontamination of plutonium, uranium, and tritium from fabrication and assembly operations. **+887**

Containers

The increase reflects increased work scope associated with off-site transportation shipping containers for nuclear materials and components supporting both the nuclear weapons program and nuclear materials consolidation. **+4,600**

Storage

The decrease reflects the transition to operations at HEUMF at Y-12. Repackaging of material has been completed and is being moved into HEUMF. **-475**

Construction

The increase in FY 2011 funding will support several key Construction projects at the identified sites.

At LANL, the funding will support the continued design of the Radioactive Liquid Waste Treatment Facility Upgrade, Chemistry and Metallurgy Research Replacement (CMRR) Facility, TA-55 Reinvestment Project Phase II and design of the Transuranic (TRU) Waste Facility Project. The CMRR project will involve completion and startup of the Radiological Utility/Office Building (RLUOB) with associated equipment and will establish a baseline for the CMRR Nuclear Facility and begin construction at a date determined by the baseline plan.

At Y-12, the funding will support the long lead procurement of equipment with delivery lead times over 24 months for the Uranium Processing Facility Project (UPF) and allow for site preparation work consisting of excavation of the building foundation and preparation of the surrounding area for full construction start in FY 2012.

	FY 2011 vs. FY 2010 ($000)
At Pantex, funding will support the High Explosive Pressing Facility (HEPF).	
The increase is also offset by a decrease reflected in the transfer of the PDCF project from RTBF to the Defense Nuclear Nonproliferation's Fissile Materials Disposition Program and the remaining projects are consistent with the construction project profiles for ongoing projects.	**+95,112**
Total Funding Change, Readiness in Technical Base and Facilities	**+6,100**

Capital Operating Expenses and Construction Summary
Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	18,359	18,763	19,176
Capital Equipment	39,863	40,740	41,636
Total, Capital Operating Expenses	**58,222**	**59,503**	**60,812**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	19,598	20,029	20,470	20,920
Capital Equipment	42,552	43,448	44,445	45,423
Total, Capital Operating Expenses	**62,150**	**63,477**	**64,915**	**66,343**

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Construction Projects[a] [b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2009	FY 2010	FY 2011	Unappropriated Balance
11-D-801, TA-55 Reinvestment Project, Phase 2, LANL	TBD	0	0	0	20,000	TBD
10-D-501, Nuclear Facility Risk Reduction (NFRR), Y-12	TBD	0	0	12,500	0	TBD
09-D-404, Test Capabilities Revitalization-II, SNL	37,700	0	3,104	3,200	0	TBD
09-D-007, LANSCE· Refurbishment, LANL	TBD	0	19,300	20,000	0	TBD
08-D-806, Ion Beam Laboratory Refurbishment, SNL [c]	34,813	0	6,100	0	0	0
08-D-804, TA-55 Reinvestment Project, Phase I, LANL	13,548	5,885	7,663	0	0	0
08-D-802, High Explosive Pressing Facility, PX [d]	133,920	15,008	27,386	0	30,000	61,526
08-D-801, High Pressure Fire Loop, PX	40,716	6,866	1,940	31,910	0	0
07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade, LANL	TBD	26,162	14,170	0	0	TBD

[a] The TEC estimate is for design only for the PED projects included in 07-D-140 and 06-D-140.

[b] These represent construction TEC estimates. Design TEC estimates are reported in the appropriate PED project.

[c] FY 2008 ($9,911) funds appropriated for project 08-D-806, Ion Beam Laboratory Refurbishment, SNL were appropriated under Engineering Campaign. Prior year funds ($18,813) were transferred from 01-D-108, MESA, SNL as a result of the FY 2009 Omnibus Appropriations Act (P.L. 111-8) and the total of $28,724 is not included in the construction total.

[d] All prior year uncosted funds for 08-D-802, High Explosive Pressing Facility, PX were used as a use of prior-year balance offset as a result of P.L. 111-85.

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2009	FY 2010	FY 2011	Unappropriated Balance
07-D-140, Project Engineering & Design, VL	TBD	2,452	7,223	0	5,000	TBD
06-D-402, NTS Replace Fire Stations No. 1 and No. 2, NTS	36,744	26,211	9,060	1,473	0	0
06-D-141, PED/Construction, Uranium Processing Facility, Y-12 [a]	TBD	0	0	94,000	115,016	TBD
06-D-140, Project Engineering & Design, VL [a]	192,929	70,508	106,421	12,000	4,000	0
05-D-402, Beryllium Capability Project,	23,580	18,715	4,865	0	0	0
04-D-128, Criticality Experiments Facility (formerly TA-18 Mission Relocation Project),	81,269	69,727	10,042	1,500	0	0
04-D-125, Chemistry and Metallurgy Research Facility Replacement (CMRR), LANL	TBD	231,638	97,194	97,000	225,000	TBD
99-D-141-01, Pit Disassembly and Conversion Facility (PDCF), SRS [b]	TBD	255,558	24,883	30,321	0	TBD
Total, Construction			**314,468**	**303,904**	**399,016**	

[a] Funding for the Uranium Processing Facility, Y-12 in FY 2010 and beyond was separated into 06-D-141 as a result of P.L. 111-85.

[b] FY 2008 ($22,447) and FY 2009 ($24,883) funds appropriated for project 99-D-140-01, Pit Disassembly and Conversion Facility, SRS were appropriated under Directed Stockpile Work as a result of the FY 2008 Consolidated Appropriations Act (P.L. 110-161) and are not included in the construction total. FY 2011 funds are requested under the Defense Nuclear Nonproliferation/Fissile Materials Disposition Program.

Outyear Construction Projects

(dollars in thousands

	FY 2012	FY 2013	FY 2014	FY 2015
14-D-XXX, Mission Consolidation, Various	0	0	31,860	19,776
12-D-XXX, TRU Waste Facility, LANL	6,500	12,349	71,151	40,000
11-D-801, TA-55 Reinvestment Phase II, LANL	19,640	20,221	20,468	42,480
10-D-501, Nuclear Facility Risk Reduction (NFRR), Y-12	35,387	17,909	0	0
08-D-802, High Explosive Pressing Facility	30,359	0	0	0
07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade, LANL	40,000	15,455	0	0
06-D-141, PED/Construction, Uranium Processing Facility, UPF	105,400	189,987	270,012	320,000
04-D-125, Chemistry and Metallurgy Research Facility Replacement (CMRR), LANL	305,000	300,000	299,961	300,000
Total, Construction	**542,286**	**555,921**	**693,452**	**722,256**

11-D-801, TA-55 Reinvestment Project – Phase II (TRP II)
Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) for the TA-55 Reinvestment Project (TRP), Phase II is CD-2A, Approve Performance Baseline for Air Dryers and Glovebox Group 1. CD-2A was approved on November 24, 2009 with a TPC of $19,470,000 and a CD-4A date of May 2013. CD-1, Approve Alternative Selection and Cost Range for all seven subprojects in TRP II, was approved on July 15, 2008 with a preliminary cost range of $75,400,000 to $99,900,000 and a preliminary CD-4 date of FY 2016.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is new for Construction.

The Project anticipates approval of the project baseline for CD-2B, Confinement Doors and Glovebox Group 2, in the 3Q FY 2010. The Project anticipates establishing a performance baseline for the remaining subprojects (CD-2C) by the 3Q FY 2011. This phased critical decision approach and schedule is consistent with tailoring strategy that has been approved by the NNSA Acquisition Executive.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	3/23/2005	7/25/2008	TBD	3QFY2009	TBD	TBD	N/A	N/A
FY 2011	3/23/2005	7/25/2008	3QFY2012	TBD	TBD	TBD	N/A	N/A

Air Dryers and Glovebox Group 1

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/25/2008	3QFY2012	11/24/2009	1QFY2010	3QFY2013	N/A	N/A

Glovebox 2 and Confinement Doors

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/25/2008	3QFY2012	3QFY2010	TBD	TBD	N/A	N/A

Glovebox 3, Exhaust Stack, Uninterruptible Power Supply, Criticality Alarm System, and Vault Water Tanks

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/25/2008	3QFY2012	3QFY2011	TBD	TBD	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete –Completion of D&D work

3. Baseline and Validation Status[a]

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	12,779	TBD	TBD	TBD	N/A	TBD	TBD
FY 2011	13,684	TBD	TBD	TBD	N/A	TBD	TBD

Air Dryers and Glovebox Group 1

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	3,700	15,330	19,030	440	N/A	440	19,470

4. Project Description, Justification, and Scope

The LANL Plutonium Facility (PF-4) major facility and infrastructure systems are aging and approaching the end of their service life, and, as a consequence, are beginning to require excessive maintenance. As a result, the facility is experiencing increased operating costs and reduced system reliability. Compliance with safety and regulatory requirements is critical to mission essential operations, and thus becoming more costly and cumbersome to maintain due to the physical conditions of facility support systems and equipment.

This project will enhance safety and enable cost effective operations so that the facility can continue to support critical Defense Programs missions and activities. The TA-55 Reinvestment Project Team identified 20 subprojects at the pre-conceptual stage for upgrades and modernization. The subprojects were selected utilizing a risk-based prioritization process that considered the current condition of the equipment, risk of failure to the worker, the environment and the public, and risk of failure to programmatic and facility operations.

During Conceptual Design, the project continued to refine the prioritization method and subprojects. Defense Program's Infrastructure Revitalization combined with available/anticipated funding has led to development of a phased acquisition strategy for the TRP project. To meet mission need objectives within the budgetary availability and strategic context, the TRP project is proposed for execution as three separate, distinct capital line item projects, TRP I, TRP II, and TRP III.

[a] A performance baseline has only been established for the Air Dryers and Glovebox Group 1 portion of the project for $19,470,000.

TRP II Overall Scope: Consists of seven (7) subprojects:

1. Replace existing Uninterruptible Power Supply with nuclear grade equipment and relocate from Building PF-4 to Building PF-8 to allow simpler maintenance and proper exhaust and to minimize mixed waste generation.
2. Refurbish four existing air dryers and provide a cross connect between the 300 and 400 area dryers so the 400 dryer can back up the 300 dryer. Modern controls will also be provided.
3. Replace eight existing PF-4 confinement doors to address operability and leak rate issues.
4. Replace 20 existing detectors and circuits with new and expandable detectors and electronics.
5. Replace two Pu^{238} water storage tanks and associated cooling systems. Relocation out of the vault to a space next to the vault will also be conducted.
6. Seismically brace and qualify approximately 210 glovebox stands in PF-4 to meet safety requirements.
7. Replace two existing PF-4 exhaust stacks so that exhaust measuring equipment meets industry standards.

The order in which these subprojects will be accomplished is subject to change, depending on the condition of existing systems. For instance, if the water tanks are found in the future to be in imminent danger of failure, there replacement would be accelerated.

Air Dryers and Glovebox Group 1 Scope:

All work mitigates nuclear safety risks called to the Department's attention by the DNFSB in its Recommendation 2009-2, Los Alamos National Laboratory Plutonium Facility Seismic Safety."

Air Dryers – Replace and refurbishment air dryers in non-safety systems to ensure the reliability of production processes in PF-4.

Glovebox Group 1 – Install internal and external bracing to approximately 11 higher priority gloveboxes to ensure gloveboxes remain intact and do not topple during a seismic event. Installation of seismic bracing will require removal and reinstallation of significant amounts of interfering piping, cables, ventilation lines, and other systems supporting glovebox operation. The labor hours and costs of the work in Group 1 will be tracked and the information used to increase the accuracy of the performance baselines for glovebox work in later phases.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

Funds appropriated for this construction project may be used to provide independent assessments of the planning and execution of this line item project.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2008	1,439[a]	1,439	24
FY 2009	8,245	8,245	3,406
FY 2010	4,000	4,000	4,900
FY 2011	0	0	4,154
FY 2012	0	0	1,200
Total, PED (06-D-140-02)	13,684	13,684	13,684
Construction			
FY 2011	20,000	20,000	16,000
FY 2012	19,640	19,640	19,640
FY 2013	20,221	20,221	22,221
FY 2014	20,468	TBD	TBD
FY 2015	42,480	TBD	TBD
FY 2016	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2008	1,439	1,439	24
FY 2009	8,245	8,245	3,406
FY 2010	4,000	4,000	4,900
FY 2011	20,000	20,000	20,154
FY 2012	19,640	19,640	20,840
FY 2013	20,221	20,221	22,221
FY 2014	20,468	TBD	TBD
FY 2015	42,480	TBD	TBD
FY 2016	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2005	854	854	854
FY 2006	1,919	1,919	1,919
FY 2007	980	980	980
FY 2008	1,343	1,343	1,343
FY 2009	582	582	582
FY 2010	410	410	410
FY 2011	3,300	3,300	3,300
FY 2012	2,800	2,800	2,800
FY 2013	2,600	2,600	2,600
FY 2014	TBD	TBD	TBD

[a] FY 2008 PED includes $360,000 that was transferred from TA-55 Reinvestment Project Phase I. Funding for both PED projects were appropriated under the same project line within Project 06-D-140.

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2015	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D			
FY2010	NA	NA	NA
Total, D&D	NA	NA	NA
OPC			
FY 2005	854	854	854
FY 2006	1,919	1,919	1,919
FY 2007	980	980	980
FY 2008	1,343	1,343	1,343
FY 2009	582	582	582
FY 2010	410	410	410
FY 2011	3,300	3,300	3,300
FY 2012	2,800	2,800	2,800
FY 2013	2,600	2,600	2,600
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2005	854	854	854
FY 2006	1,919	1,919	1,919
FY 2007	980	980	980
FY 2008	2,782	2,782	1,367
FY 2009	8,827	8,827	3,988
FY 2010	4,410	4,410	5,310
FY 2011	23,300	23,300	23,454
FY 2012	22,440	22,440	23,640
FY 2013	22,821	22,821	24,821
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	11,619	N/A	TBD
Contingency	2,065	N/A	TBD
Total, PED (06-D-140)	13,684	N/A	TBD
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Total, TEC	TBD	N/A	TBD
Contingency, TEC	TBD	N/A	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, OPC except D&D	TBD	N/A	TBD
D&D			
D&D	N/A	N/A	TBD
Contingency	N/A	N/A	TBD
Total, D&D	N/A	N/A	TBD
Total, OPC	TBD	N/A	TBD
Contingency, OPC	TBD	N/A	TBD
Total, TPC	TBD	N/A	TBD
Total, Contingency	TBD	N/A	TBD
Total	TBD	N/A	TBD

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2011	TEC	9,684	4,000	20,000	19,640	20,221	20,468	42,480	TBD	TBD
	OPC	5,678	410	3,300	2,800	2,600	TBD	TBD	TBD	TBD
	TPC	15,362	4,410	23,300	22,440	22,821	20,468	42,480	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	25
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations		N/A		N/A
Maintenance		N/A		N/A
Total, Operations & Maintenance		N/A		N/A

9. Required D&D Information

As the project is an investment in the infrastructure systems of an existing facility, construction and demolition activities are minimal and are directly related to replacement and upgrade of these systems

Area	Square Feet
Area of new construction	1,200
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	1,200

Name(s) and site location(s) of existing facility(s) to be replaced: Uninterruptible Power Supply is planned to be relocated immediately outside of the existing structure (this represents the 1,200 square feet).

10. Acquisition Approach

Design and Construction Management will be implemented by the Los Alamos National Security through the LANL Management and Operating Contract. The TRP Acquisition Strategy is based on tailored procurement strategies for each subproject in order to mitigate risks. TRP Subprojects will be implemented via LANL-issued final design/construction contracts based on detailed performance requirements/specifications developed during the preliminary design phase.

08-D-802, High Explosive Pressing Facility
Pantex Plant, Amarillo, Texas
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent DOE 0 413.3A approved Critical Decision (CD) is CD-3, Approve Start of Construction, for the High Explosive Pressing Facility (HEPF), approved on May 15, 2008. Baseline Change Proposal 12A (BCP-12A) was approved by the DOE Acting Deputy Secretary on January 9, 2009, setting the Total Project Cost at $116,038,000 and the CD-4 date at May 2014.

In April 2009 NNSA deferred the construction phase of the project, but the project must be restarted in FY 2011 because of increasing evidence of the deterioration of existing facilities. Delaying construction of the HEPF project has created significant risk in the future capability to produce nuclear weapon primaries in sufficient quantities to support mission requirements. The existing aged facilities, infrastructure, and equipment are in poor condition and continue to fail. Pressing operations were down from April 6, 2009 to August 21, 2009 due to equipment failures. Deferred maintenance continues to grow in existing facilities. Facility systems have exceeded their design life (roofs, electrical, HVAC/ mechanical systems, etc.) and are failing. A major failure of the press, support equipment, or facility systems could jeopardize stockpile requirements.

As a result of the construction deferment, the construction contract will have to be rebid in FY 2011. The cost is projected to increase to approximately $138,212,000, and the CD-4 date is projected to change December 2016. Additional funding beyond what appears in this data sheet in FY 2012 and/or 2013 will be required for project completion, based on actual construction bids in FY 2011. The project will reassess its baseline to support requesting additional funds in the FY 2012 President's Budget Request to replace the lost prior year balances included in the FY 2010 appropriation and to cover additional costs due to the delay.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is an update of the FY 2009 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2008	8/8/2003	7/19/2005	3QFY2007	11/21/2006	4QFY2008	2QFY2011	N/A	N/A
FY 2009	8/8/2003	7/19/2005	4QFY2008	11/21/2006	4QFY2008	3QFY2012	N/A	N/A
FY 2011	8/8/2003	7/19/2005	3QFY2009	11/21/2006	5/15/2008	1QFY2017	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2008	8,146	68,140	76,286	4,292	N/A	4,292	80,578
FY 2009	8,146	72,334	80,480	4,507	N/A	4,507	84,987
FY 2011	7,948[a]	125,972	133,920	4,292	N/A	4,292	138,212[b]

4. Project Description, Justification, and Scope

This project will provide a new high explosive (HE) main charge pressing facility with capability and capacity to meet the needs of changing weapon complexity, projected workload, and the Life Extension Program activities in the future including the W76, W78, and W88 Programs.

The facility improves safety, quality and efficiency of material movement. It reduces personnel restrictions and eliminates human reliability program (HRP) requirements by its location outside the Protected Area. Benefits also include reduced administrative safety controls through improved engineering controls, and reduced maintenance downtime.

The new facility will be located in the Limited Area of the Pantex Plant, and replaces existing operations in buildings 12-17, 12-21A and 12-63. The facility will be designed to produce main charge pressing hemispheres to meet future capacity requirements and will consist of approximately 45,000 square feet of space. Proposed areas include the main pressing facility, a magazine storage area, and a connecting ramp.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

Funds appropriated under this data sheet may be used to provide independent assessments of the planning and execution of this project.

[a] PED reduced due to the loss of all uncosted project funds included in the FY 2010 use of prior year balances offset.

[b] This PDS increases the TPC to $138,212,000 based on the delay of construction start from FY 2009 to FY 2011.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2004	1,200	1,200	0
FY 2005	1,488	1,488	330
FY 2006	1,980	1,980	2,184
FY 2007	3,280[a]	3,280	3,055
FY 2008	0	0	1,755
FY 2009	0	0	624
Total, PED (PED 04-D-103.2)	7,948	7,948	7,948
Construction			
FY 2008	613[b]	613	577
FY 2009	0[c]	0	36
FY 2010	0	0	0
FY 2011	30,000	30,000	20,700
FY 2012	30,359	30,359	30,400
FY 2013	0	0	9,259
FY 2014	0	0	0
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0
Total, Construction	60,972	60,972	60,972
TEC			
FY 2004	1,200	1,200	0
FY 2005	1,488	1,488	330
FY 2006	1,980	1,980	2,184
FY 2007	3,280	3,280	3,055
FY 2008	613	613	2,332
FY 2009	0	0	660
FY 2010	0	0	0
FY 2011	30,000	30,000	20,700
FY 2012	30,359	30,359	30,400
FY 2013	0	0	9,259
FY 2014	0	0	0
FY 2015	0	0	0
FY 2016	0	0	0
FY 2017	0	0	0
Total, TEC	68,920	68,920	68,920

[a] Original appropriation was $3,478,000 and was reduced by $197,613 as a use of prior year balance offset in the FY 2010 appropriation.

[b] Original appropriation was $15,008,000 and was reduced to $613,387 to satisfy the use of prior year balance offset in the FY 2010 appropriation.

[c] Original appropriation was $27,386,000 and was reduced to $0 as a use of prior year balance offset in the FY 2010 appropriation.

(dollars in thousands)

	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
FY 2004	860	860	860
FY 2005	281	281	281
FY 2006	158	158	158
FY 2007	200	200	200
FY 2008	150	150	150
FY 2009	20	20	20
FY 2010	0	0	0
FY 2011	170	170	170
FY 2012	300	300	300
FY 2013	300	300	300
FY 2014	500	500	500
FY 2015	500	500	500
FY 2016	553	553	553
FY 2017	300	300	300
Total, OPC Except D&D	4,292	4,292	4,292
D&D	0	0	0
Total OPC			
FY 2004	860	860	860
FY 2005	281	281	281
FY 2006	158	158	158
FY 2007	200	200	200
FY 2008	150	150	150
FY 2009	20	20	20
FY 2010	0	0	0
FY 2011	170	170	170
FY 2012	300	300	300
FY 2013	300	300	300
FY 2014	500	500	500
FY 2015	500	500	500
FY 2016	553	553	553
FY 2017	300	300	300
Total, OPC	4,292	4,292	4,292
Total Project Cost (TPC)			
FY 2004	2,060	2,060	860
FY 2005	1,769	1,769	611
FY 2006	2,138	2,138	2,342
FY 2007	3,480	3,480	3,255
FY 2008	763	763	2,482
FY 2009	20	20	680
FY 2010	0	0	0
FY 2011	30,170	30,170	20,870
FY 2012	30,659	30,659	30,700
FY 2013	300	300	9,559
FY 2014	500	500	500
FY 2015	500	500	500

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2016	553	553	553
FY 2017	300	300	300
Total, TPC	73,212	73,212	73,212

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	7,948	7,144	7,122
Contingency	0	1,002	1,024
Total, PED	7,948	8,146	8,146
Construction			
Site Preparation	800	0	0
Equipment	0[a]	6,589	7,816
Other Construction	112,384	58,087	51,579
Contingency	12,788	7,658	8,745
Total, Construction	125,972	72,334	68,140
Total, TEC	133,920	80,480	76,286
Contingency, TEC	12,788	8,660	9,769
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	1,166	1,166	1,166
Conceptual Design	355	998	998
Other	123	161	161
Start-Up	1,631	1,700	1,485
Contingency	1,017	482	482
Total, OPC except D&D	4,292	4,507	4,292
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	4,292	4,507	4,292
Contingency, OPC	1,017	482	482
Total, TPC	138,212	84,987	80,578
Total, Contingency	13,805	9,142	10,251

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009	TEC	51,387	17,028	0	0	0	0	0	0	68,415
Performance	OPC	1,809	440	1,800	243	0	0	0	0	4,292
Baselie	TPC	53,196	17,468	1,800	243	0	0	0	0	72,707
	TEC	50,540	0	0	0	0	0	0	0	50,540
FY 2010	OPC	1,669	0	0	0	0	0	0	0	1,669
	TPC	52,209	0	0	0	0	0	0	0	52,209
	TEC	8,561	0	30,000	30,359	0	0	0	0	68,920
FY 2011	OPC	1,669	0	170	300	300	500	500	853	4,292
	TPC	10,230	0	30,170	30,659	300	500	500	853	73,212

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY2017
Expected Useful Life (number of years)	30
Expected Future Start of D&D of this capital asset (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	1,000	1,000	1,000	1,000
Maintenance	400	400	460	460
Total, Operations & Maintenance	1,400	1,400	1,460	1,460

9. Required D&D Information

Area	Square Feet
Area of new construction	45,000
Area of existing operations (s) being replaced	6,727
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced: N/A

10. Acquisition Approach

Various alternatives were considered to include a Federally led and managed construction or utilizing the current Management and Operating contractor, B&W Pantex, LLC. It was determined that, due to the specialized functionality associated with this project, B&W Pantex, LLC will be responsible for Title I, II, and III design & construction services.

07-D-140 Project Engineering and Design, RTBF
Various Locations
Project Data Sheet (PDS) is for PED multiple projects

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) for the Transuranic (TRU) Waste Facility Project is CD-0 (Approve Mission Need) that was approved on February 7, 2006, with Total Project Cost (TPC) range of $20,000,000 to $60,000,000.

A Federal Project Director at the appropriate level has been assigned to the TRU Waste Facility project.

This PDS is an update of the FY 2009 PED PDS. This PDS requests funding in FY 2011 that was not shown in the previous PDS for the reasons discussed below.

The TRU Waste Facility Project is proposed to be built at the Los Alamos National Laboratory. The project team had submitted the Resource Conservation and Recovery Act (RCRA) permit to the State of New Mexico Environmental Division in August 2007 to avoid delaying start of the construction. However, the request was not approved and the state requested more detailed design information which was not possible to provide because the project was still in the conceptual phase. The next time the state accepts RCRA permit requests is in FY 2010. As a result, construction cannot be initiated until the RCRA permit is approved. This will delay the construction start potentially to FY 2012 or later. The PED funds previously appropriated in FY 2008 and 2009 will be available to begin preliminary design work in FY 2010. The planned appropriations for line items funds have been delayed in order to ensure that the planned capability is aligned with out year program requirements for solid waste. In FY 2009 a programmatic study was completed to validate the need for the capability and ensure program requirement alignment. Agreements on the planning assumptions and final project requirements will be reached by the 3rd quarter of FY 2010 resulting in any FY 2012 additional PED requests that are required. Therefore, the total PED requirements and FY 2012 requests are presented as TBD. The future design activities will be executed to support both the availability of funding and out year capability alignment.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2007	02/07/2006[a]	2QFY 2007	4Q FY 2008	Various	Various	Various	Various	Various
FY 2008	02/07/2006	2QFY 2007	4Q FY 2008	Various	Various	Various	Various	Various
FY 2009	02/07/2006	1Q FY 2008	4Q FY 2009	TBD	TBD	TBD	TBD	TBD
FY 2010	02/07/2006	1Q FY 2009	TBD	TBD[b]	TBD	TBD	TBD	TBD
FY 2011	02/07/2006	3Q FY 2010	TBD	TBD	TBD	TBD	TBD	TBD

[a] Pertains to the TRU Waste CD-0 date only.

[b] Schedules are to be determined. Preliminary CD-4 schedule range is 4Q FY 2016 to 4Q FY 2017.

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2006	TBD	NA	TBD	NA	NA	NA	NA
FY 2007	7,477	NA	7,477	NA	NA	NA	NA
FY 2008	7,477	NA	7,477	NA	NA	NA	NA
FY 2009	9,898	NA	9,898	NA	NA	NA	NA
FY 2010	19,898	NA	19,898	NA	NA	NA	NA
FY 2011	TBD	NA	TBD	NA	NA	NA	NA

4. Project Description, Justification, and Scope

This project provides for Architect-Engineering (A-E) services for National Nuclear Security Administration (NNSA) construction projects, allowing designated projects to proceed from conceptual design into preliminary design and final design. The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction costs based on the approved design and working drawings and specifications, and provide construction schedules, including procurements. The designs will be extensive enough to establish performance baselines and to support construction or long-lead procurements in the fiscal year in which line item construction funding is requested and appropriated.

Conceptual design studies are prepared for each project using Operations and Maintenance (O&M) funds prior to receiving design funding under a PED line item. These conceptual design studies define the scope of the project and produce a rough cost estimate and schedule.

The FY 2007 PED design projects are described below. While not anticipated, some changes may occur due to continuing conceptual design studies or developments occurring after submission of this data sheet. These changes will be reflected in subsequent years. Preliminary estimates for the cost of preliminary and final design and engineering efforts for each subproject are provided. The final TEC and the Total Project Cost (TPC) for the project described below will be validated and the Performance Baseline will be established at Critical Decision 2 (CD-2), following completion of preliminary design.

Funds appropriated under this data sheet may be used to provide independent assessments of the planning and execution of this project.

07-01: Consolidate and Renovate Computing Facilities, Kansas City Plant, Kansas City

Fiscal Quarter				Total Estimated Cost (Design Only) ($000)	Preliminary Full Total Estimated Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q FY 2007	1Q FY 2007	2Q FY 2008	2Q FY 2011	1,977	22,200 – 27,000

Fiscal Year	Appropriations ($000)	Obligations ($000)	Costs ($000)
2007	0	0	0

This project has been cancelled.

07-02: TRU Waste Facility, Los Alamos National Laboratory

Fiscal Quarter				Total Estimated Cost (Design Only) ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
3Q FY 2010	TBD	TBD	TBD	TBD	TBD

Fiscal Year	Appropriations	Obligations	Costs
2007	0	0	0
2008	2,452[a]	0	0
2009	7,223	0	0
2010	0	9,312	5,586
2011	5,000	5,363	5,312
2012	TBD[b]	0	3,777

The Department of Energy (DOE) signed an Order of Consent ("Consent Order") with the State of New Mexico, effective March 1, 2005. The Consent Order requires DOE to complete a "fence-to-fence" cleanup of Los Alamos National Laboratory (LANL) by December 29, 2015. "Fence-to-fence" means removal and/or remediation of contaminants that reside in the environment at LANL. As part of the Consent Order, the State of New Mexico has identified four Material Disposal Areas (MDAs) in TA-54. The current set of TRU waste storage and process facilities resides in MDA G. MDA G will undergo a phased closure, consistent with the Consent Order, to be completed by December 29, 2015. It will not be feasible, practical, or realistic to attempt to keep the TRU facilities operational in the midst of Area G closure activities. Therefore, the TRU waste management capability must be reconstituted,

[a] Original FY 2008 appropriation was $2,474,000. This was reduced by $22,091 as a result of a mandatory rescission in the FY 2008 Consolidated Appropriations Act (P.L. 110-161).

[b] Agreements on the planning assumptions and final project requirements will be reached by the 3rd quarter of FY 2010 resulting in any FY 2012 additional PED requests that are required. Therefore, the total PED requirements and FY 2012 requests are presented as TBD. The future design activities will be executed to support both the availability of funding and out year capability alignment.

commissioned, and in operation at a location outside of the closure boundaries, before the corrective actions to close MDA G begins. Closure of MDA G is scheduled to start in FY 2012 and must be completed by December 29, 2015.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met or will be met.

Funds appropriated under this data sheet may be used to provide independent assessments of the planning and execution of this project.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2007[a]	0	0	0
FY 2008	2,452[bc]	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	5,586
FY 2011	5,000	5,363	5,312
FY 2012	TBD	TBD	3,777
Total, PED	TBD	TBD	TBD
Construction			
FY 2008	NA	NA	NA
FY 2009	NA	NA	NA
FY 2010	NA	NA	NA
FY 2011	NA	NA	NA
Total, Construction	NA	NA	NA
TEC			
FY 2007	0	0	0
FY 2008	2,452	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	5,586
FY 2011	5,000	5,363	5,312
FY 2012	TBD	TBD	3,777
Total, TEC	TBD	TBD	TBD

[a] No funds were allocated to this PED Line Item, during the year-long continuing resolution.

[b] These PED funds are entirely for the TRU Waste Facility Project at LANL.

[c] Original FY 2008 appropriation was $2,474,000. This was reduced by $22,091 as a result of a mandatory rescission in the FY 2008 Consolidated Appropriations Act (P.L. 110-161).

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	NA	NA	NA
FY 2008	NA	NA	NA
FY 2009	NA	NA	NA
Total, OPC except D&D	NA	NA	NA
D&D			
FY 2009	NA	NA	NA
Total, D&D	NA	NA	NA
OPC			
FY 2006	NA	NA	NA
FY 2007	NA	NA	NA
FY 2008	NA	NA	NA
FY 2009	NA	NA	NA
Total, OPC	NA	NA	NA
Total Project Cost (TPC)			
FY 2006	NA	NA	NA
FY 2007	NA	NA	NA
FY 2008	2,452	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	5,586
FY 2011	5,000	5,363	5,312
FY 2012	TBD	TBD	3,777
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	TBD	8,432	NA
Contingency	TBD	1,466	NA
Total, PED	TBD	9,898	NA
Construction			
Site Preparation	NA	NA	NA
Equipment	NA	NA	NA
Other Construction	NA	NA	NA
Contingency	NA	NA	NA
Total, Construction	NA	NA	NA
Total, TEC	TBD	9,898	NA
Contingency, TEC	TBD	1,466	NA
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	NA	NA	NA
Conceptual Design	NA	NA	NA
Start-Up	NA	NA	NA
Contingency	NA	NA	NA
Total, OPC except D&D	NA	NA	NA
D&D			
D&D	NA	NA	NA
Contingency	NA	NA	NA
Total, D&D	NA	NA	NA
Total, OPC	NA	NA	NA
Contingency, OPC	NA	NA	NA
Total, TPC	NA	NA	NA
Total, Contingency	NA	NA	NA

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2010	TEC	9,898	0	0	0	0	0	0	0	9,898
	OPC	0	0	0	0	0	0	0	0	0
	TPC	9,898	0	0	0	0	0	0	0	9,898
FY 2011	TEC	9,675	0	5,000	0	0	0	0	0	14,675
	OPC	0	0	0	0	0	0	0	0	0
	TPC	9,675	0	5,000	0	0	0	0	0	14,675

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	NA
Expected Useful Life (number of years)	NA
Expected Future Start of D&D of this capital asset (fiscal quarter)	NA

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	NA	NA	NA	NA
Maintenance	NA	NA	NA	NA
Total, Operations & Maintenance	NA	NA	NA	NA

9. Required D&D Information

Area	Square Feet
Area of new construction	NA
Area of existing facility(s) being replaced	NA
Area of additional D&D space to meet the "one-for-one" requirement	NA

Name(s) and site location(s) of existing facility(s) to be replaced: Not applicable for PED.

10. Acquisition Approach

Not applicable for PED.

06-D-140, Project Engineering and Design (PED), Various Locations
Project Data Sheet (PDS) is for PED (multiple projects)

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) for the Radioactive Liquid Waste Treatment Facility Upgrade (RLWTF) Project is CD-2A, Approval of Performance Baseline for the Zero Liquid Discharge subproject. CD-2A was approved on 11/22/2006 with a total project cost (TPC) of $9,579,000 and CD-4 of September 2012. CD-1 for the RLWTF project was approved on 6/5/2006 with a preliminary cost range of $82,000,000 to $104,000,000. An internal reprogramming occurred in FY 2009 which increased the RLWTF PED by $4,900,000.

The TA-55 Radiography Facility Project has been cancelled and all funds have been realigned to the Radioactive Liquid Waste Treatment Facility Project.

The most recent DOE O 413.3A approved CD for the TA-55 Reinvestment Project (TRP) Phase I is CD-3, Approval of Construction Start, on March 6, 2009 with a TPC of $21,478,000 and CD-4 of September 2010. A Federal Project Director at the appropriate level has been assigned to the TRP I Project.

The most recent DOE O 413.3A approved CD for the TA-55 Reinvestment Project (TRP) Phase II is CD-2A, Approval of Performance Baseline for Air Dryers and Glovebox Group 1. CD-2A was approved on November 24, 2009, with a TPC of $19,500,000 and a CD-4A date of October 2013. A Federal Project Director at the appropriate level has been assigned to the TRP II Project.

The Uranium Processing Facility (UPF) Project was previously appropriated in this PDS. However, Congress directed in the FY 2010 Conference Report accompanying P.L. 111-85 that the project be separated out as its own data sheet. All future PED requests for the UPF Project are now contained in the data sheet 06-D-141.

This PDS is an update of the FY 2009 internal reprogramming notification PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2006	Various	1QFY2006	3QFY2009	Various	Various	Various	Various	Various
FY 2007	Various	1QFY2006	3QFY2009	Various	Various	Various	Various	Various
FY 2008	Various	1QFY2006	3QFY2009	Various	Various	Various	Various	Various
FY 2009	Various	1QFY2006	2QFY2012	Various	Various	Various	Various	Various
FY 2009 Reprogramming	Various	1QFY2006	2QFY2013	Various	Various	Various	Various	Various
FY 2010	Various	1QFY2006	2QFY2013	Various	Various	Various	Various	Various
FY 2011	Various	1QFY2006	2QFY2012[a]	Various	Various	Various	Various	Various

[a] Reflects removal of UPF PED (06-D-140-05) from this PDS.

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status[a]

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2006	92,213	N/A	92,213	N/A	N/A	N/A	92,213
FY 2007	108,795	N/A	108,795	N/A	N/A	N/A	108,795
FY 2008	TBD	N/A	TBD	N/A	N/A	N/A	TBD
FY 2009	343,619	N/A	343,619	N/A	N/A	N/A	343,619
FY 2009 Reprogramming	365,551	N/A	365,551	N/A	N/A	N/A	365,551
FY 2010	342,855	N/A	342,855	N/A	N/A	N/A	342,855
FY 2011	192,929	N/A	192,929[b]	N/A	N/A	N/A	192,929

4. Project Description, Justification, and Scope

This project provides for Architect-Engineering (A-E) services for Readiness in Technical Base and Facilities (RTBF) construction projects, allowing designated projects to proceed from conceptual design into preliminary design and final design. The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction costs based on the approved design and working drawings and specifications, and provide construction schedules, including procurements. The designs will be extensive enough to establish performance baselines and to support construction or long-lead procurements in the fiscal year in which line item construction funding is requested and appropriated.

Conceptual design studies are prepared for each project using Operations and Maintenance funds prior to receiving design funding under a PED line item. These conceptual design studies define the scope of the project and produce a rough cost estimate and schedule.

FY 2006 PED design projects are described below. Some changes have occurred due to continuing conceptual design studies or developments occurring after submission of this data sheet. These changes have been reflected in subsequent years. Preliminary estimates for the cost of preliminary and final design and engineering efforts for each subproject are provided, as well as very preliminary estimates of the total estimated cost (TEC), including physical construction, of each subproject. The final TEC and the TPC for each project described below will be validated and the Performance Baseline will be established at CD-2, following completion of preliminary design.

[a] The TEC is for design only for the subprojects currently included in this data sheet.

[b] Reflects removal of all future UPF PED (06-D-140-05) from this PDS.

TA-55 Reinvestment (TRP) Phase I has an approved baseline. The remaining projects listed in this data sheet do not have an approved performance baseline; therefore, all costs and schedule are preliminary until CD-2 is approved.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

Funds appropriated under this data sheet may be used to provide independent assessments of the planning and execution of these projects.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2006	12,379	10,000	362
FY 2007	16,577	14,600	8,441
FY 2008	41,552	40,562	39,058
FY 2009	106,421	111,767	92,080
FY 2010	12,000	11,000	39,634
FY 2011	4,000	5,000	12,154
FY 2012	0	0	1,200
Total, PED	192,929	192,929	192,929
Construction			
FY	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC (PED)			
FY 2006	12,379	10,000	362
FY 2007	16,577	14,600	8,441
FY 2008	41,552	40,562	39,058
FY 2009	106,421	111,767	92,080
FY 2010	12,000	11,000	39,634
FY 2011	4,000	5,000	12,154
FY 2012	0	0	1,200
Total TEC (PED)	192,929	192,929	192,929
Other Project Cost (OPC)			
Total, OPC except D&D	TBD	TBD	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
D&D			
Total, D&D	TBD	TBD	TBD
OPC			
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
Total, TPC	TBD	TBD	TBD

06-01: TA-55 Radiography Facility, Los Alamos National Laboratory (LANL)

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
TBD	TBD	TBD	TBD	6,336	29,000-47,000

Fiscal Year	Appropriations	Obligations	Costs
2006	0	0	0
2007[a]	0	0	0
2008[b]	0	0	0

The TA-55 Radiography Project has been cancelled. Funds have been reprogrammed to subproject 06-03, Radioactive Liquid Waste Treatment Facility Project.

[a] Of the total funds appropriated in FY 2006 for this project 06-D-140, the entire $141,130 or 1 percent rescission included in the Consolidated Appropriations Act, 2006 (P.L. 109-148) was applied against subproject 06-01, TA-55 Radiography Facility.

[b] Of the $2,500,000 funds appropriated in FY 2008 for 06-D-140.01, a reduction of $1,510,000 was included in the Consolidated Appropriations Act, 2008 against subproject 06-01, TA-55 Radiography Facility.

06-02: TA-55 Reinvestment Project Phases I and II, LANL

TA-55 Reinvestment Phase I

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
3QFY2006	4QFY2009	3QFY2009	1QFY2011	4,400	21,478

Fiscal Year	Appropriations	Obligations	Costs
2006	2,000	2,000	0
2007	1,500	1,500	1,744
2008	540	540	1,743
2009	0	0	553
Total	4,040[a]	4,040	4,040

TA-55 Reinvestment Phase II

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
4QFY2008	1QFY2012	TBD	TBD	14,524	$75.4M – $99.9M

Fiscal Year	Appropriations	Obligations	Costs
2008	1,439[a]	1,439	24
2009	8,245	8,245	3,406
2010	4,000	4,000	4,900
2011	0	0	4,154
2012	0	0	1,200
Total	13,684	13,684	13,684

A phased acquisition strategy has been developed for the TRP project. The TRP project is proposed for execution as three separate, distinct capital line item projects, TRP I, TRP II, and TRP III. The PED funding requested above supports the first two phases of TRP. PED funding for the TRP III project to be considered in the future under a separate data sheet.

The TA-55 Reinvestment Project is intended to provide for selective replacement and upgrades of major facility and infrastructure systems to NNSA's key nuclear weapons research and development facility, the Plutonium Facility (PF-4) and related structures, located at LANL's TA-55. The objective of the TA-55 Reinvestment Project is to extend the useful life of PF-4 and the safety systems that support its critical operations to assure continued capability to reliably support Defense Programs missions for an

[a] $360,000 was transferred from TA-55 Reinvestment Project Phase I to Reinvestment Project Phase II.

additional 25 years. The project will ensure the vitality and readiness of the NNSA nuclear security enterprise to meet the threat of the 21st century.

The PF-4's major facility and infrastructure systems are aging and approaching the end of their service life, and, as a consequence, are beginning to require excessive maintenance. As a result, the facility is experiencing increased operating costs and reduced system reliability. Compliance with safety and regulatory requirements is critical to mission essential operations, and thus becoming more costly and cumbersome to maintain due to the physical conditions of facility support systems and equipment. This project will enhance safety and enable cost effective operations so that the facility can continue to support critical Defense Programs missions and activities.

The scope of this project includes upgrading, replacing, and retrofitting TA-55 facility and infrastructure systems such as mechanical (heating ventilation and air conditioning; high efficiency particulate air), electrical (standby and emergency power), and utility systems (process gasses and liquids, piping), safety, facility monitoring and control, structural components, architectural (i.e., coatings), and other systems and components, as candidate options. The candidate systems and scope have been defined by the facility and program management staff with engagement by the LANL facility maintenance organization through a prioritized, risk-based selection process during the pre-conceptual phase that has been refined during conceptual design.

06-03: Radioactive Liquid Waste Treatment Facility Upgrade, LANL

Fiscal Quarter				Total Estimated Cost (Design Only[a] ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
3QFY2006	TBD	TBD	TBD	35,000	58,000-80,000[b]

[a] The PED funds will be used to execute preliminary and final design for the Nuclear Facility and preliminary design for the Zero Liquid Discharge (ZLD). The final design of the ZLD will be executed using line item funding based on the design/build acquisition strategy.

[b] The TEC and Total Project Cost TPC for this project are based on conceptual design estimate range and are consistent with previous budget requests. The final cost estimate developed with the final design will be used to establish the performance baseline at CD-2.

Fiscal Year	Appropriations	Obligations	Costs
2006	5,379[a]	3,000	362
2007	10,077[b]	8,100	6,020
2008	990[c]	0	3,341
2009	7,554[d]	12,900	8,937
2010	8,000	7,000	9,340
2011	4,000	5,000	8,000
Total	36,000	36,000	36,000

The radioactive liquid waste (RLW) treatment and disposal capability at Los Alamos National Laboratory supports 15 technical areas, 63 buildings, and 1,800 sources of RLW. This capability must be continuously available to receive and treat liquid waste generated from Stockpile Stewardship activities. LANL has a 50-year mission need for facilities and processes that can accept, store, and treat RLW in support of this long-term mission.

Significant portions of the RLW system are over 40 years old and their reliability is significantly diminishing. The recent transuranic storage tank failure demonstrated the inability of RLW components to remain in service beyond their design life. The treatment facility is in need of significant upgrades in order to comply with current codes and standards including International Building Code, seismic design/construction codes and the National Electric Code (NEC). Recent authorization basis decisions regarding connected facilities at TA-50, where the treatment facility is located, have highlighted the need for enhanced seismic conformance. Continuous workarounds are required to keep systems running and excessive corrosion threatens system availability. Degraded and outdated facility systems pose elevated risk to workers.

This project will re-capitalize, at a minimum, the following RLW treatment capabilities at LANL and reduce the liquid discharge to Mortandad Canyon to zero:
- Transuranic (TRU) waste treatment,
- Low-level waste (LLW) treatment,
- Secondary waste treatment,
- RLW discharge system/(ZLD), and
- TRU influent storage.

[a] Original FY 2006 appropriation was $3,000,000. At the discretion of the Program Secretarial Officer, $1,859,000 was transferred from 06-01 and $520,000 was transferred from 06-04.

[b] Original FY 2007 appropriation was $8,100,000. At the discretion of the Program Secretarial Officer, $1,977,000 was transferred from 06-01.

[c] Original FY 2008 appropriation was $0. At the discretion of the Program Secretarial Officer, $990,000 was transferred from 06-01.

[d] Original FY 2009 appropriation was $0. $2,654,000 was realigned from 06-D-140-05, PED UPF, in FY 2009. An internal reprogramming realigned $4,900,000 from 07-D-220, RLWTF to 06-D-140-03, PED RLWTF in FY 2009.

06-05, Uranium Processing Facility, Y-12 National Security Complex

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Cost Range ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2QFY2006	2QFY2014	TBD	TBD	311,627	$1,400,000-3,500,000

(dollars in thousands)

	Appropriations	Obligations	Costs
2006	5,000	5,000	0
2007	5,000	5,000	677
2008	38,583	38,583	33,950
2009	90,622[a]	90,622	79,184
2010	0	0	25,394
Total	139,205	139,205	139,205

All future PED funding requests for the UPF subproject have moved to 06-D-141 as directed by Congress in the FY 2010 Conference Report accompanying P.L. 111-85.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, PED	N/A	N/A	N/A
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, Construction	N/A	N/A	N/A
Total, TEC	N/A	N/A	N/A
Contingency, TEC	N/A	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	N/A	N/A	N/A
Start-Up	N/A	N/A	N/A

[a] Original FY 2009 appropriation was $93,276,000. $2,654,000 was realigned to 06-D-140-03, PED RLWTF, in FY 2009.

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Contingency	N/A	N/A	N/A
Total, OPC except D&D	N/A	N/A	N/A
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	N/A	N/A	N/A
Contingency, OPC	N/A	N/A	N/A
Total, TPC	N/A	N/A	N/A
Total, Contingency	N/A	N/A	N/A

7. Schedule of Total Project Costs[a]

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2010	TEC	172,029	70,678	55,216	50,000	12,728				360,651
	OPC									0
	TPC	172,029	70,678	55,216	50,000	12,728	0	0	0	360,651
FY 2011	TEC	176,929	12,000	4,000	0	0	0			192,929
	OPC									0
	TPC	176,929	12,000	4,000	0	0	0	0	0	192,929

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	Various
Expected Useful Life (number of years)	Various
Expected Future Start of D&D of this capital asset (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations		N/A		N/A
Maintenance		N/A		N/A
Total, Operations & Maintenance		N/A		N/A

[a] FY 2011 row reflects removal of all future PED funding requests for 06-D-140-05, UPF Project from this PDS.

9. Required D&D Information

Area	Square Feet
Area of new construction	N/A
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced: N/A

10. Acquisition Approach

Not applicable for PED.

06-D-141, Uranium Processing Facility, Y-12 National Security Complex,
Oak Ridge, Tennessee
Project Data Sheet (PDS) is for Preliminary Engineering and Design (PED) and Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range. CD-1 was approved on 07/25/2007 with a cost range of $1,400,000,000 to $3,500,000,000 and a CD-4 of September 2018.

This PDS combines both design and construction funding for the UPF project.

This request reduces the schedule risk by allowing early start of site preparation. With these funds the project will be able to excavate the foundation, prepare the surrounding area for work and be positioned to initiate full construction in FY 2012.

A Federal Project Director at the appropriate level has been assigned to this project.

This project data sheet is new for FY 2011; however, it continues the efforts started under 06-D-140, Project Engineering & Design, VL. In FY 2010, Congress directed that PED for the UPF project be separated from the other PED projects in the previous data sheet, 06-D-140 to improve oversight of this project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	12/17/04	07/25/07	2QFY2014	TBD	TBD	TBD	TBD	TBD

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete –Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	351,149	935,000 – 1,604,000	1,124,00 - 1,928,000	276,000 - 472,000	TBD	TBD	1,400,000 – 3,500,000

4. Project Description, Justification, and Scope

Project Description

The Uranium Processing Facility (UPF) is a major system acquisition that was selected in the Record of Decision for the Complex Transformation Supplemental Programmatic Environmental Impact Statement to ensure the long-term viability, safety, and security of the Enriched Uranium (EU) capability at the Y-12 National Security Complex. The UPF will provide new facilities and equipment to consolidate all EU operations at Y-12 into a single, modern facility with state-of-the-art technologies and safeguards and security concepts and strategies. The goals and objectives of UPF are:

- Ensure the long-term capability and improving the reliability of EU operations through consolidation of facilities;
- Replace deteriorating, end-of-life facilities with a modern manufacturing facility;
- Significantly improve the health and safety posture for workers and the public by replacing administrative controls with engineered controls to manage the risks related to worker safety, criticality safety, fire protection, and environmental compliance;
- Accomplish essential upgrades to security at Y-12 necessary to carry out mission-critical activities and implement the Graded Security Protection Policy, and
- Allow the Y-12 site to accomplish a 90 percent reduction in its high-security footprint.

Justification

The UPF is needed to ensure the long-term viability, safety, and security of the EU capability at Y-12 in Oak Ridge, Tennessee. The UPF will support the Nation's nuclear weapons stockpile, down blending of EU in support of nonproliferation, and provide uranium as feedstock for fuel for naval reactors. Currently these capabilities reside in aged and "genuinely decrepit" facilities as noted by the Perry Commission. There is substantial risk that the existing facilities will continue to age to the point of significant impact to Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors programs. The impacts could result in loss of the U.S. capability to maintain the nuclear weapons stockpile through life extension programs, shutdown of the U.S. Navy nuclear powered fleet due to lack of EU fuel feedstock materials, and impact to the Defense Nuclear Nonproliferation program's ability to reduce the enrichment level of foreign research reactors through supply of lower enrichment fuels manufactured at Y-12. The risk of inadvertent or accidental shutdown of the existing facilities is high. Due to the increasing risk a planned shutdown may be necessary prior to completion and startup of a replacement facility, i.e., the UPF.

The UPF will reduce annual operating cost for Y-12 in excess of $200,000,000 per year through the consolidation of facilities, reduced transfer of materials, reduction in emissions and waste management, reduction in protective forces required for security, and efficiency gains resulting from the reduction of the Protected Area footprint. The UPF will also save approximately $3,200,000,000 (net present value dollars) over the life of the project.

Scope

The UPF will consolidate all Category I and II EU operations into a single, modern facility with state-of-the-art technologies and safeguards and security concepts and strategies. UPF will include facilities and equipment required to accomplish the following EU processing operations

- Disassembly and dismantlement of returned weapons subassemblies;
- Assembly of subassemblies from refurbished and new components;
- Quality evaluation to assess future reliability of weapons systems in the stockpile;
- Product certification (dimensional inspection, physical testing, and radiography);
- EU metalworking, and
- Chemical processing including conversion of scrap and salvage EU to metal, stable, or disposable forms.

The EU processing operations will be housed in a multi-story, reinforced concrete building. The primary building will be seismically designed to protect the building and its contents as required by the applicable safety analysis. A combination of reinforced concrete, concrete masonry units and metal stud and gypsum board walls will be used for interior partitions. The building provides space for EU processing systems and will also house supporting and administrative areas.

The existing site Perimeter Intrusion Detection and Alarm System (PIDAS) or similar system will be extended to enclose UPF within the same Protected Area as the Highly Enriched Uranium Materials Facility (HEUMF). Additional portals will be included to permit access to the facility. Access and alarm systems will be provided as required to meet the site security requirements.

A Fire Water tie in line to the HEUMF will also be provided. Systems will be provided to accommodate the transfer of nuclear and non-nuclear materials between UPF and other Y-12 facilities.

The project will be conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

Funds appropriated under this data sheet may be used to provide independent assessments of the planning and execution of this project.

FY 2011 activities include preliminary and final design activities for the facility and associated services and equipment. As part of the project planning activities to be conducted, the project is considering the option of awarding multiple CD-2 and CD-3 packages in FY 2011 for smaller, more manageable, projects in order to ensure commitments for cost and schedule are met. These activities may include long-lead procurement of a number of specialty systems and components which involve equipment manufacturer design, in order to meet the construction schedule and installation as well as for readiness testing prior to start of operations. Also, early start of site preparation and site utilities may be sought to prepare the surrounding area for work and position the project to undertake full construction activities in FY 2012. No funding will be used for these purposes until a limited project performance baseline has been validated and the appropriate milestone in accordance with DOE O 413.3A has been approved.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED[a]			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622[b]	90,622	75,000
FY 2010	94,000	94,000	90,000
FY 2011	115,016	115,016	73,491
FY 2012	2,928	2,928	26,787
FY 2013	0	0	30,376
FY 2014	0	0	20,868
Total, PED	351,149	351,149	351,149
Construction			
FY 2011	0	TBD	TBD
FY 2012	102,472	TBD	TBD
FY 2013	189,987	TBD	TBD
FY 2014	270,012	TBD	TBD
FY 2015	320,000	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622	90,622	75,000
FY 2010	94,000	94,000	90,000

[a] PED for FY 2006 – FY 2009 was appropriated under 06-D-140, Project Engineering & Design, VL.
[b] $2,654,000 was realigned within 06-D-140, PED, VL from the UPF subproject to the Radioactive Liquid Waste Treatment Facility Upgrade subproject, in FY 2009.

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2013	189,987	TBD	TBD
FY 2014	270,012	TBD	TBD
FY 2015	320,000	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC, except D&D			
FY 2005	12,113	12,113	12,113
FY 2006	7,809	7,809	7,809
FY 2007	10,082	10,082	10,082
FY 2008	11,730	11,730	11,730
FY 2009	14,000	14,000	14,000
FY 2010	19,296	TBD	TBD
FY 2011	24,179	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2005	12,113	12,113	12,113
FY 2006	12,809	12,809	7,809
FY 2007	15,082	15,082	10,759
FY 2008	50,313	50,313	45,680
FY 2009	104,622	104,622	93,184
FY 2010	113,296	113,296	129,374
FY 2011	139,195	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	286,149	N/A	N/A
Contingency	65,000	N/A	N/A
Total, PED	351,149	N/A	N/A
Construction			
Site Preparation	TBD	N/A	N/A
Equipment	TBD	N/A	N/A
Other Construction	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, Construction	TBD	N/A	N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D	TBD	N/A	N/A
Conceptual Planning	TBD	N/A	N/A
Conceptual Design	TBD	N/A	N/A
Start-Up	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	N/A
D&D			
D&D	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, D&D	TBD	N/A	N/A
Total, OPC	TBD	N/A	N/A
Contingency, OPC	TBD	N/A	N/A
Total, TPC	TBD	N/A	N/A
Total, Contingency	TBD	N/A	N/A

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2011	TEC	139,205	94,000	115,016	105,400	189,987	270,012	320,000	TBD	TBD
	OPC	55,734	19,296	24,179	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	194,939	113,296	139,195	TBD	TBD	TBD	TBD	TBD	TBD

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	TBD
Expected Useful Life (number of years)	50
Expected Future start of D&D for new construction (fiscal quarter)	TBD

(Related Funding requirements)

	Annual Costs		Life cycle costs (2018-2068)	
	Current estimate	Prior Estimate	Current estimate	Prior Estimate
Operations	138,000	N/A	6,900,000	N/A
Maintenance	32,000	N/A	1,600,000	N/A
Total, Operations & Maintenance	170,000	N/A	8,500,000	N/A

9. Required D&D Information

Area	Square Feet
Area of new construction	400,000
Area of existing facility(s) being replaced	0
Area of additional D&D space to meet the "1.5 to 1" requirement	600,000

The construction of UPF will add approximately 400,000 square feet of new facilities to the Y-12 footprint and will replace functions in all or parts of the following facilities within the Y-12 Complex.

- Areas of Building 9212 that house EU casting and EU chemical processing operations,
- Areas of Building 9215 and 9998 that house EU metal working, EU machining operations and inspection, and
- Building 9204-2E which houses Assembly, Disassembly/ Dismantlement, Quality Evaluation and Product Certification operations.

The final decontamination and decommissioning (D&D) and demolition of these areas are not considered a part of the UPF project.

The D&D of Building 9212 is included in the Integrated Facility Disposition Project (IFDP) which is currently being proposed by the Environmental Management (EM) Program, DOE Oak Ridge Operations Office, Y-12 and Oak Ridge National Laboratory (ORNL) to dispose of legacy facilities at both Y-12 and the ORNL. Building 9215 and 9998 will not become immediately or completely excess

and available for demolition since it also contains depleted uranium manufacturing facilities; ongoing modernization plans for Y-12 are considering further consolidation of non-Special Nuclear Material (SNM) manufacturing functions and determine the potential for the demolition of Buildings 9215 and 9998 as well as the possible reuse of Building 9204-2E. Accordingly, NNSA does not intend to provide funding for the UPF D&D within the Integrated Construction Program Plan (ICPP).

The project will meet the requirement to eliminate facilities of an equivalent size (NNSA policy modified the offset requirement factor to 1.5 starting in FY 2009) of UPF as required by the FY 2002 Energy and Water Development Appropriations Bill conference Report (107-258) by using Y-12's "banked excess." At the end of FY 2008 Y-12's confirmed "banked excess" balance which was reported February 9, 2009, is 954,841 square feet. At the time UPF construction is complete, the balance of Y-12's "banked excess" available to offset the footprint added by UPF is projected to be in excess of one million square feet.

10. Acquisition Approach

The Management and Operating (M&O) contractor for Y-12 under the leadership and direction of the Y-12 Site Office Federal Project Director and the Federal Integrated Project Team will be responsible for the execution of the project. The Office of Defense Programs is the responsible NNSA organization. The UPF will be executed under a design-bid-build project delivery system in which the design will be performed by one or more Architect-Engineers (A-E's) and construction will be performed by multiple fixed-price Construction Contractors (CC's). Both the A-E's and CC's will be subcontracted through the M&O contractor.

To the extent practical, subcontracts for Title I & II design services, and Title III engineering services will be competitively bid, cost-type subcontracts that are awarded on the basis of best value-based to the Government.

To the extent practical, all construction work and procurements will be accomplished under competitively bid, fixed-price subcontracts. The CC's will be responsible for execution of all construction including site preparation, building construction, equipment installation and contractor acceptance testing.

The M&O contractor will provide project management, administer the A-E and CC subcontracts, act as the design authority for UPF systems, provide designated Authorities Having Jurisdiction (AHJ) for code interpretations, provide technical support to NNSA for the preparation and review of NEPA documentation, prepare construction and operating permit applications, provide technical and operational support to, and oversight of the A-E and CC manager, and be responsible for all commissioning and start-up activities. The M&O contractor may also do limited design and procurement of unique or specialty type equipment. The M&O contractor will provide maintenance support to the CC as required to accomplish tie-ins to existing plant systems and will provide health and safety oversight of the CC and his subcontractors.

04-D-125, Chemistry and Metallurgy Research Building Replacement (CMRR) Project, Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The CMRR project will construct two principal structures in three project phases. The first phase provides funding to construct the Radiological Laboratory/Utility/Office Building (RLUOB). The second phase, the RLUOB Equipment Installation (REI) effort, procures and installs the Special Facility Equipment (SFE) for the RLUOB. The third phase constructs the Nuclear Facility (NF). The FY 2011 data sheet is restructured to present the budget, costs, baselines and activities for each of the three phases more clearly.

RLUOB: The most recent DOE O 413.3A approved Critical Decision (CD) is CD-3, Approve Start of Construction on October 21, 2005 with a TPC of $164,000,000 and a CD-4 date of February 28, 2010. Construction of the building structure and related systems has been successfully completed.

REI: The most recent DOE O 413.3A approved CD is CD-2/3, Approve Performance Baseline and Start of Construction on July 17, 2009 with a TPC of $199,400,000 and a CD-4 date of April 30, 2013. This phase of the project is currently underway.

NF: The most recent DOE O 413.3A approved CD is CD-1, Approve Alternative Selection and Cost Range. CD-1 was approved on May 18, 2005. After advancement of the design effort, changes in the assumptions for site seismic data, incorporation of lessons learned from previous nuclear projects in nuclear quality assurance construction, resolution of safety concerns identified by the Defense Nuclear Facilities Safety Board, and incorporation of commercial data on material costs and estimated escalation assumptions, the current preliminary cost estimate is over $2,000,000,000 and estimated start of operations by FY 2022.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is an update of the FY 2010 PDS.

2. Design, Construction, and D&D Schedule

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete[a]
FY 2004	7/16/2002	1QFY2004	3QFY2006		2QFY2004	1QFY2011	N/A	N/A
FY 2005	7/16/2002	3QFY2004	3QFY2007		3QFY2005	3QFY2012	N/A	N/A
FY 2006	7/16/2002	2QFY2005	1QFY2007	4QFY2005	1QFY2006	4QFY2010	N/A	N/A
FY 2007	7/16/2002	9/30/2005	2QFY2007	1QFY2006	1QFY2006	1QFY2013	TBD	TBD
FY 2008	7/16/2002	9/30/2005	2QFY2009	10/21/2005	1QFY2006	1QFY2013	TBD	TBD

[a] CMR D&D will not be initiated until final start-up of CMRR Nuclear Facility operations, currently projected to occur no earlier than FY 2020. Inclusion of CMR D&D in the FY 2011 budget request is premature. Approval of CD-0 provides formal recognition by DOE/NNSA of the requirement for D&D of the existing CMR Building.

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete[a]
FY 2009	7/16/2002	9/30/2005	3QFY2010	TBD	TBD	TBD	TBD	TBD
FY 2010	7/16/2002	9/30/2005	3QFY2011	TBD	TBD	TBD	TBD	TBD

RLUOB Facility

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	7/16/2002	5/18/2005	N/A	10/21/2005	10/21/2005	2/28/2010	TBD	TBD

RLUOB Equipment Installation

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	7/16/2002	5/18/2005	12/19/2007	7/17/2009	7/17/2009	4/30/2013	TBD	TBD

Nuclear Facility

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	7/16/2002	5/18/2005	12/19/2007	TBD	TBD	TBD	TBD	TBD

CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2004	N/A	N/A	500,000	100,000	N/A	N/A	600,000
FY 2005	N/A	N/A	500,000	100,000	N/A	N/A	600,000
FY 2006	N/A	N/A	750,000	100,000	N/A	N/A	850,000
FY 2007	N/A	N/A	738,097	100,000	N/A	N/A	838,097
FY 2008	65,939	672,158	738,097	100,000	N/A	N/A	838,097
FY 2009	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2010	65,138	TBD	TBD	TBD	TBD	TBD	TBD

RLOUB Facility

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	N/A	159,130	159,130	4,870	TBD	TBD	164,000

RLUOB Equipment Installation

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	N/A	152,900	152,900	46,500	TBD	TBD	199,400

Nuclear Facility

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	65,138	TBD	TBD	TBD	TBD	TBD	TBD

4. Project Description, Justification, and Scope

Project Description

The CMRR Project seeks to relocate and consolidate mission critical analytical chemistry, material characterization (AC/MC), and actinide research and development (R&D) capabilities, as well as providing SNM storage and large vessel handling capabilities to ensure continuous national security mission support capabilities at LANL.

Justification

In January 1999, the NNSA approved a strategy for managing risks at the CMR Building. This strategy recognized that the 50-year-old CMR Facility could not continue its mission support at an acceptable level of risk to public and worker health and safety without operational restrictions. In addition, the strategy committed NNSA and LANL to manage the existing CMR Building to a planned end of life, then projected to be in the 2010 timeframe, and to develop long-term facility and site plans to replace and relocate CMR capabilities elsewhere at LANL as necessary to maintain support of national security missions. CMR capabilities are currently substantially restricted; additionally, in order to reduce costs and risks in operating the aging CMR facility, wing consolidation has occurred. These operational restrictions preclude the full implementation of the level of operations DOE/NNSA requires as documented through the Record of Decision for the 2008 LANL Site-Wide Environmental Impact Statement, and in the 2008 Complex Transformation Supplemental Programmatic Environmental Impact Statement. The CMRR project will relocate mission-critical CMR capabilities at LANL to Technical Area (TA)-55 near the existing Plutonium Facility (Building PF-4). The CMRR Project will also provide for SNM storage capabilities in order to sustain national security missions at LANL, and reduce risks to the public and workers as described in the November 2003 Final Environmental Impact Statement for CMRR and approved in the February 2004 CMRR EIS Record of Decision.

Scope

The CMRR project consists of designing, constructing and achieving operational readiness for two discrete facilities to meet the national security missions assigned to LANL.

- RLUOB: Construction of a facility to house laboratory space of approximately 19,500 net square feet capable of handling radiological (<8.4g Pu^{239} equivalent) quantities of Special Nuclear Materials (SNM); a utility building sized to provide utility services (including chilled and hot water, potable hot/cold water, compressed air, and process gases) for all CMRR facility elements; office space for CMRR workers located outside of perimeter security protection systems; and space for centralized TA-55 training activities. The RLUOB becomes fully functional and operational after the completion of the equipment installation effort for this facility in the REI phase.

- REI: Equipment installation includes gloveboxes, hoods, AC/MC instrumentation, security and communication hardware, and final facility tie-ins and operational readiness/turnover activities. The performance baseline for the RLUOB Equipment Installation effort was approved on July 17, 2009. Funding for the design, procurement, and installation/construction of the RLUOB equipment installation portion is supported through this data sheet.

- NF: Consists of the design, construction, and operational readiness of approximately 22,500 net square feet of Hazard Category II, Security Category I nuclear laboratory space for analytical chemistry/material characterization and actinide research & development operations. Additionally, this facility will include SNM Storage and space to accommodate large vessel handling. Initial site utilities and construction support activities and all associated Special Facilities Equipment (SFE) for the NF, which includes gloveboxes, hoods, and materials transfer system, will be addressed in the baseline for the NF. The CMRR NF capabilities support virtually all nuclear programs at LANL, including pit certification and surveillance, pit manufacturing, and waste operations. Additionally, the CMRR NF will operate in an integrated fashion with the existing PF-4 facility to incorporate production efficiencies and minimize operating costs. The opportunity to improve performance in both the engineering and construction activities will continue to be evaluated to optimize cost and schedule performance.

In FY 2011, funding will be used for RLUOB equipment fabrication, installation, testing, and acceptance. This work will be physically completed by the end of FY 2012, with a transition to operations by 2Q FY 2013.

In FY 2011, funds will also be used to advance the final design of the NF. Safety concerns for the NF previously identified by the Defense Nuclear Facilities Safety Board (DNFSB) were certified as resolved by the two agencies (DNFSB and the NNSA) on September 14, 2009. To enable completion of dedicated NF design, design engineering and analysis will continue for a select number of safety components by manufacturers. Since the NF requires such a large effort, in FY 2011 within this Project Data Sheet, the project team is exploring options of segmenting some of the work into smaller, more manageable, projects with their own CD-2, TPC and CD-4 dates. These activities may include procurement/modification of site utilities, construction support infrastructure, and soil improvement work. No funding will be used for these purposes until a project performance baseline has been validated and the appropriate milestone in accordance with DOE O 413.3A has been approved for these smaller projects.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements are being met.

Funds appropriated for this project may be used to provide independent assessments and other direct support determined necessary by the FPD for the planning and execution of this project.

5. Financial Schedule

RLUOB Facility

(dollars in thousands)

	Appropriations	Obligations	Costs
TEC			
FY 2004	9,941	0	0
FY 2005	39,684	49,625	0
FY 2006	54,450	54,450	15,933
FY 2007	41,933	41,933	29,364
FY 2008	13,122	13,122	50,085
FY 2009	0	0	58,348
FY 2010	0	0	5,400
Total, TEC	159,130	159,130	159,130
OPC[a]			
FY 2008	0	0	1,153
FY 2009	4,870	4,870	2,455
FY 2010	0	0	1,262
Total, OPC	4,870	4,870	4,870
Total Project Cost (TPC)			
FY 2004	9,941	0	0
FY 2005	39,684	49,625	0
FY 2006	54,450	54,450	15,933
FY 2007	41,933	41,933	29,364
FY 2008	13,122	13,122	51,238
FY 2009	4,870	4,870	60,803
FY 2010	0	0	6,662
Total, TPC	164,000	164,000	164,000

[a] OPCs for CMRR were not segregated by project phase until FY 2009. Aggregate OPCs for earlier years are reported with the NF.

RLUOB Equipment Installation (REI)

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED	0	0	0
Total, PED (PED 03-D-103-01)	0	0	0
Final Design			
FY 2007	11,489	11,489	2,959
FY 2008	2,009	2,009	9,410
FY 2009	0	0	1,129
Total, Final Design (TEC 04-D-125)	13,498	13,498	13,498
Total, Design	13,498	13,498	13,498
Construction			
FY 2008	19,604	19,604	0
FY 2009	4,998	4,998	3,941
FY 2010	40,000	40,000	60,000
FY 2011	59,000	59,000	55,461
FY 2012	15,800	15,800	20,000
Total, Construction (TEC 04-D-125)	139,402	139,402	139,402
TEC			
FY 2007	11,489	11,489	2,959
FY 2008	21,613	21,613	9,410
FY 2009	4,998	4,998	5,070
FY 2010	40,000	40,000	60,000
FY 2011	59,000	59,000	55,461
FY 2012	15,800	15,800	20,000
Total, TEC	152,900	152,900	152,900
Other Project Cost (OPC)			
OPC except D&D[a]			
FY 2009	3,079	3,079	5,602
FY 2010	10,700	10,700	8,177
FY 2011	14,100	14,100	14,100
FY 2012	14,123	14,123	14,123
FY 2013	4,498	4,498	4,498
Total, OPC except D&D	46,500	46,500	46,500
D&D			
	TBD	TBD	TBD
Total, D&D	TBD	TBD	TBD

[a] OPCs for CMRR were not segregated by project phase until FY 2009. Aggregate OPCs for earlier years are reported with the NF.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
OPC			
FY 2009	3,079	3,079	5,602
FY 2010	10,700	10,700	8,177
FY 2011	14,100	14,100	14,100
FY 2012	14,123	14,123	14,123
FY 2013	4,498	4,498	4,498
Total, OPC	46,500	46,500	46,500
Total Project Cost (TPC)			
FY 2007	11,489	11,489	2,959
FY 2008	21,613	21,613	9,410
FY 2009	8,077	8,077	10,672
FY 2010	50,700	50,700	68,177
FY 2011	73,100	73,100	69,561
FY 2012	29,923	29,923	34,123
FY 2013	4,498	4,498	4,498
Total, TPC	199,400	199,400	199,400

Nuclear Facility

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2004	9,500	0	0
FY 2005	13,567	23,067	1,848
FY 2006	27,910	27,910	19,147
FY 2007	14,161	14,161	27,213
FY 2008	0	0	15,079
FY 2009	0	0	-329
FY 2010	0	0	2,180
Total, PED (PED 03-D-103-01)	65,138	65,138	65,138
Final Design			
FY 2008	39,406	39,406	15,454
FY 2009	92,196	92,196	45,972
FY 2010	57,000	57,000	75,000
FY 2011	166,000	166,000	104,500
FY 2012	102,800	102,800	102,800
FY 2013	60,000	60,000	112,375
Total, Final Design (TEC 04-D-125)	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2011	0	0	0
FY 2012	186,400	186,400	155,200
FY 2013	240,000	240,000	187,625
FY 2014	299,961	299,961	300,000
FY 2015	300,000	300,000	300,000
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Construction (TEC 04-D-125)	TBD	TBD	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2004	9,500	0	0
FY 2005	13,567	23,067	1,848
FY 2006	27,910	27,910	19,147
FY 2007	14,161	14,161	27,213
FY 2008	39,406	39,406	30,533
FY 2009	92,196	92,196	45,643
FY 2010	57,000	57,000	77,180
FY 2011	166,000	166,000	104,500
FY 2012	289,200	289,200	258,000
FY 2013	300,000	300,000	300,000
FY 2014	299,961	299,961	300,000
FY 2015	300,000	300,000	300,000
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	4,865	4,865	1,408
FY 2008	0	0	1,105
FY 2009	52	52	1,018
FY 2010	1,200	1,200	2,000
FY 2011	2,500	2,500	2,500
FY 2012	3,000	3,000	3,000
FY 2013	3,500	3,500	3,500
FY 2014	4,000	4,000	4,000
FY 2015	4,500	4,500	4,550
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D	TBD	TBD	TBD
Total, D&D	TBD	TBD	TBD
OPC			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	4,865	4,865	1,408
FY 2008	0	0	1,105
FY 2009	52	52	1,018
FY 2010	1,200	1,200	2,000
FY 2011	2,500	2,500	2,500

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2012	3,000	3,000	3,000
FY 2013	3,500	3,500	3,500
FY 2014	4,000	4,000	4,000
FY 2015	4,500	4,500	4,550
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	16,714	7,214	7,214
FY 2005	20,731	30,231	9,012
FY 2006	29,310	29,310	20,211
FY 2007	19,026	19,026	28,621
FY 2008	39,406	39,406	31,638
FY 2009	92,248	92,248	46,661
FY 2010	58,200	58,200	79,180
FY 2011	168,500	168,500	107,000
FY 2012	292,200	292,200	261,000
FY 2013	303,500	303,500	303,500
FY 2014	303,961	303,961	304,000
FY 2015	304,500	304,500	304,550
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Overall Project

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED[a]			
FY 2004	9,500	0	0
FY 2005	13,567	23,067	1,848
FY 2006	27,910	27,910	19,147
FY 2007	14,161	14,161	27,213
FY 2008	0	0	15,079
FY 2009	0	0	-329
FY 2010	0	0	2,180
Total, PED (PED 03-D-103-01)	65,138	65,138	65,138
Final Design & Construction (TEC 04-D-125)			
FY 2004	9,941	0	0
FY 2005	39,684	49,625	0

[a] CMRR SFE and NF have completed preliminary design using PED funds included 03-D-103. Design beyond preliminary will be completed using TEC funds included in 04-D-125.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2006	54,450	54,450	15,933
FY 2007	53,422	53,422	32,323
FY 2008	74,141	74,141	74,949
FY 2009	97,194	97,194	109,390
FY 2010	97,000	97,000	140,400
FY 2011	225,000	225,000	159,961
FY 2012	305,000	305,000	278,000
FY 2013	300,000	300,000	300,000
FY 2014	299,961	299,961	300,000
FY 2015	300,000	300,000	300,000
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Final Design & Construction (TEC 04-D-125)	TBD	TBD	TBD
TEC			
FY 2004	19,441	0	0
FY 2005	53,251	72,692	1,848
FY 2006	82,360	82,360	35,080
FY 2007	67,583	67,583	59,536
FY 2008	74,141	74,141	90,028
FY 2009	97,194	97,194	109,061
FY 2010	97,000	97,000	142,580
FY 2011	225,000	225,000	159,961
FY 2012	305,000	305,000	278,000
FY 2013	300,000	300,000	300,000
FY 2014	299,961	299,961	300,000
FY 2015	300,000	300,000	300,000
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	4,865	4,865	1,408
FY 2008	0	0	2,258
FY 2009	8,001	8,001	9,075
FY 2010	11,900	11,900	11,439
FY 2011	16,600	16,600	16,600
FY 2012	17,123	17,123	17,123
FY 2013	7,998	7,998	7,998

	(dollars in thousands)		
	Appropriations	Appropriations	Appropriations
FY 2014	4,000	4,000	4,000
FY 2015	4,500	4,500	4,550
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D[a]			
	TBD	TBD	TBD
Total, D&D	TBD	TBD	TBD
OPC			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	4,865	4,865	1,408
FY 2008	0	0	2,258
FY 2009	8,001	8,001	9,075
FY 2010	11,900	11,900	11,439
FY 2011	16,600	16,600	16,600
FY 2012	17,123	17,123	17,123
FY 2013	7,998	7,998	7,998
FY 2014	4,000	4,000	4,000
FY 2015	4,500	4,500	4,550
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	26,655	7,214	7,214
FY 2005	60,415	79,856	9,012
FY 2006	83,760	83,760	36,144
FY 2007	72,448	72,448	60,944
FY 2008	74,141	74,141	92,286
FY 2009	105,195	105,195	118,136
FY 2010	108,900	108,900	154,019
FY 2011	241,600	241,600	176,561
FY 2012	322,123	322,123	295,123
FY 2013	257,998	257,998	307,998
FY 2014	303,961	303,961	304,000
FY 2015	304,500	304,500	304,550
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
FY 2019	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

[a] Section 9 provides preliminary pre-conceptual cost and schedule information for CMR D&D.

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED & TEC)			
Design	465,276	TBD	TBD
Contingency	80,000	TBD	TBD
Total, Design (PED 03-D-103, TEC 04-D-125)	545,276	TBD	TBD
Construction			
Site Preparation	300,000	TBD	TBD
Equipment	235,000	TBD	TBD
Other Construction	1,606,823	TBD	TBD
Contingency	702,000	TBD	TBD
Total, Construction	2,843,823	TBD	TBD
Total, PED & TEC (PED 03-D-103, TEC 04-D-125)	3,389,099	TBD	TBD
Contingency, TEC	782,000	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	5,000	TBD	TBD
Conceptual Design	26,497	24,895	TBD
Start-Up	280,404	TBD	TBD
Contingency	94,000	TBD	TBD
Total, OPC except D&D	405,901	TBD	TBD
D&D			
D&D	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, D&D	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Contingency, OPC	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD
Total, Contingency	TBD	TBD	TBD

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2005	TEC	159,130								159,130
RLOUB	OPC	4,068	802							4,870
Baseline	TPC	163,198	802	0	0	0	0	0	0	164,000
FY 2009	TEC	38,100	40,000	59,000	15,800					152,900
REI	OPC	5,602	11,900	12,100	12,400	4,498				46,500
Baseline	TPC	43,702	51,900	71,100	28,200	4,498	0	0	0	199,400
	TEC	159,130								159,130
FY 2010	OPC	4,068	802							4,870
RLOUB	TPC	163,198	802	0	0	0	0	0	0	164,000
	TEC	38,100	40,000	59,000	15,800					152,900
FY 2010	OPC	5,602	11,900	12,100	12,400	4,498				46,500
REI	TPC	43,702	51,900	71,100	28,200	4,498	0	0	0	199,400
	TEC	131,600	57,500	129,000	289,200	300,000	300,000	300,000	1,504,631	3,011,931
FY 2010	OPC	34,481	2,000	2,500	3,000	3,500	4,000	4,550	300,500	354,531
NF	TPC	166,081	59,500	131,500	292,200	303,500	304,000	304,550	1,805,131	3,366,462
	TEC	159,130								159,130
FY 2011	OPC	4,068	802							4,870
RLOUB	TPC	163,198	802	0	0	0	0	0	0	164,000
	TEC	38,100	40,000	59,000	15,800					152,900
FY 2011	OPC	5,602	11,900	12,100	12,400	4,498				46,500
REI	TPC	43,702	51,900	71,100	28,200	4,498	0	0	0	199,400
	TEC	131,600	57,500	166,000	289,200	300,000	300,000	300,000	1,532,769	3,077,069
FY 2011	OPC	34,481	2,000	2,500	3,000	3,500	4,000	4,550	300,500	354,531
NF	TPC	166,081	59,500	168,500	292,200	303,500	304,000	304,550	1,833,269	3,431,600

Note: NF data above are pre-baseline planning figures

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY2009[a]
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	2QFY2065

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total, Operations & Maintenance	N/A	N/A	N/A	N/A

[a] This date corresponds to the beneficial occupancy of the RLUOB construction phase only. NF date is TBD.

9. Required D&D Information

As directed by the DOE Acquisition Executive at CMRR CD-0, NNSA and LANL developed a pre-conceptual cost and schedule range for the D&D requirements of the existing CMR Building located at TA-3 during the CMRR conceptual design. The initial pre-conceptual cost estimate range for D&D of the CMR Building is approximately $200,000,000 - $350,000,000 (un-escalated FY 2004 dollars) with an associated schedule estimate range of 4-5 years. This information was presented as part of CMRR CD-1 per Secretarial direction issued at CD-0.

During the 3rd Quarter of FY 2005, the D&D of the existing CMR facility received CD-0 in conjunction with CMRR CD-1 approval. Current Future Years Nuclear Security Program/Integrated Construction Program Plan (FYNSP/ICPP) funding profiles do not include the funding for the D&D of the CMR Facility. NNSA will not initiate CMR D&D activities until completion and operational start-up of the CMRR Nuclear Facility, currently projected to be operational well after the FYNSP budget planning window. As such, budget formulation for CMR D&D is premature for the FY 2011 budget submission. The inclusion of the D&D CMR Facility budget will occur upon the establishment of a project number and update of the FYNSP/ICPP in out year budget cycles.

The CMR D&D commitment is reflected in this CPDS for completeness. However, as planning for this D&D activity matures, NNSA may elect to enable this effort as a separate project, execute it as an element of a wider project or program for a portfolio of D&D activities at LANL, or bundle it with other, yet undefined activities.

Area	Gross Square Feet (gsf)
TA-55-400 (Radiological Laboratory & Office Building) TA-55-440 (Central Utility Building)	187,127 20,998
TA-55-500 (Security Category I/Hazard Category II Nuclear Facility)	406,000 (beneficial occupancy post FY 2018)
TA-3, Building 29 (CMR)	(571,458)
LANL "banked excess" necessary to offset one-for-one requirement	42,667

Name and site location of existing facility to be replaced: CMR (TA-3, Building 29)

When originally conceptualized, the replacement facilities for CMR, the RLUOB and NF, were thought to result in a significantly smaller space than the CMR facilities being replaced. However, owing to needs to meet modern health, waste, safety, and security functions, the combined space for CMRR is now expected to exceed the space for CMR.

CMRR has incorporated the NNSA Fiscal Year Banking of Excess Facilities Elimination, New Construction and Net Banked Square Footage reporting process that documents, through the DOE Facilities Information Management System (FIMS), the data associated with new construction added by the RLUOB and the NF. The new construction square footage is accounted for once beneficial occupancy is received and is subsequently offset with LANL "banked excess" additional D&D space to meet the "one-for-one" requirement within the FY 2002 Energy and Water and Water Development Appropriations Bill conference report (107-258). Given planned new construction (including CMRR) at LANL and planned excess facility reductions, the excess program is projecting it will have banked well

over a million and a half square feet before CMR is demolished. The gross square feet of the CMRR NF is a preliminary estimate and will be updated as the design develops.

10. Acquisition Approach

Design and Construction Management will be implemented by Los Alamos National Security through the LANL Management and Operating Contract. The CMRR Acquisition Strategy is based on procurement strategies specific for each major component of the CMRR project in order to mitigate overall technical and schedule risk. The RLUOB was implemented via LANL-issued design-build subcontract based on performance specifications developed during CMRR Conceptual Design. The SFE associated with the RLUOB and the NF will be implemented via one or more LANL-issued final design-bid-construction contracts. Design-build contracting may also be employed for discrete, well defined, procurements. Other contracting mechanisms may also be utilized that are best suited, after analysis for individual and discrete procurements. The performance baseline will be established upon completion of final design for each portion of the Project. Options are being considered for construction of the main NF structure, but the current plan is to acquire one or more qualified specialty contractors through the site M&O under commercial terms.

Secure Transportation Asset

Overview

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Secure Transportation Asset (STA)			
Operations and Equipment	127,701	138,772	149,018
Program Direction	86,738	96,143	99,027
Total, Secure Transportation Asset	**214,439**	**234,915**	**248,045**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Operations and Equipment				
Operations and Equipment	149,274	144,398	144,660	150,066
Program Direction	101,998	105,058	108,209	111,455
Total, Operations and Equipment	**251,272**	**249,456**	**252,869**	**261,521**

Mission

The STA program safely and securely transports nuclear weapons, weapons components, and special nuclear materials to meet projected Department of Energy (DOE), Department of Defense (DoD), and other customer requirements.

The STA Government Performance and Results Act (GPRA) unit contains two activities that contribute to GPRA Unit Program Number 34 – Program Direction, and Operations and Equipment. Secure Transportation Asset (STA) is a departmental asset. Program Direction in this account provides primarily for the federal agents and the transportation workforce. Operations and Equipment in this account provides for STA's transportation service infrastructure that is critical in meeting the stockpile refurbishment and modernization initiatives of the nuclear security enterprise.

The workload requirements for this program support the dismantlement and maintenance schedule for the nuclear weapons stockpile and the initiative to consolidate the storage of nuclear material. The transportation requirements result in the need for higher levels of funding to support new vehicle and equipment replacement and enhancements, as well as recruitment and training of the federal agent workforce. These long-lead efforts are required to effectively maintain mission capacity. The challenge to maintain the capacity of the program is in balance with complex national security concerns and the requirements of Graded Security Protection Policy (GSP). The uncertain threat environment necessitates the implementation of force multiplier technologies and operational enhancements for intelligence analysis and front-end reconnaissance. STA's resources will implement an operationally-focused and intelligence-driven operation, focusing on the detection, deterrence and disruption of potential threats while sustaining capabilities to defend, recapture and recover.

The STA current capacity will meet the planned NNSA Stockpile refurbishment and modernization initiatives and other DOE workload. The NNSA STA Advisory Board (STAAB) will continue to balance and prioritize customer requests against STA capability. In recent years, the nuclear material consolidation campaigns have stressed the STA vehicle fleet, and now STA needs to replace seasoned transportation assets to meet shipping requirements. In the long-term, the STA will maintain the personnel and vehicle resources at sufficient levels to meet the NNSA and DOE shipping requirements with safe and secure transportation.

Benefits

The primary objective is to serve its customers through the provision of safe and secure shipments. Defense Programs remains the highest priority customer for STA, as these shipments are required to support and maintain the nuclear weapons in the national stockpile. The Stockpile Refurbishments, Life Extensions, various test programs, and nuclear weapon disassemblies depend on the movement of material and weapons on schedule. In addition to this responsibility, the STA must also provide secure transport to support other NNSA programs including Naval Reactors, Defense Nuclear Nonproliferation and Nuclear Counterterrorism Incident Response. STA supports the Departmental initiative to convert weapons-grade material to commercial reactor fuel (MOX) by transporting weapon pits and fuel rods. Other DOE programs including Nuclear Energy and Environmental Management are also supported. STA also supports other government programs, including the National Aeronautic and Space Administration, and is involved with the international shipments with Canada, United Kingdom, Italy, and France.

Annual Performance Results and Targets

The STA Program directly supports the Secretarial goal for Security by reducing the nuclear dangers and environmental risks associated with the transportation of nuclear cargo across the United States. The key outcome performance indicator of the Program, 100 percent safe and secure shipments, attests to the program's commitment to perform this primary function. Since its formal creation in 1974, the program has maintained its long legacy of no loss of cargo and no radiological release on any shipment.

The performance indicator for Unit Readiness ensures that the program maintains the Federal Agent resources to meet the departmental shipping requirements. This measure is important for future transportation operations because it takes years to recruit, clear, and train a Federal Agent for nuclear explosives duties. The performance indicator for Delivery Timeliness ensures that the critical transportation needs of the department and other agencies are being met.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 34, Secure Transportation Asset											
Safe and Secure Shipiments: Annual percentage of shipments completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material. (Annual Outcome)	R: 100% T: 100%	R: 100% T: 100%	R: 100% T: 100%	R: 100% T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, ensure that 100% of shipments are completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material.
Convoy Cost: Annual cost per convoy expressed in terms of millions of dollars. (Efficiency)	R: $2.10 T: $1.80	R: $1.69 T: $1.80	R: $1.73 T: $1.79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By FY 2008, achieve a cost per convoy equivalent of $1.79M.
Secure Convoys: Annual number of secure convoys completed. (Annual Output)	R: 93 T: 115	R: 113 T: 115	R: 109 T: 118	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By FY 2008, achieve 118 convoy equivalents.
Safeguard Transporters (SGTs): Cumulative number of Safeguard Transporters (SGTs) in operation. (Long-term Output)	R: 36 T : 36	R: 39 T: 38	R: 42 T: 42	R: 45 T: 45	N/A	N/A	N/A	N/A	N/A	N/A	By FY 2009, achieve an operational SGT fleet of 45.
Federal Agents/Couriers: Cumulative number of Federal Agents at the end of each year. (Long-term Output)	R: 324 T: 355	R: 351 T: 355	R: 373 T: 385	R: 379 T: 390	N/A	N/A	N/A	N/A	N/A	N/A	By the end of FY 2009, achieve end strength of 390 Agents.
Delivery Timeliness: Annual percentage of Transportation Shipping Requests (TSRs) delivered by the scheduled delivery date. (Efficiency)	N/A	N/A	N/A	Baseline	90%	90%	90%	90%	90%	90%	Annually, ensure that 90% of TSRs are delivered by the scheduled delivery date.
Unit Readiness: Annual percentage of Unit Readiness to perform assigned convoy mission-weeks. (Long-term Output) [a]	N/A	N/A	N/A	Baseline	T: 80%	T: 80%	T: 80%	T: 80%	T: 90%	T: 90%	By FY 2014 ensure Operational Units have a 90 % readiness rate to perform assigned convoy mission-weeks.

[a] Performance indicator was evaluated in FY 2009 and the calculation methodology was modified to reflect the efficient management of Federal Agent resources, as they are the most critical factor in achieving mission outputs. With OMB approval, the measure was changed to a Long-term Output beginning in FY 2010.

FY 2009 Accomplishments

- Safely and securely completed 100 percent of shipments without compromise/loss of nuclear weapons/components or a release of radioactive material;
- Completed the DOE Office of Health, Safety and Security (HSS) independent oversight inspection which included a Joint Testing Exercise at Nevada Test Site;
- Delivered 13 Heavy Chassis Escort vehicles ahead of schedule and below cost;
- Completed two Agent Candidate Training (ACT) classes; with total of 59 graduates; achieving an estimated Federal Agent end strength of 379;
- Produced 3 Safeguard Transporters (SGTs) for a total of 45;
- Transportation for the Lawrence Livermore National Laboratory deinventory on schedule;
- Transportation for the Hanford Site deinventory 100 percent complete;
- Completed seven (7) Operational Readiness Training exercises;
- Participated in an interagency exercise with the Las Vegas Federal Bureau of Investigation;
- Supported NNSA with the Congressionally-directed Air Study;
- Hosted Russian training workshop at Ft. Chaffee;
- Completed a 5-week Train-the-Trainer Course for Republic of Kazakhstan in Albuquerque;
- Participated in Nuclear Command and Control System Comprehensive Review;
- Incorporated the Active Security Doctrine and the Graded Security Protection Policy into the STA Site Safeguards and Security Plan;
- Produced 24 Support Vehicles;
- Updated Memorandums of Understanding with US NORTHCOM and the Federal Bureau of Investigation;
- Implemented Leadership training for employee career development, and
- Established a collective training venue at the Nevada Test Site.

Major Outyear Priorities and Assumptions

The outyear projections for STA total $1,015,118,000 for FY 2012 through FY 2015. The primary objective of the STA program is to continue completing 100 percent of shipments safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material. In order to support the workload requirements, while maintaining the safety and security of shipments, the STA program will increase the cumulative number of escort vehicles in operation for a total of 118 by the end of FY 2014. An Armored Tractor prototype will be developed in FY 2011 with production activities continuing throughout the FYNSP. Additionally, STA will initiate the design, engineering and fielding of a new Command Control, Communication, Computer and Cyber (C5) System to replace the current Transportation Command and Control System (TCCS) through the FYNSP. The STA program also intends to maintain an annual average agent manpower at 390. A predictive transportation planning process balances workload requirements, training, maintenance, and agent quality of life.

A major priority is the replacement of the last of the aging aviation assets in FY 2012. Two DC-9s and one C-9 have reached the end of their effective life-cycle. STA plans to acquire the final of the three 737-like aircraft in FY 2012.

Secure Transportation Asset

Operations and Equipment

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Operations and Equipment			
Mission Capacity	70,107	75,038	84,010
Security/Safety Capability	20,617	26,472	27,001
Infrastructure and C5 Systems	25,978	23,217	23,681
Program Management	10,999	14,045	14,326
Total, Operations and Equipment	**127,701**	**138,772**	**149,018**

Outyear and Over Target Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Operations and Equipment				
Mission Capacity	82,966	76,764	75,672	79,699
Security/Safety Capability	27,541	28,092	28,654	29,227
Infrastructure and C5 Systems	24,155	24,638	25,131	25,633
Program Management	14,612	14,904	15,203	15,507
Total, Operations and Equipment	**149,274**	**144,398**	**144,660**	**150,066**

Mission

Within the STA Operations and Equipment Activity, four subprograms make unique contributions to the GPRA Unit Program Number 34 regarding the safety and security of the nuclear stockpile. These subprograms accomplish the following: (1) Mission Capacity - provides agent candidate training to maintain federal agent workforce, provides mission-essential agent equipment, maintains and expands the transportation fleet, provides aviation services and optimizes transport operations;
(2) Security/Safety Capability - develops and implements new fleet technologies, intensifies agent training, and implements Security, Safety, and Emergency Response programs; (3) Infrastructure and C5 systems - provides facility maintenance, support for minor construction projects, and C5 systems;
(4) Program Management - provides corporate functions and business operations that control, assist, and direct secure transport operations.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Mission Capacity	**70,107**	**75,038**	**84,010**

Sustains STA systems capacity through equipment purchases and maintenance of the agent manpower to fulfill the present schedule. This goal includes the following activities: (1) Annually, conduct an Agent Candidate Training (ACT) class to maintain the agent end-strength and training expertise. Funding supports the recruiting, equipping, and training of federal agent candidates necessary to maintain the work force impacted by attrition**.** (2) Replaces aging vehicle fleet with newly designed vehicles. Funding supports the design, engineering, testing, and fielding of specialized vehicles, tractors and trailers that counter current threat scenarios. (3) Maintains readiness posture of the STA fleet. Funding supports the inspection, testing, and maintenance of escort vehicles, secure trailers, armored tractors, mobile communication and defensive systems. It also supports the operation of three vehicle maintenance facilities. Funding also supports aircraft which are used to move agents to staging points to minimize travel time. As the nuclear security enterprise moves toward consolidation of materials and centralization of operations, STA will adapt to new shipping patterns and delivery timelines. Aircraft are also used to support the Limited Life Components Program and emergency response for the Nuclear Emergency Search Team (NEST), Accident Response Group (ARG), Radiological Assistance Program (RAP), and Joint Tactical Operations Team (JTOT). Funding supports the operation and maintenance of three large fixed wing aircraft, one Learjet 35, and two Twin Otters.

The FY 2011 request increases by 12 percent and will support an ACT class, maintain the STA fleet and will purchase a 737-like aircraft and the associated parts, spares and tools required to manage and maintain the acquired aircraft to replace the forty-year old aircraft.

Security/Safety Capability	**20,617**	**26,472**	**27,001**

Provides support to the program objective of strengthening the STA security and safety capability. This goal includes the following sub-elements: (1) Identifies, designs, and tests new fleet and mission technologies. Funding supports on-going upgrades and enhancements to the secure trailers, analyzing intelligence data, disseminating information and the application of emerging physical security technology. (2) Sustains and supports intensified training. Funding supports the technical equipment, logistics, curriculum development, and staffing necessary to conduct Special Response Force (SRF), Operational Readiness Testing (ORT), and agent sustainment training. (3) Maintains security and safety programs. Funding supports liaison with state and local law enforcement organizations; maintaining a human reliability program for federal agents and staff; analyzing security methods and equipment; conducting vulnerability assessments; developing the Site Safeguards and Security Plan (including Force-on-Force validation exercises), and combat simulation computer modeling; and conducting safety studies and safety engineering for the Safety Basis, Nuclear Explosive Safety, and over-the-road safety issues. (4) Maintains the NNSA Emergency Operations Center (EOC) in Albuquerque, NM, as well as trains and exercises the STA response capability. Funding supports the

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

Emergency Management Program to include Federal Agent Incident Command System refresher and sustainment training.

The focus in FY 2011 will be to operate the Transportation Safeguards System (TSS) within the safety and security licenses, based on the updated/upgraded Site Safeguards and Security Plan, and maintaining agent skills to meet the GSP requirements. STA will maintain the federal agent force, equipment and training tempo to meet GSP and workload requirements.

Infrastructure and C5 Systems	**25,978**	**23,217**	**23,681**

Provides support to the program goal of expanding, modernizing, and maintaining the physical platforms that the STA operates. This goal includes the following sub-elements: (1) Modernize and maintain classified command and control, communication, computer, and cyber (C5) systems activities to enhance required oversight of nuclear convoys. Funding supports operation of the Transportation Emergency Control Centers; communications maintenance; electronic systems depot maintenance; and the costs for operating relay stations in five states. (2) Expand, upgrade and maintain the STA facilities and equipment to support the increase in federal agents and workload. Funding supports the utilities, maintenance, upgrades and required expansion projects for 80 facilities and their respective equipment.

The focus for FY 2011 is to modernize and maintain classified command and control communication, computer and cyber systems and upgrade and maintain the STA facilities and equipment.

Program Management	**10,999**	**14,045**	**14,326**

Provides support to the program goal of creating a well-managed, responsive, and accountable organization by employing effective business practices. This goal includes the following: (1) Provide for corporate functions including validation of the safety and security operations, technical document support and business operations that control, assist, and direct secure transport operations. Includes supplies, equipment and technical document production and regulation. (2) Assess, evaluate and improve work functions and processes. Funding supports quality studies, self-inspections, professional development, routine STA intranet web support, configuration management, and business integration activities.

The focus for FY 2011 is to provide for corporate functions and business operations that control, assist and direct secure transportation operations.

Total, Secure Transportation Asset, Operations and Equipment	**127,701**	**138,772**	**149,018**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Mission Capacity	
The increase is attributable to transition costs associated with maintenance activities in support of multiple aircraft types; aircraft cargo door modification and necessary tooling to meet payload configurations.	**+8,972**
Security/Safety Capability	
The increase is associated with the cost of maintaining an effective Human Reliability Program for Federal Agents and staff.	**+529**
Infrastructure and C5 Systems	
The increase will support facility maintenance and utilities.	**+464**
Program Management	
The increase will provide for general site support to all STA Federal Agent Commands. Support includes supplies, equipment and services required to maintain Federal Agent qualifications and mission-related duties.	**+281**
Total Funding Change, Operations and Equipment	**+10,246**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	3,000	21,100	21,200
Total, Capital Operating Expenses	**3,000**	**21,100**	**21,200**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	21,200	21,200	21,200	21,200
Total, Capital Operating Expenses	**21,200**	**21,200**	**21,200**	**21,200**

Two DC-9s and one C-9 have reached the end of their effective life-cycle. Capital expenditures include the procurement of 737-like aircraft replacements for a total of three aircraft and modification of aircraft cargo doors to meet future payload configurations.

Armored Tractor production activities will commence in FY 2013 once the aircraft procurements and modifications are complete. The Armored Tractor program has reached its life cycle and replacements are necessary to provide safe and secure transportation.

In addition, capital operating expenditures are associated with procurement of specialized escort vehicles. The vehicles are required to meet projected workload, replacing aging vehicles and initiate a steady state lifecycle. Escort vehicles are critical in providing safe and secure transportation support to the increased workload associated with material consolidation and Complex Transformation initiatives.

Secure Transportation Asset

Program Direction

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Program Direction			
Salaries and Benefits	75,226	81,225	83,311
Travel	10,188	11,331	7,746
Other Related Expenses	1,324	3,587	7,970
Total, Program Direction	**86,738**	**96,143**	**99,027**
Total, Full Time Equivalents	**570**	**647**	**637**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Program Direction				
Salaries and Benefits	85,781	88,323	90,943	93,641
Travel	7,980	8,218	8,465	8,719
Other Related Expenses	8,237	8,517	8,801	9,095
Total, Program Direction	**101,998**	**105,058**	**108,209**	**111,455**
Total, Full Time Equivalents	**637**	**637**	**637**	**637**

Mission

The STA Program Direction makes unique contributions to the GPRA Unit Program Number 34 regarding the safety and security of the nuclear stockpile by providing personnel to: (1) conduct armed escorts of nuclear weapons, material, and components; (2) track nuclear convoys and provide emergency response capability; (3) perform staff oversight of three federal agent commands; (4) supervise the design and implementation of classified security technologies; (5) provide critical skills training to the federal agent force and staff; (6) staff and operate the Training and Logistics Command and conduct of one 20-week training class per year for new agents; and (7) perform administrative and logistical functions for the organization.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Salaries and Benefits	**75,226**	**81,225**	**83,311**

Provides salaries and benefits for the program staff at Albuquerque, NM; Fort Chaffee, AR; and Washington, DC, as well as the federal agents and support staff at the three federal agent force locations (Albuquerque, NM; Oak Ridge, TN; and, Amarillo, TX). Includes overtime, workmen's compensation, and health/retirement benefits associated with federal agents, secondary positions, and support staff.

Travel	**10,188**	**11,331**	**7,746**

Provides for travel associated with annual secure convoys, training at other federal facilities and military installations, and program oversight.

Other Related Expenses	**1,324**	**3,587**	**7,970**

Provides required certification training for the handling of nuclear materials by federal agent forces, as well as staff professional development. Provides for Permanent Change of Station (PCS) moves and other Contractual Services.

Total, Program Direction	**86,738**	**96,143**	**99,027**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Salaries and Benefits	
The increase is attributable to escalation of salaries, benefits and costs associated with pay for performance to maintain 637 FTEs. This increase is partially offset by a reduction in FTEs which supports the funding adjustments for additional activities in the Other Related Expenses account.	**+2,086**
Travel	
The decrease is attributable to the funding shift of travel costs associated with agent training at NTS to Other Related Expenses.	**-3,585**
Other Related Expenses	
The increase supports training at NTS, the Service Center fee and payment for the Department of Energy Common Operating Environment (DOECOE) contract.	**+4,383**
Total Funding Change, Secure Transportation Asset, Program Direction	**+2,884**

Nuclear Counterterrorism Incident Response

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Nuclear Counterterrorism Incident Response (Homeland Security)[a]			
Emergency Response (Homeland Security)[a]	132,918	139,048	134,092
National Technical Nuclear Forensics (Homeland Security)[a]	12,557	10,217	11,698
Emergency Management (Homeland Security)[a]	7,428	7,726	7,494
Operations Support (Homeland Security)[a]	8,207	8,536	8,675
International Emergency Management and Cooperation	4,515	7,181	7,139
Nuclear Counterterrorism (Homeland Security)[a]	49,653	49,228	64,036
Total, Nuclear Counterterrorism Incident Response	**215,278**	**221,936**	**233,134**

Outyear Target Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Nuclear Counterterrorism Incident Response				
Emergency Response (Homeland Security)[a]	137,715	138,359	139,504	141,107
National Technical Nuclear Forensics (Homeland Security)[a]	11,589	11,694	11,577	11,828
Emergency Management (Homeland Security)[a]	7,129	6,629	6,505	6,694
Operations Support (Homeland Security)[a]	8,691	8,799	8,749	9,000
International Emergency Management and Cooperation	7,129	7,139	7,032	7,275
Nuclear Counterterrorism (Homeland Security)[a]	50,661	49,888	61,933	62,082
Total, Nuclear Counterterrorism Incident Response	**222,914**	**222,508**	**235,300**	**237,986**

Mission

The Nuclear Counterterrorism Incident Response (NCTIR) program, formerly the Nuclear Weapons Incident Response program, responds to, and mitigates nuclear and radiological incidents worldwide and has a lead role in defending the Nation from the threat of nuclear terrorism.

Benefits

The National Nuclear Security Administration (NNSA) Emergency Operations program remains the United States (U.S.) government's primary capability for radiological and nuclear emergency response and for providing security to our Nation from the threat of nuclear terrorism. Through the development, implementation and coordination of programs and systems designed to serve as a last line of defense in the event of a nuclear terrorist incident or other types of radiological accident, the Office of Emergency Operations maintains a high level of readiness for protecting and serving the U.S. and its allies – a readiness level that provides the U.S. Government with quickly deployable, dedicated resources capable of responding rapidly and comprehensively to nuclear or radiological incidents worldwide. NCTIR is focused on redefining relationships with old partners such as the Federal Bureau of Investigation (FBI),

[a] Office of Management and Budget (OMB) Homeland Security designation.

and strengthening relationships with other newer partners, such as the Department of Homeland Security (DHS). Even as the need for effective emergency operations activities continues to grow, NCTIR increasingly serves as the Federal Government's comprehensive defense of the Nation against the nuclear terrorism threat.

A single Readiness measure encompasses trained personnel, reliable and operational equipment and communications ready to respond to and mitigate nuclear and radiological incidents worldwide. This puts NCTIR's focus on what is critically important, ties the measure to nearly 100 percent of the program's budget, forces a focus on all problem areas, and makes performance measurement a powerful management tool. In FY 2009, NCTIR added two additional components to the Readiness measure related to transportation of first responders, to further characterize our ability to respond.

This budget request includes continued funding for the Render Safe Research and Development Program and the Render Safe Stabilization Operations (formerly Stabilization Implementation within Emergency Response) and National Technical Nuclear Forensics (NTNF) programs.

The NCTIR program functions primarily as a homeland security related activity which also uses its resources and expertise as a unique foreign policy asset for the additional application of international emergency response. Within the NCTIR program, the Emergency Response Homeland Security (HS), Emergency Management HS, National Technical Nuclear Forensics HS, Operations Support HS, International Emergency Management and Cooperation, and Nuclear Counterterrorism HS subprograms each make unique contributions to GPRA Unit Program Number 35. The Emergency Response HS maintains and provides specialized technical expertise in response to nuclear/radiological incidents, including those involving nuclear weapons. These capabilities include immediate situation resolution, longer-term consequence management, and issues relating to human health. These response teams include the Nuclear Emergency Support Team (NEST) and other assets. The Emergency Management HS provides for the comprehensive, integrated emergency planning, preparedness, and response programs throughout the Department's field operations. The program develops and implements specific programs, plans and systems to minimize the impact of emergencies on national security, worker and public safety, and the environment. The program oversees the implementation of emergency management policy, preparedness, and response activities within the NNSA. The National Technical Nuclear Forensics HS supports implementation of operations and research and development as well as builds upon nuclear disposition activities already underway, including pre- and post- detonation nuclear forensics. Operations Support activities support Headquarters' emergency response operations through the Headquarters' Watch Office and Operations Centers. Program staffs participate in drills and exercises to improve communication and notification capabilities and procedures. NCTIR manages and operates the Headquarters Emergency Communications Network to facilitate unclassified and classified videoconferences in support of Department-wide task forces, meetings/briefings, exercises/drills and all DOE site emergencies. The International Emergency Management and Cooperation Program conducts training, provides technical assistance, and develops programs, plans and infrastructure to strengthen emergency management systems worldwide. The Nuclear Counterterrorism (NCT) program serves as the single point of contact for nuclear counterterrorism in the US Government, directly supporting other agencies needs relative to Improvised Nuclear Device (IND) design and assessment activities. The NCT program provides the necessary analysis of NNSA-specific data needed by other agencies to counter the threat of a terrorist nuclear device. The NCT program draws on the full range of tools, techniques and expertise developed within the nuclear weapons design laboratories.

Annual Performance Results and Targets

The Nuclear Counterterrorism Incident Response program continues to contribute to the departmental goal of "Security: Reduce nuclear dangers and environmental risks" through the ongoing and planned international activities to provide consistent emergency plans and procedures, effective early warning and notification of nuclear/radiological incidents or accidents, and delivery of assistance to an affected nation should an incident/accident occur. Through the International Emergency Management and Cooperation (IEMC) program element, NCTIR is also providing communication and radiation monitoring equipment and technical assistance for International Atomic Energy Agency (IAEA) and foreign government emergency programs to address nuclear/radiological incidents and accidents including lost sources. The IEMC supports emergency response cooperative activities bilaterally, multi-laterally and under various international agreements and arrangements and Presidential and Global Initiatives to ensure programs are in place to protect emergency personnel, the public and the environment from the consequences of nuclear/radiological incidents and accidents.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 35, Nuclear Counterterrorism Incident Response											
Emergency Operations Readiness Index: Emergency Operations Readiness Index measures the overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide (This Index is measured from 1 to 100 with higher numbers meaning better readiness--the first three quarters will be expressed as the readiness at those given points in time where as the year end will be expressed as the average readiness for the year's four quarters). (Efficiency)	R: 82 T: 91	R: 91 T: 91	R: 91 T: 91	R: 91 T: 91	T: 91	T: 91	T: 91	T: 91	T: 91	T: 91	Annually, maintain an Emergency Operations Readiness Index of 91 or higher.

FY 2009 Accomplishments

- Deployed multiple field teams to conduct special events and elevated threats including 34 high profile special events and 47 emergency responses around the world in support of Homeland Security, FBI and Department of State; including National Special Security Events, and National Security Events. These events included: State of the Union; Super Bowl; several NASCAR events; Papal visits to DC and New York; Annapolis Conference; Marine Corps Marathon; Republican and Democratic National Conventions, MLB and NBA All-Star Games; Rolling Thunder; United Nations General Assembly; New Years Eve support in various cities, as well as the 2009 Presidential Inauguration.

- Participated in 137 interagency national and international counterterrorism exercises, including: Marble Challenge (2), and led the Empire 2009 consequence management exercise, which was a Tier 2 National Level Exercise, supported by DHS and other federal, state and local agencies. We also participated in a Nuclear Weapons Accident Incident Exercise 2009 (NUWAIX 09).

- Participated in Eagle Horizon 09, a White House-directed interagency continuity exercise.

- Continued support to the FBI of its render safe capability and completed the first-ever Stabilization tool kit, which has been field tested and training conducted in FY 2009. There will be an FBI Stabilization team in one city by March 2010.

- Executed for the first-ever end to end post-detonation Improvised Nuclear Device nuclear forensics exercise, OAK PHOENIX, incorporating notification/deployment, sample collection, lab analysis, and data evaluation phases.

- Continued Global Initiative to Combat Nuclear Terrorism (GICNT) support through outreach, interagency, and international efforts designed to improve the capabilities of participant nations for response, mitigation, and investigation of terrorist use of nuclear and radioactive materials. Individual events with the GICNT included exercises in the Netherlands and Kazakhstan; conferences in the Netherlands; and, workshops in Australia, the United Kingdom and Morocco.

- Improved the capability of Triage, a radiological reach-back capability, to provide first responders with expert analysis of detector readings and enhanced hands-on training and workshops.

Major Outyear Priorities and Assumptions

The outyear projections for Nuclear Counterterrorism Incident Response total $918,708,000 for FY 2012 through FY 2015. The trend through the five-year period is relatively flat but funding is targeted to specific areas of the program including - Equipment and Training, Render Safe Stabilization Operations, International Emergency Management and Cooperation, and Nuclear Counterterrorism. These initiatives support scientific breakthroughs from Render Safe Research and Development in support of stabilization equipment and training for FBI teams and the continued implementation of international emergency management training and outreach activities to ensure its mission of reducing the risk of international nuclear or radiological events by strengthening emergency preparedness and response capabilities worldwide.

The NCTIR outyear budgets will concentrate on the programs that contribute the most to vital national security missions. The program will focus to correct deficiencies surfaced by quarterly evaluation of the readiness performance measure, and necessary upgrades to the Emergency Operations Centers.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Emergency Response (Homeland Security)	**132,918**	**139,048**	**134,092**

The Office of Emergency Response serves as the last line of national defense in the face of a nuclear terrorist incident or other type of radiological accident. The mission is to protect the public, environment, and the emergency responders from terrorist and non-terrorist events by providing a responsive, flexible, efficient, and effective nuclear/radiological emergency response framework and capability for the Nation by applying NNSA's unique technical expertise resident within the Department of Energy (DOE) complex. The strategic approach for emergency response activities is to ensure a central point of contact and an integrated response to emergencies. Specific attention is focused on providing the appropriate technical response to any nuclear emergency within the Department, the U.S. and abroad. This is accomplished by ensuring that the appropriate infrastructure is in place to provide command, control, communications, and properly organized, trained and equipped response personnel to successfully resolve an emergency event.

- **Nuclear Emergency Support Team** **87,300** **92,249** **89,106**

  Under the provisions of the Atomic Energy Act of 1954 and Presidential Decision Directives 39 and 62, National Security Presidential Directives (NSPD) 28, NSPD 17/Homeland Security Presidential Directive (HSPD) 4, and NSPD 46/HSPD 15, government agencies are directed to plan for, train, and resource a robust capability to combat terrorism, especially in the area of Weapons of Mass Destruction (WMD). The Nuclear Emergency Support Team (NEST) program provides DOE/NNSA technical assistance to a Lead Federal Agency (LFA), whether it be DHS, FBI, or Department of Defense (DoD), to deal with incidents, including terrorist threats, that involve the use of nuclear materials. NEST is comprised of three functional elements which include searching for, rendering safe, and command and control of the assets. Furthermore, there are five primary teams dedicated to the execution of these functions: Accident Response Group (ARG), Radiological Assistance Program (RAP), Nuclear/Radiological Advisory Team (NRAT), Search Response Team (SRT), and Joint Technical Operations Team (JTOT). The NEST program has been structured to address threats posed by domestic and foreign terrorists likely to have both the will and means to employ WMD. The NEST response assumes that such an act might occur with little, if any, advanced warning.

  Under such circumstances, NEST would respond to assist in the search for, identification, characterization, rendering safe and final disposition of any nuclear weapon or radioactive device. Additionally, NEST has the capability to search for possible additional devices that may have been emplaced. Finally, the NEST Technology Integration program keeps responders equipped with cutting edge equipment and analysis methods.

- **Other Assets** **26,919** **27,449** **25,660**

  Additional assets provide assistance to local, state and other federal agencies and conduct exercises in response to emergencies involving nuclear/radiological materials in support of Environmental Protection Agency (EPA)/Nuclear Regulatory Commission (NRC) and DOE, as well as support to

the NEST programs to ensure the safe resolution of an incident and protect public safety and the environment.

- The Aerial Measuring System (AMS) detects and maps radioactive material at an emergency scene to determine contamination levels using fixed wing and rotary aircraft.
- The Atmospheric Release Advisory Capability (ARAC) develops and disseminates predictive dose and deposition plots generated by sophisticated computer models.
- The Federal Radiological Monitoring and Assessment Center (FRMAC)/Consequence Management Teams provide the technical capabilities focused on radiological consequence management to assist and coordinate federal radiological monitoring and assessment activities and effects with DHS, Federal Emergency Management Agency (FEMA), NRC, EPA, DoD, state and local agencies, and others.
- The Radiation Emergency Assistance Center/Training Site (REAC/TS) provides advice and medical consultation for injuries resulting from radiation exposure and contamination and serves as a training facility. REAC/TS operates the Cytogenetic Biodosimetry Laboratory (CBL) that has the capability to perform clinical dose assessments for potentially exposed individuals to non-symptomatic levels of radiation. The CBL is the only federally funded civilian facility of its kind in the country. Additionally, REAC/TS provides training to the medical community and maintains a database of medical responders trained to treat radiation injuries within the U.S. and abroad.

- **Render Safe Stabilization Operations** **18,699** **19,350** **19,326**

The Render Safe Stabilization Operations (RSSO) has begun to operationally deploy technologies developed by the Render Safe R&D program. The RSSO program is working with the FBI to develop the teams to use technologies without extensive training, to isolate and stabilize a nuclear device until the national response assets arrive to render it safe.

The Render Safe Research and Development (RS R&D) Program continues to research technologies that can be used to stabilize and render safe a nuclear device. Currently, the RS R&D portfolio is focused on stabilization technologies. Research is promising, and several technologies developed by the RS R&D Program are in initial production to be used by RSSO stabilization teams. The requested RSSO funding will make this possible. The RSSO program is also leveraging technologies developed by other government agencies.

In FY 2011, the funding requested for Stabilization Operations will facilitate the interchange of information between NCTIR and other agencies, obtain and maintain equipment, develop and train the stabilization field and home teams with the FBI, and deploy the first generation of stabilization equipment to selected FBI teams, thus improving the national emergency response capability and fully integrating this technology with response elements and associated deployed technologies.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
National Technical Nuclear Forensics (Homeland Security)	**12,557**	**10,217**	**11,698**

The Office of National Technical Nuclear Forensics (NTNF) provides operational support to Pre-Detonation Device and Post-Detonation technical nuclear forensics program. The NTNF program is a Homeland Security Council (HSC)/National Security Council (NSC) sponsored policy initiative, which aims to establish missions, institutionalize roles and responsibilities and enable operational support for pre-detonation and post-detonation nuclear forensics and attribution programs including training and exercises, equipment purchases and maintenance, logistics, and deployment readiness to support ground sample collection and Deployable Field Laboratory operations. Major program elements include:

- concept of operations development and techniques, tactics and procedures;
- modeling, signatures development, knowledge base and data management;
- support to FBI in collection of pre-detonation device forensics evidence;
- maintain G-Tunnel capability to support NTNF;
- support to FBI in collection and analysis of post-detonation ground samples;
- establish Home Team capability, and
- training, drills, and exercises.

Emergency Management (Homeland Security)	**7,428**	**7,726**	**7,494**

The Office of Emergency Management develops and implements specific programs, plans, and systems to minimize the impacts of emergencies on worker and public health and safety, the environment, and national security. This is accomplished by promulgating appropriate Departmental requirements and implementing guidance; developing and conducting training and other emergency preparedness activities; supporting readiness assurance activities and participating in interagency activities. The objective is to continue to have a fully implemented and fully integrated Departmental comprehensive emergency management system throughout the DOE complex. In FY 2011, the Office of Emergency Management will conduct six to eight no-notice exercises at DOE/NNSA sites to gauge emergency preparedness.

The Office of NNSA Emergency Management Implementation serves as the single point of contact for implementing and coordinating emergency management policy, preparedness, and response activities with NNSA, including managing the NNSA Headquarters emergency preparedness and response effort and coordinating NNSA field and contractor implementation of emergency management policy.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

The Emergency Operations Training Academy (EOTA) is an academically accepted training and development center that remains on the cutting edge of technology and innovation. It is the Office of Emergency Operations point of service for training development and oversight.

The Continuity Program (CP) continues to include responsibility for all of DOE and NNSA and is a HSC/NSC required policy initiative. These programs develop the Headquarters and the field Continuity of Operations and Continuity of Government plans that are updated constantly. Periodic training and exercises are required. The NNSA and DOE continue to participate in major interagency exercises sponsored by DHS on an annual basis. In FY 2012, the CP plans to complete the National Communications System directive (NCS) -10 (Federal) communications equipment and training requirements for the national capital region as well as Albuquerque.

Operations Support (Homeland Security) 8,207 8,536 8,675

Emergency Operations Support operates the DOE Emergency Operations Centers and the Emergency Communications Network (ECN). The DOE Headquarters Emergency Operations Center provides the core functions of supporting Departmental command, control, communications, Geographic Information System (GIS) data and situational intelligence requirements for all categories of DOE emergency response situations. The goal of the Emergency Communications Network Program is to provide the DOE/NNSA national emergency response community a world-class, state-of-the-art, high speed, global emergency communications network to support the exchange of classified and unclassified voice, data and video information.

International Emergency Management and Cooperation 4,515 7,181 7,139

The International Emergency Management and Cooperation (IEMC) subprogram develops program plans and infrastructure; provides technical assistance, and conducts training to strengthen and harmonize emergency management systems worldwide. Current ongoing cooperation involves Argentina, Brazil, Canada, Chile, China, Denmark, Finland, France, Iceland, India, Iraq, Israel, Japan, Malaysia, Mexico, Morocco, Norway, Pakistan, Philippines, Russia, Singapore, South Korea, Sweden, and Taiwan. NNSA will continue liaison with, and participate in projects sponsored by, international organizations (IAEA, European Union (EU), North Atlantic Treaty Organization (NATO), Group of 8, (G8), Arctic Council), exhibiting leadership under assistance and cooperation agreements to provide consistent emergency plans and procedures, effective early warning and notification of nuclear/radiological incidents or accidents, and delivery of assistance to an affected nation should an incident/accident occur.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

The IEMC subprogram supports the IAEA in developing and implementing new standards and guidance for emergency management affecting all member states (approximately 150 countries). The IEMC is also providing communication and radiation monitoring equipment and technical assistance for the IAEA and foreign government emergency programs to address nuclear and radiological incidents and accidents including lost sources. The subprogram supports emergency response cooperative activities bilaterally, multi-laterally and under various international agreements and arrangements and Presidential and Global Initiatives to ensure programs are in place to protect emergency personnel, the public and the environment from the consequences of nuclear/radiological incidents and accidents. The IEMC conducts emergency drills and exercises involving nuclear facility workers and local and national government counterparts; and develops and conducts training courses for nuclear facility emergency staff and other emergency responders.

The subprogram is developing specialized emergency management training courses for emergency managers in several Asian (China, Malaysia, Philippines, South Korea) and South American countries (Argentina, Brazil, Chile) for topics to include hazards assessment, monitoring, and medical management of a radiological emergency. Additionally, the subprogram is working to maximize synergies and ensure integration of emergency management systems and training and emergency response activities with other ongoing NNSA projects involving common foreign partners.

Nuclear Counterterrorism (Homeland Security)	**49,653**	**49,228**	**64,036**

The Nuclear Counterterrorism (NCT) program serves as the primary point of contact in the US Government for technical expertise regarding Improvised Nuclear Devices (IND); proliferant foreign and non-U.S. stockpile weapon design and assessment activities as they relate to nuclear terrorism, counterproliferation and national render safe activities. The NCT program has developed specialized capabilities within the stockpile-related nuclear weapons design laboratories and production facilities, to provide the necessary analysis, policy support, and contingency planning needed by other agencies to counter the threat of a stolen, modified, or improvised nuclear device. The majority of this budget request is for nuclear materials and high explosives assessment, as well as development and testing of diagnostics and render safe tools. Also, in FY 2011, NCT will be completing analysis of a second series of major render safe experiments in support of the Disablement Capabilities Review.

This subprogram element enables specialized R&D for technical analysis, equipment, and procedures necessary to maintain the Nation's capabilities for research on non-stockpile nuclear weapons designs; e.g., Improvised Nuclear Devices or Radiological Dispersal Devices and the laboratory analysis of their aftermath. Additionally, this program element will ensure that we will be able to meet the expectations of DoD in our role for worldwide render safe support. This effort will enhance our capabilities to respond to intelligence requests and maintain operational readiness through acquisition of needed specialized equipment and training of interagency staff on non-stockpile weapons designs, thus decreasing the Nation's risk in the event of a nuclear terrorist strike.

Total, Nuclear Counterterrorism Incident Response	**215,278**	**221,936**	**233,134**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Emergency Response (Homeland Security)	
▪ **Nuclear Emergency Support Team**	
This decrease reflects reprioritization within NCTIR elements to accommodate increases in higher priority mission requirements.	**-3,143**
▪ **Other Assets**	
This decrease reflects reprioritization within NCTIR elements to accommodate increases in higher priority mission requirements.	**-1,789**
▪ **Render Safe Stabilization Operations**	
Reflects a slight decrease in development and deployment of first generation equipment for stabilization teams.	**-24**
Subtotal, Emergency Response	**- 4,956**
National Technical Nuclear Forensics (Homeland Security)	
The increase supports further establishment of missions, institutionalization of roles and responsibilities and refinement of operational support for pre-detonation and post-detonation nuclear forensics, attribution and ongoing disposition programs.	**+ 1,481**
Emergency Management (Homeland Security)	
This decrease reflects reprioritization within NCTIR elements to accommodate increases in higher priority mission requirements.	**-232**
Operations Support (Homeland Security)	
Increases Emergency Operations Centers funding to support required maintenance of the Emergency Communications Network.	**+139**
International Emergency Management and Cooperation	
This decrease is commensurate with the planned profile of funding requirements for international outreach efforts.	**-42**

	FY 2011 vs. FY 2010 ($000)
Nuclear Counterterrorism (Homeland Security)	
This increase results from reallocation within NCTIR to ensure that efforts to combat nuclear terrorism continue for existing customers and stakeholders along with technical aspects this program can bring to bear on the NCTIR mission. The NCT base program will continue to ensure its mission of reducing the risks of potential INDs. Funding requested represents revised investment mix in R&D for tools, techniques and procedures in such areas as multi-dimensional modeling; an IND tool kit; proactive information control, and various other activities.	
The growth in this subprogram element enables specialized R&D for technical analysis, equipment, and procedures necessary to maintain the Nation's capabilities for research on non-stockpile nuclear weapons designs; e.g., Improvised Nuclear Devices or Radiological Dispersal Devices and the laboratory analysis of their aftermath as well as ensuring that we will be able to meet the expectations of DoD in our role for worldwide render safe support.	**+ 14,808**
Total Funding Change, Nuclear Counterterrorism Incident Response	**+ 11,198**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	1,852	1,893	1,935
Total, Capital Operating Expenses	**1,852**	**1,893**	**1,935**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	1,978	2,022	2,066	2,111
Total, Capital Operating Expenses	**1,978**	**2,022**	**2,066**	**2,111**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects. Funding shown reflects estimates based on actual FY 2009 obligations.

Facilities and Infrastructure Recapitalization Program

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Facilities and Infrastructure Recapitalization Program			
Operations and Maintenance (O&M)			
Recapitalization	69,226	69,377	79,600
Infrastructure Planning	10,324	8,982	9,400
Facility Disposition	0	5,600	5,000
Subtotal, Operations and Maintenance (O&M)	**79,550**	**83,959**	**94,000**
Construction	67,899	9,963	0
Total, Facilities and Infrastructure Recapitalization Program	**147,449**	**93,922**	**94,000**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Facilities and Infrastructure Recapitalization Program				
Operations and Maintenance (O&M)				
Recapitalization	79,600	86,600	0	0
Infrastructure Planning	9,400	2,400	0	0
Facility Disposition	5,000	5,000		
Subtotal, Operations and Maintenance (O&M)	**94,000**	**94,000**	**0**	**0**
Construction	0	0	0	0
Total, Facilities and Infrastructure Recapitalization Program	**94,000**	**94,000**	**0**	**0**

Mission

The Facilities and Infrastructure Recapitalization Program (FIRP) continues its mission to restore, rebuild and revitalize the physical infrastructure of the nuclear security enterprise. The program funding is utilized to address an integrated, prioritized series of repair and infrastructure projects that significantly increase the operational efficiency and effectiveness of the NNSA nuclear security enterprise sites by focusing on elimination of legacy deferred maintenance. FIRP improves safety and is able to readily respond to changing missions, priorities and decisions affecting both sites and their facilities within the nuclear security enterprise through the implementation of its prioritized project list that targets the highest priority facilities and infrastructure deficiencies first.

Benefits

Within FIRP, four subprograms each make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 36. Of the four subprograms, three require funding in FY 2011: Recapitalization, Infrastructure Planning, and Facility Disposition. The Facility Disposition subprogram achieved its initial commitment to fund a cumulative 3,000,000 gross square feet (gsf) for disposition in FY 2008. However, beginning in FY 2010 additional facilities will continue to be dispositioned as part of FIRP's effort to reduce the deferred maintenance backlog. The FIRP line item construction program is not requesting funding in FY 2011.

FIRP is complementary to the ongoing programmatic base maintenance and infrastructure efforts at NNSA sites. Maintenance and infrastructure are primarily funded by Readiness in Technical Base and Facilities (RTBF) and through site overhead allocations to ensure that facilities necessary for immediate programmatic workload activities are sufficiently maintained. FIRP addresses the additional sustained investments above the RTBF base for focused reduction of deferred maintenance to extend facility lifetimes, reduce the risk of unplanned system and equipment failures, increase operational efficiency and effectiveness, allow for the recapitalization of aging facility systems, and remove hazards to workers by improving safety. FIRP works in partnership with RTBF to ensure the facilities and infrastructure of the nuclear security enterprise are restored to an appropriate condition to support the Stockpile Stewardship Program mission, transformation of the complex, and to institutionalize responsible and accountable facility management practices.

FIRP is effectively executing the program and reports the corresponding planned and actual performance results in the Congressional Budget Request. FIRP's partners, NNSA sites, and M&O contractors have committed to the achievement of the FIRP annual performance goals. The success of FIRP is attributed to strong central management of the program; independent and objective oversight; and an ongoing partnership between Headquarters programs, NNSA Site Offices, and NNSA M&O contractors.

Annual Performance Results and Targets

(R = Results; T= Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** .36, Facilities and Infrastructure Recapitalization Program											
Deferred Maintenance: Annual dollar value and cumulative percentage of legacy deferred maintenance baseline of $900 million; funded for elimination by FY 2013. (Long-term Output)	R: $118M (32.8%) T: $60M (28%)	R: $75M (56%) T: $60M (38%)	R: $93M (73%) T: $80M (64%)	R:$75.7M (81.7%) T: $62M (80%)	T: $34.1M (85.5%)	T: $24.7M (88.3%)	T:$24.5M (91.0%)	T: $23.6M (93.6%)	N/A	N/A	Eliminate $900,000,000 of NNSA's legacy deferred maintenance backlog by 2013.[a]
Execution of Projects: Execute FIRP projects within approved cost and schedule baselines (including BCPs submitted for approval), such that 95 percent of FIRP projects are on schedule/meet established milestones and are within total estimated costs (TEC). (Efficiency)	N/A	N/A	N/A	N/A	T: 95%[b]	T: 95%	T: 95%	T: 95%	N/A	N/A	Achieve 95% of projects on schedule and within total estimated costs through the end of the program in FY 2013.
Footprint Reduction: Annual gross square feet (gsf) of NNSA excess facilities space funded for elimination; and cumulative percentage of FY 2002-FY 2009 total goal of three million gsf eliminated.	R: 316,000[b] (85%) T: 175,000 (79%)	R: 264,000 (96%) T: 225,000 (92%)	R: 292,000 (106%) T: 225,000 (100%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By 2009, eliminate 3,000,000 gsf of excess facility space.[a]

[a] (1) The program's deferred maintenance goal is to eliminate $900,000,000 of deferred maintenance by FY 2013. (2) The original FY 2009 date for elimination of the deferred maintenance backlog was extended to 2013 due to constrained outyear funding.

[b] FIRP's contribution to reducing FCI is minimal compared to the RTBF program's contribution. Therefore, FIRP developed a new efficiency measure for project execution. Beginning in FY 2010, FIRP will no longer report FCI results.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
(Long-term Output)											
Facility Condition Index (FCI) for Mission Critical Facilities: Annual NNSA complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance costs per replacement plant value, for all mission-critical facilities and infrastructure. (Jointly with Readiness in Technical Base and Facilities). (Efficiency)	R: 6.7% T: 7.4%	R: 6.5% T: 6.8%	R: 4.26% T: 5%	R: 3.37% T: 5%	N/A[b]	N/A	N/A	N/A	N/A	N/A	By 2009, maintain the condition of mission critical facilities and infrastructure at an FCI level of 5%.
Facility Condition Index (FCI) for Mission Dependent Not Critical Facilities: Annual NNSA complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance costs per replacement plant value, for all mission-dependent, not critical facilities and infrastructure. (Jointly with Readiness in Technical Base and Facilities). (Efficiency)	N/A	N/A	R: 8.92% T: 8.25%	R: 6.91% T: 8.75%	N/A[a]	N/A	N/A	N/A	N/A	N/A	By 2009, improve mission dependent, not critical facilities and infrastructure to an FCI level of 8.75%.

[a] FIRP met its footprint reduction target in FY 2008. Additional facilities continue to be dispositioned as part of FIRP's effort to reduce the deferred maintenance backlog.

[b] FIRP's contribution to reducing FCI is minimal compared to the RTBF program's contribution. Therefore, FIRP developed a new efficiency measure for project execution. Beginning in FY 2010, FIRP will no longer report FCI results.

Annual Performance Results and Targets

The FIRP program falls under the Secretarial Goal 3, entitled, "Security: Reduce nuclear dangers and environmental risks." FIRP addresses an integrated, prioritized series of repair and infrastructure projects that significantly increase the operational efficiency and effectiveness of the NNSA nuclear security enterprise sites by focusing on elimination of legacy deferred maintenance. FIRP improves safety and is able to readily respond to changing missions, priorities and decisions affecting both sites and their facilities within the nuclear security enterprise through the implementation of its prioritized project list which targets the highest priority facilities and infrastructure deficiencies first.

FY 2009 Accomplishments

- All FIRP line item construction projects were rated as "Green" for cost and schedule by the DOE Office of Engineering and Construction Management (OECM).

Major Outyear Priorities and Assumptions

The outyear projections for FIRP total $188,000,000 (FY 2012-FY2013). FIRP is a finite program with a Congressionally-mandated end date of FY 2013.

FIRP continues to use a prioritized project listing that enables the program to prioritize and fund legacy deferred maintenance reduction projects that significantly reduce NNSA's deferred maintenance backlog to acceptable levels and support the Stockpile Stewardship Program mission and transformation of the enterprise. FIRP projects improve safety by improving conditions for the maintenance workers and the general laboratory and plant populations.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Recapitalization	**69,226**	**69,377**	**79,600**

Recapitalization funds capital renewal and sustainability projects required to restore the facilities and infrastructure comprising the nuclear security enterprise to an acceptable condition. The subprogram funds projects in accordance with established criteria and priorities that target deferred maintenance reduction and repair (non-programmatic) of facilities and infrastructure. These projects are vital to improving safety and restoring the facilities that accommodate the people, equipment, and material necessary to support scientific research, production, or testing to conduct the Stockpile Stewardship Program, the primary NNSA mission. Recapitalization also includes construction/renovation projects (non-programmatic) that renovate landlord or multi-program facilities, address adaptive reuse (conversion) or alterations to existing facilities, bring existing production and laboratory facilities into compliance with mandated codes and/or standards, or reduce the site landlord's total ownership costs of facilities and infrastructure. FIRP has invested approximately $87,000,000 (FY 2004-FY 2009) in its enterprise-wide Roof Asset Management Program and plans to provide $15,000,000 in FY 2010 and FY 2011 to maintain a corporate approach for the management of NNSA's roofing assets.

Infrastructure Planning	**10,324**	**8,982**	**9,400**

Infrastructure Planning funds planning activities for the upcoming year's Recapitalization projects. Its primary objective is to ensure that projects are adequately planned and designed in advance of project start. This permits the timely use of Recapitalization funds and effective project execution, using a graded approach to meet the requirements of DOE Order 413.3A, "Program and Project Management for the Acquisition of Capital Assets." The subprogram supports: the establishment of Recapitalization project baselines; planning and design for priority general infrastructure projects; contract preparation and other activities necessary to ensure the readiness to obligate and execute funds. Infrastructure Planning also funds Other Project Costs in anticipation of FIRP Project Engineering and Design (PED) and in support of construction for FIRP utility line items. Other key activities funded by this subprogram include assessments of the physical condition of the enterprise to aid in the prioritization of deferred maintenance reduction and facility consolidation efforts; and procurement support of small business contracts.

Facility Disposition	**0**	**5,600**	**5,000**

The Facility Disposition subprogram funds the decontamination, dismantlement, removal and disposal of excess facilities that have been deactivated. This includes facilities that are excess to current and future NNSA mission requirements, and are not contaminated by weapons processes. The subprogram's budgeting and reporting (B&R) code will remain open through the conclusion of the FIRP in FY 2013 in order to contribute to FIRP achieving a $900,000,000 legacy DM reduction by FY 2013. From a corporate facilities view, an aggressively pursued disposition program is a major component of all successfully executed government, private sector, and academic asset management pursuits. This action restores that capability to NNSA's corporate facilities management activities. The disposition of excess facilities reduces energy consumption, security risks,

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

environment, safety and health hazards, surveillance and maintenance costs, deferred maintenance, and contributes to the realization of a smaller, safer, more secure and less expensive nuclear security enterprise.

FIRP Construction	**67,899**	**9,963**	**0**

FIRP Construction funds select utility line item construction projects across the enterprise, which reduce deferred maintenance and result in increased efficiencies. FY 2010 funding will complete the last project currently planned for execution under this subprogram.

Total, Facilities and Infrastructure Recapitalization Program	**147,449**	**93,922**	**94,000**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Recapitalization	
The change reflects the redirection of FIRP's deferred maintenance project funding from its line item construction projects to high priority Recapitalization projects. This change supports FIRP's continued effort to reduce deferred maintenance by FY 2013. FIRP Recapitalization funding remains essential to restoring the condition of mission essential facilities and infrastructure across the nuclear security enterprise to an acceptable level.	**+10,223**
Infrastructure Planning	
The requested amount is in alignment with the level of effort required to support up-front planning and design of FY 2012 Recapitalization projects. These activities will ensure the effective and efficient expenditure of program funds.	**+418**
Facility Disposition	
This change reflects funding associated with the disposition of excess facilities. Projects proposed for execution under the Facility Disposition subprogram will provide comparable Legacy DM reduction to FIRP Recapitalization projects and will be prioritized with Recapitalization projects for execution in each year.	**-600**
Construction	
The decrease reflects the planned shift of funding for deferred maintenance reduction from line item construction projects to projects funded under the Recapitalization subprogram.	**-9,963**
Total Funding Change, Facilities and Infrastructure Recapitalization Program	**+78**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	32,942	34,691	38,840
Capital Equipment	0	0	0
Total, Capital Operating Expenses	**32,942**	**34,691**	**38,840**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	38,840	38,840	0	0
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**38,840**	**38,840**	**0**	**0**

Construction Projects[b]

(dollars in thousands)

Major Item of Equipment	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
08-D-601, Mercury Highway, NTS[c]	17,500	7,651	9,849	0	0	0
08-D-602, Potable Water System, Y-12	48,906	22,070	26,836	0	0	0
07-D-253, TA-I Heating Systems Modernization, SNL	52,496	27,251	15,282	9,963	0	0
06-D-601, Electrical Distribution System Upgrade, PX	16,721	12,841	3,880	0	0	0
06-D-603, Steam Plant Life Extension Project, Y-12	43,818	33,266	10,552	0	0	0
Total, Construction			**66,399**	**9,963**	**0**	

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

[b] These represent construction estimates. Design TEC estimates are reported in the appropriate PED project.

[c] $1,500,000 of prior-year uncosted balances for 08-D-601, Mercury Highway, Nevada Test Site was reprogrammed in FY 2009 in order to address funding needs for contractor employee defined-benefit pension plans. The project completed the previously-approved scope under budget and funding was available without impact due to favorable bids and subsequent contract award for the project. the FY 2009..

Site Stewardship

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Site Stewardship			
Operations and Maintenance	0	61,288	90,478
Construction			15,000
Total, Site Stewardship	**0**	**61,288**	**105,478**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Site Stewardship				
Operations and Maintenance	101,929	103,536	174,071	205,802
Construction	0	0	0	0
Total, Site Stewardship	**101,929**	**103,536**	**174,071**	**205,802**

Mission

The goal of Site Stewardship is to ensure environmental compliance and energy and operational efficiency throughout the nuclear security enterprise, while modernizing, streamlining, consolidating, and sustaining the stewardship and vitality of the sites as they transition within NNSA's plans for the nuclear security enterprise. The objective of Site Stewardship is to maintain facility and overall site stewardship to better focus resources in support of the overall NNSA missions by ensuring that all regulatory and energy efficiency requirements are met and Special Nuclear Material (SNM) is dispositioned.

Benefits

These activities support the NNSA's mission by ensuring efficient, balanced common stewardship contributions to the Government Performance and Results Act (GPRA) Unit Program Number 60. Site Stewardship has a number of subprogram elements that are essential to support and maintain the critical mission programs across the nuclear security enterprise. These subprogram elements address regulatory driven requirements, nuclear materials consolidation, and NNSA-specific energy needs.

Operations and Maintenance

The Site Stewardship Operations and Maintenance program is comprised of three subprograms in FY 2011 that include: Environmental Projects and Operations; Nuclear Materials Integration; and Energy Modernization and Investment Program. Environmental Projects and Operations is a regulatory driven subprogram that provides Long-Term Stewardship (LTS) at NNSA sites once the cleanup mission at an NNSA site has been completed by the Office of Environmental Management. Nuclear Materials Integration provides focused attention on the consolidation and disposition of specific NNSA nuclear materials and on material sets owned by multiple programs and where a single coordinated disposition program is warranted. Energy Modernization and Investment Program (EMIP) improves energy and water efficiency of enduring NNSA assets and implements renewable energy solutions in

accordance with regulatory requirements (e.g., Energy Policy Act, Energy Independence and Security Act), Executive Orders 13423 and 13514, and DOE Order 430.2B.

Construction

Site Stewardship construction supports energy efficiency and site utility upgrade projects. In FY 2011 the Sanitary Effluent Reclamation Facility (SERF) Expansion at the Los Alamos National Laboratory (LANL) will upgrade 15 permitted wastewater discharge points to meet new EPA limits and to reduce total site water usage by over 114 million gallons per year. Future Site Stewardship line item construction projects will be identified and prioritized at each of the sites across the nuclear security enterprise and will address environmental compliance and energy and operation efficiency and include modernization projects as required.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 60, Site Stewardship											
Environmental Monitoring and Remediation: Annual percentage of environmental monitoring and remediation deliverables that are required by regulatory agreements to be conducted at NNSA sites under Long Term Stewardship (LTS) that are executed on schedule and in compliance with all acceptance criteria. (Annual Output)	N/A	N/A	R: 100%	R: 100% T: 95%[a]	T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	Annually, submit on schedule and receive regulator approval of at least 95% of all environmental monitoring and remediation deliverables that are required at NNSA sites under LTS by regulatory agreements.
Special Nuclear Material Removed: Cumulative percentage of security category I/II Special Nuclear Material removed from Lawrence Livermore National Laboratory. (Long-term Output)	N/A	N/A	R: 35%	R: 55% T: 50%[b]	T: 80%	T: 90%	T: 100%	N/A	N/A	N/A	By the end of 2012, all security category I and II SNM removed from the Lawrence Livermore National Laboratory.

[a] Target is associated with the previous Environmental Projects and Operations GPRA Unit.

[b] Performance reporting is initiated in FY 2010 with the transfer of this activity into the new Site Stewardship account. Prior to FY 2010, this activity was funded within the RTBF account and not reported as a discreet performance activity.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
NNSA Long-Term Stewardship Program: Cumulative cost savings totaling 12% over six years for the NNSA Long Term Stewardship program demonstrated by comparison of the actual annual costs of performing the Stewardship activities at a site as compared to the budgeted annual costs of performing these same activities using Earned Value Management (EVM) principles with a target savings of 2% per year. (Efficiency Measure)	N/A	N/A	Baseline	R: 16%[a] T: 2.0% [b]	T: 2.0%	T: 2.0%	T: 2.0%	T: 2.0%	T: 2.0%	N/A	Over a six year period (FY 2009 - FY 2014) achieve a cumulative 12% cost savings when applying this measure.

[a] The large apparent cost savings shown is due to delays in receiving regulatory approval for well replacements at Sandia and in completing the environmental restoration activities at the Pantex Plant, which did not allow for all planned LTS activities to be completed during FY 2009 and thus resulting in lower than expected costs in FY 2009. Future year performance of these deferred activities will normalize the apparent cost savings.

[b] Target is associated with the previous Environmental Projects and Operations GPRA Unit Program.

FY 2009 Accomplishments
The Site Stewardship GPRA unit begins in FY 2010. For specific FY 2009 achievements for the former EPO GPRA unit, see the respective section in the EPO justification.

Major Outyear Priorities and Assumptions
The current outyear projections for Site Stewardship are $585,338,000 for FY 2012 through FY 2015. Outyear funding will provide for the critical and persistent stewardship needs that support and align with the NNSA mission and proposed transformation of the nuclear security enterprise. The effort to complete the removal of security category I/II SNM from LLNL by the end of 2012 will continue.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Operations and Maintenance	**0**	**61,288**	**90,478**
Environmental Projects and Operations	**0**	**41,288**	**42,273**

The Environmental Projects and Operations (EPO) subprogram provides for the continuance of Long Term Stewardship (LTS) activities that are regulatory driven to reduce risks to human health and the environment at NNSA sites and adjacent areas through two mechanisms: (1) by operating and maintaining environmental cleanup systems installed by the Office of Environmental Management as part of the Legacy Environmental Cleanup projects at NNSA sites; and (2) performing long-term environmental monitoring activities and analyses in a cost-effective manner that assures compliance with federal, state, and local requirements. EPO provides effective oversight of these activities and ensures integration of a responsible environmental stewardship program with the NNSA's stockpile stewardship and nuclear security efforts.

In FY 2011, NNSA is responsible for LTS at five sites: Kansas City Plant, Lawrence Livermore National Laboratory (LLNL) Main Site, LLNL Site 300, Pantex Plant, and Sandia National Laboratories. The EPO subprogram will support LTS regulatory requirements by continuing to treat contaminated groundwater; performing environmental monitoring of surface water, ground water, and soils; operating and maintenance of landfill remedies; and working with EPA regions and various states to meet post-completion regulatory cleanup and reporting requirements. The NNSA, working in concert with other Federal agencies, states, and affected stakeholders, executes its LTS activities in a cost-effective, compliant, and safe manner consistent with end states that support the nuclear enterprise mission.

Nuclear Materials Integration	**0**	**20,000**	**41,554**

The Nuclear Materials Integration (NMI) subprogram provides focused attention on the consolidation and disposition of specific NNSA nuclear materials and on material sets owned by multiple programs and where a single coordinated disposition program is warranted. In addition, the subprogram includes the Inactive Actinides program activities that ensure programmatic materials, not in active use, are properly characterized and safely packaged, and that unneeded materials have an appropriate disposition path.

In FY 2011, the ongoing inactive actinides program will continue to support the treatment, consolidation and disposition of NNSA special nuclear material (SNM) that is no longer required to support the nuclear security enterprise mission. In FY 2011 Nuclear Materials Integration will initiate the treatment and disposition of NNSA materials currently stored at non-NNSA sites including the Idaho National Laboratory and Oak Ridge National Laboratory.

Support will be provided to Department-level planning activities including the identification of material sets with multiple program owners where a centralized and coordinated effort would be the most efficient and effective means of consolidating and dispositioning the material.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

By the end of FY 2011, 90 percent of the security category I/II SNM will have been prepared for off-site shipment. All security category I/II SNM will be packaged and removed from LLNL by the end of 2012. Funding is provided starting in FY 2011 to package transuranic (TRU) waste generated by the preparation of the LLNL materials, consistent with new guidance from the Office of Environmental Management, for dispositioning at the Waste Isolation Pilot Program.

Energy Modernization and Investment Program	**0**	**0**	**6,651**

The Energy Modernization and Investment Program (EMIP) implements specific energy-savings projects across the nuclear security enterprise to reduce greenhouse gas emissions, improve energy and water efficiency of enduring assets, and increase the generation and use of clean renewable energy. The EMIP directly supports Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management, Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance, DOE orders, and regulatory requirements. The EMIP is a key component of NNSA's energy management strategy to promote sustainability and reduce energy usage and therefore costs, and complements other funding mechanisms.

The FY 2011 EMIP funding supports priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution. Example projects include: energy efficient upgrades to existing facility and utility systems; water conservation measures; installation of advanced meters; high-efficiency new systems; and renewable energy solutions.

FY 2011 EMIP funding also supports Other Project Costs (OPC) for next-year energy stewardship projects.

Construction	**0**	**0**	**15,000**

Site Stewardship construction supports energy efficiency and site utility upgrade projects.

In FY 2011 the Sanitary Effluent Reclamation Facility (SERF) Expansion at the Los Alamos National Laboratory (LANL) will upgrade 15 permitted wastewater discharge points to meet new EPA limits and to reduce total site water usage by over 114 million gallons per year.

Total, Site Stewardship	**0**	**61,288**	**105,478**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Operations and Maintenance	
▪ **Environmental Projects and Operations**	
The slight increase in EPO is at Pantex, primarily due to additional operation and maintenance of the Zone 11 In-situ bioremediation system, as a result of regulatory concerns regarding perchlorate in the perched aquifer; and for well replacements in order to maintain compliance plan monitoring well network requirements.	**+985**
▪ **Nuclear Materials Integration**	
The net increase of $21,554,000 reflects a planned decrease of approximately $4,900,000 for the removal of security category I/II special nuclear material from LLNL by the end of FY 2012; an increase of approximately $11,500,000 to implement new packaging requirements for TRU waste from the LLNL effort; and an increase of approximately $14,900,000 in the program to consolidate and disposition NNSA and multi-program nuclear materials.	**+21,554**
▪ **Energy Modernization and Investment Program**	
The increase supports the initiation and execution of priority Energy Modernization and Investment Program (EMIP) projects that will contribute towards achievement of NNSA's energy conservation goals.	**+6,651**
▪ **Construction**	
The increase fully funds the Sanitary Effluent Reclamation Facility (SERF) Expansion at the Los Alamos National Laboratory (LANL) to upgrade wastewater discharge points to meet new EPA limits and to reduce total site water usage by over 114 million gallons per year.	**+15,000**
Total Funding Change, Site Stewardship	**+44,190**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**	**0**

Construction Projects

(dollars in thousands)

Major Item of Equipment	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
11-D-601, Sanitary Effluent Reclamation Facility, LANL	15,000	0	0	0	15,000	0
Total, Construction			**0**	**0**	**15,000**	

11-D-601, Sanitary Effluent Reclamation Facility (SERF) Expansion at the Los Alamos National Laboratory (LANL) Project Data Sheet is for Project Engineering and Design/Construction

1. Significant Changes

The most recent approved Critical Decision (CD) is CD-1, approved on January 8, 2010, with a pre-conceptual design cost range of $10,000,000 to $16,000,000.

A Federal Project Director has been assigned to this project.

This Project Data Sheet is new for Project Engineering and Design (PED) and Construction.

Consistent with the Deputy Secretary's memorandum dated January 16, 2009, and the FY 2011 Field Budget Call dated December 14, 2009, requiring that all pre-CD-2 projects with a total project cost (TPC) of less than $20,000,000 request all construction funds within the same appropriation year of start of construction, the project will be fully funded in FY 2011, its construction year. Therefore, PED and construction funding are being requested concurrently.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)[a]

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2009	07/29/2009	NA	NA	NA	NA	NA	NA	NA
FY 2010	07/29/2009	NA	NA	NA	NA	NA	NA	NA
FY 2011	07/29/2009	01/08/2010	3Q 2011	3Q 2011	3Q 2011	4Q 2012	NA	NA

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete –Completion of D&D work

[a] The CD-1, CD-2, CD-3, and CD-4 dates are preliminary, pending approval of the performance baseline by the Acquisition Executive upon CD-2 approval.

3. Baseline and Validation Status

(dollars in thousands)[a]

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC	
FY 2009	NA	NA	NA	NA	NA	NA	NA	
FY 2010	NA	NA	NA	NA	NA	NA	NA	
FY 2011	1,200	13,800	15,000	1,100	NA	1,100	16,100	

4. Project Description, Justification, and Scope

Project Description

The Sanitary Effluent Reclamation Facility (SERF) was originally constructed in 2003 to supply reclaimed sanitary effluent for use at only the Strategic Computing Complex (SCC). However, the SERF as originally designed does not have the capacity to treat the expected amount of effluent at critical facilities and will need to be expanded. The expansion of SERF will provide treatment capacity (up to 500,000 gallons per day (gpd)), both in terms of volumetric flow and degree of treatment, which will allow the Sanitary Waste Water System (SWWS), SCC, Laboratory Data Communications Center (LDCC), and Power Plant effluent to be treated to allow reuse, thereby greatly reducing the amount of water that must be discharged to the environment, and allowing National Pollution Discharge Elimination System (NPDES) permit effluent limits to be met.

The SWWS and Power Plant treated effluents are currently combined and discharged to the environment into Sandia Canyon (an environmental concern) in addition to the blow-down from the SCC and LDCC cooling towers. However, an integrated approach to reduce or eliminate discharges to NPDES-permitted outfalls through water reuse does not exist. To achieve the integrated approach objective, treated effluent from the SWWS plant will receive additional treatment at the SERF and be used to meet the water demands for the Power Plant, SCC, and LDCC. Cooling tower blow-down from the SCC and LDCC will be returned to the SERF, thereby minimizing the discharges to the canyon. Boiler and cooling tower blow-down and other routinely-generated non-sanitary wastewaters from the Power Plant will also be returned to SERF, thereby eliminating the need to discharge these wastewaters to the environment.

Project Scope

The SERF Expansion Project will increase the existing facility's footprint to allow the installation of additional piping, pumps, and micro and reverse osmosis filters to increase capacity (up to 500,000 gpd) and capability for removal of Polychlorinated biphenyls (PCB) and metals from the waste waters. In addition, new effluent and blending tanks will be provided as a process buffer to enable remote, off-shift operations. Additional tank capacity may be added near the SSWW plant to mitigate the potential of untreated over-flow and provide operational flexibility/buffer. Lastly, new evaporation ponds will be added to store reverse osmosis rejects which cannot be treated further to meet permit requirements.

[a] All costs are preliminary, pending approval of the performance baseline costs by Acquisition Executive upon CD-2 approval.

Project Justification

The primary justification for the SERF project is to recycle 115 million gallons of water annually which supports the goals of the Energy Management Executive Orders 13423 and 13514 which designate water conservation targets requiring a 16 percent reduction by 2015. This project will contribute 37 percent to achieving the goal.

The outfall reduction strategy plan, dependent on the SERF Expansion Project, meets the established objectives for reduced water consumption. Since LANL is the sixth largest user of water among DOE facilities, a significant contribution from LANL is critical to achieving the Executive Order 13423 and Executive Order 13514 goals. The Laboratory has implemented an objective and target under its Environmental Management System of zero liquid discharges by 2012.

During the course of performing the national nuclear security mission, LANL discharges more than 175 million gallons of treated wastewater each year through 15 permitted outfalls under its NPDES permit. These outfalls support mission-critical research and development and waste management operations at LANL. In August 2007, LANL was issued a new NPDES Outfall permit by the U.S. Environmental Protection Agency (EPA Permit #NM0028355). Stricter effluent limitations along with July 2010 and July 2012 compliance deadlines will result in compliance issues for LANL if present discharges are not addressed. The stricter effluent limitations contained in the new permit cannot be met with existing treatment facilities at the Laboratory. Failure to resolve these compliance issues by the compliance deadlines could disrupt Laboratory operations and possibly expose NNSA and LANL to civil and criminal liability. Fines and penalties of $25,000/day for each violation could be imposed by the EPA.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements will be followed or tailored as necessary.

No construction funds will be used until the project performance baseline has been validated and CD-3 has been approved (this project may be completed as a design build acquisition contingent on approval by the Acquisition Executive).

5. Financial Schedule

	(dollars in thousands)[a]		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2011	1,200	1,200	1,200
FY 2012	0	0	0
Total, PED	1,200	1,200	1,200
Construction			
FY 2011	13,800	13,800	2,000
FY 2012	0	0	11,800
Total, Construction	13,800	13,800	13,800
TEC			
FY 2011	15,000	15,000	3,200
FY 2012	0	0	11,800
Total, TEC	15,000	15,000	15,000
Other Project Cost (OPC)			
OPC except D&D			
FY 2009[b]	1,100	136	136
FY 2010	0	764	564
FY 2011	0	0	200
FY 2012	0	200	200
Total, OPC except D&D	1,100	1,100	1,100
D&D			
FY 2012	NA	NA	NA
Total, D&D	NA	NA	NA
OPC			
FY 2009	1,100	136	136
FY 2010	0	764	564
FY 2011	0	0	200
FY 2012	0	200	200
Total, OPC	1,100	1,100	1,100
Total Project Cost (TPC)			
FY 2009[b]	1,100	136	136
FY 2010	0	764	564
FY 2011	15,000	15,000	3,400
FY 2012	0	200	12,000
Total, TPC	16,100	16,100	16,100

[a] Funding and cost profiles shown are preliminary, pending approval of the performance baseline by the Acquisition Executive upon approval of CD-2.

[b] Funded by Facilities and Infrastructure Recapitalization Program (FIRP).

6. Details of Project Cost Estimate

	(dollars in thousands)[a]		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	1,000	NA	NA
Contingency	200	NA	NA
Total, PED	1,200	NA	NA
Construction			
Site Preparation	1,000	NA	NA
Equipment	4,000	NA	NA
Other Construction	6,600	NA	NA
Contingency	2,200	NA	NA
Total, Construction	13,800	NA	NA
Total, TEC	15,000	NA	NA
Contingency, TEC	2,400	NA	NA
Other Project Cost (OPC)			
OPC Except D&D			
Conceptual Design	800	NA	NA
Startup	200	NA	NA
Contingency	100	NA	NA
Total OPC Except D&D	1,100	NA	NA
D&D			
D&D	NA	NA	NA
Contingency	NA	NA	NA
Total D&D	NA	NA	NA
Total, OPC	1,100	NA	NA
Contingency, OPC	100	NA	NA
Total, TPC	16,100	NA	NA
Total, Contingency	2,500	NA	NA

[a] All costs are preliminary, pending approval of the performance baseline costs by Acquisition Executive upon CD-2 approval.

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2011	TEC			15,000						15,000
	OPC	1,100								1,100
	TPC	1,100	0	15,000	0	0	0	0	0	16,100

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY 2013
Expected Useful Life (number of years)	30
Expected Future Start of D&D of this capital asset (fiscal quarter)	1Q FY 2042

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	750	750	22,500	22,500
Maintenance	1,500	1,500	45,000	45,000
Total, Operations & Maintenance	2,250	2,250	67,500	67,500

9. Required D&D Information

The one-for-one offset requirement will be met by utilizing site-banked square footage.

Area	Square Feet
Area of new construction	800
Area of existing facility(s) being replaced	NA
Area of additional D&D space to meet the "one-for-one" requirement	NA

Name(s) and site location(s) of existing facility(s) to be replaced:

10. Acquisition Approach

Potential alternatives that will be considered includes, but not limited to status quo, limited expansion (no recycle for the LDCC and the Power Plant Cooling Tower), expansion as described above, and expanded SERF Expansion by adding Sigma and TA-55.

To meet the July 2012 deadline for meeting the NPDES permitting requirements, the project will be acquired through a design-build strategy on a firm-fixed price contract, if deemed necessary.

Environmental Projects and Operations

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Environmental Projects and Operations			
Long-Term Stewardship	38,596	0	0
Total, Environmental Projects and Operations	**38,596**	**0**	**0**

Budget Structure Changes

The Environmental Projects and Operations Long-Term Stewardship activities have been realigned to Site Stewardship Operations and Maintenance Program. The Site Stewardship Government Performance and Results Act (GPRA) unit established in FY 2010 integrates program elements managed under the Associate Administrator for Infrastructure and Environment into one funding entity that will operate under a consistent policy.

FY 2009 Accomplishments

- Signed Chemical Commodities Superfund Consent Decree at Kansas City Plant.
- Submitted all regulatory documents on time for the Kansas City Plant, Lawrence Livermore National Laboratory, Pantex Plant, and Sandia National Laboratories.
- Submitted Missouri Hazardous Waste Management Facility (MHWMF) permit renewal application to Missouri DNR. The regulator allowed an application for a Post Closure permit instead of a MHWMF permit which was less onerous and liability on the site.
- DOE and EPA negotiated and settled dispute with DOE agreeing fines and penalties due to shutdown of remedial actions (treatment facilities) at LLNL Main Site in FY 2008. A Treatment Facility restart schedule was also negotiated as part of the agreement which was implemented beginning in FY 2009.
- Maintained Engineering and Institutional Controls in support of requirements identified in Compliance Plans for Long Term Stewardship of cleanup actions at these sites.

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Environmental Projects and Operations/Long-Term Stewardship	
Reflects realignment of the Environmental Projects and Operations Long-Term Stewardship activities under the Site Stewardship Operations and Maintenance Program in FY 2010.	**0**
Total Funding Change, Environmental Projects and Operations	**0**

Safeguards and Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Safeguards and Security (S&S)			
Defense Nuclear Security (Homeland Security)			
Operations and Maintenance	689,510	720,044	667,954
Construction	45,698	49,000	52,000
Total, Defense Nuclear Security	**735,208**	**769,044**	**719,954**
Cyber Security (Homeland Security)	**121,286**	**122,511**	**124,345**
Total, Safeguards and Security	**856,494**	**891,555**	**844,299**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Safeguards and Security (S&S)				
Defense Nuclear Security (Homeland Security)				
Operations and Maintenance	675,229	672,344	671,671	681,259
Construction	55,715	57,265	57,254	59,390
Total, Defense Nuclear Security	**730,944**	**729,609**	**728,925**	**740,649**
Cyber Security (Homeland Security)	**126,046**	**125,822**	**125,707**	**127,189**
Total, Safeguards and Security	**856,990**	**855,431**	**854,632**	**867,838**

Mission

Safeguards and Security (S&S) is comprised of two Government Performance and Results Act (GPRA) Unit Programs. The Defense Nuclear Security (DNS) program, managed by National Nuclear Security Administration (NNSA) Associate Administrator for Defense Nuclear Security, provides protection for NNSA personnel, facilities, nuclear weapons, and information from a full spectrum of threats, most notably from terrorism, which has become of paramount concern since the September 11, 2001 attacks. The Cyber Security program, managed by the NNSA Chief Information Officer, provides the requisite guidance needed to ensure that sufficient information technology and information management security safeguards are implemented throughout the NNSA enterprise. These program efforts are integrated under NNSA's Chief of Defense Nuclear Security.

The FY 2011 submission provides direct funding for the mission base program for Defense Nuclear Security. Work for Others will continue to fund an allocable share of the base program through full cost recovery. Extraordinary security requirements for Work for Others projects will be a direct charge to those customers. In the FY 2011-2015 Budget Request, Cyber Security activities are all requested as direct funded.

The NNSA Management and Operating contractors have provided estimates for full cost recovery of Defense Nuclear Security activities that support and/or benefit Work for Others customers for FY 2011. The table below provides an estimate of the costs that will be recovered from Work for Others customers. There was no provision for full cost recovery in the FY 2009 Omnibus Appropriation.

Estimates of Security Cost Recovered by Defense Nuclear Security

(Dollars in thousands)

Site	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Kansas City Plant	0	200	300
Livermore National Laboratory	0	3,400	3,400
Los Alamos National Laboratory	0	3,939	3,939
Nevada Test Site	0	1,864	1,929
Pantex Plant	0	165	165
Sandia National Laboratory	0	17,000	16,000
Y-12 Plant	0	0	0
Total	0	26,568	25,733

The Homeland Security Presidential Directive-12 (HSPD-12) directed the establishment of a common identification standard for Federal employees and contractors. This directive will continue to drive investments in upgrades to the physical security infrastructure and information technology to accept HSPD-12 credentials throughout the NNSA. Defense Nuclear Security, Cyber Security and Office of the Administrator Information Technology programs will continue to fund these activities in FY 2011-2015.

Defense Nuclear Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Defense Nuclear Security			
Operations and Maintenance (Homeland Security)			
Protective Forces	418,694	453,000	414,166
Physical Security Systems	77,245	74,000	73,794
Transportation	420	0	0
Information Security	25,880	25,300	25,943
Personnel Security	31,263	30,600	30,913
Materials Control and Accountability	35,929	35,200	35,602
Program Management	71,364	83,944	80,311
Technology Deployment, Physical Security	9,431	8,000	7,225
Graded Security Protection Policy (formerly DBT)	19,284	10,000	0
Total, Operations and Maintenance (Homeland Security)	**689,510**	**720,044**	**667,954**
Construction (Homeland Security)	45,698	49,000	52,000
Total, Defense Nuclear Security	**735,208**	**769,044**	**719,954**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Defense Nuclear Security				
Operations and Maintenance (Homeland Security)				
Protective Forces	422,221	414,432	414,617	421,346
Physical Security Systems	71,405	73,987	71,165	72,297
Information Security	26,202	26,464	26,729	26,996
Personnel Security	31,222	31,534	31,849	32,167
Materials Control and Accountability	35,958	36,318	36,681	37,048
Program Management	80,924	82,239	83,186	83,887
Technology Deployment, Physical Security	7,297	7,370	7,444	7,518
Total, Operations and Maintenance (Homeland Security)	**675,229**	**672,344**	**671,671**	**681,259**
Construction (Homeland Security)	55,715	57,265	57,254	59,390
Total, Defense Nuclear Security	**730,944**	**729,609**	**728,925**	**740,649**

Mission

The Defense Nuclear Security program provides protection from a full spectrum of threats especially terrorism for NNSA personnel, facilities, nuclear weapons, and information. The Defense Nuclear Security program is a Homeland Security related activity.

Benefits

The Defense Nuclear Security program makes unique contributions to Government Performance and Results Act Unit Program Number 57 by protecting Department of Energy (DOE) interests from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which may cause unacceptable adverse impacts on national security, program continuity, and the health and safety of employees, the public or the environment.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Priority: Security: Reduce nuclear dangers and environmental risks. **GPRA Unit Program Number:** 57, Defense Nuclear Security											
Graded Security Protection: Cumulative percentage of progress, measured in milestones completed, towards implementation of all Graded Security Protection (GSP) Policy at NNSA sites. (Long-term Output)[a]	R: 100% T: 100%	N/A	N/A	R: 100% T: 100%	T: 50%	T: 50%	N/A	N/A	N/A	N/A	Complete 100% of implementation plans (IPs) developed at NNSA sites in FY 2009. Complete 50% of overall GSP milestones in FY 2010, and complete the remaining 50% GSP milestones in FY 2011.
Elite Forces: Cumulative percentage of completion towards modernizing the National Nuclear Security Administration's protective forces in accordance with Tactical Response Force (TRF), also known as "Elite Forces", requirements. (Long-term Output)	N/A	N/A	N/A	R: 40% T: 40%	T: 60%	T: 100%	N/A	N/A	N/A	N/A	By 2011 complete TRF implementation.
Standardize Procurement Process: Standardize the procurement process and security equipment, such as vehicles, weapons, ammunition across the National Nuclear Security Administration Defense Nuclear Security complex by FY 2010. (Annual Output)[b]	N/A	N/A	N/A	R: 60% T: 50%	T: 100%	N/A	N/A	N/A	N/A	N/A	Standardize 100% of the procurement process and security equipment by FY 2010.
Common Procurement System: Cumulative cost savings achieved by implementing a common procurement system for selected security equipment. (Efficiency)[b]	N/A	N/A	N/A	R: Baseline	T: 5%	T: 10%	T:15%	T:20%	N/A	N/A	Achieve a cumulative 20% savings from established baseline by FY 2013.

[a] The Department replaced the 2005 Design Basis Threat with the Graded Security Protection policy, issued in FY 2008.

[b] New performance indicator added in FY 2010.

FY 2009 Accomplishments

Zero-Based Security Review (ZBSR): Working in partnership with the Office of Health, Safety and Security (HSS), a review of the entire NNSA physical security program to identify meaningful and achievable opportunities to improve the way NNSA implements security policies, procedures, and programs in each of the security topical areas has been initiated. The goal is to eliminate unnecessary costs, improve our ability to develop clear and consistent security requirements, identify enterprise-wide acceptable levels of risk, and maintain the effectiveness of the site-level security program. Its results are driving development of NNSA-specific policy implementation instructions for each security topical area, site-specific efficiency and effectiveness recommendations, and significant revision to DNS internal processes supporting the Programming, Planning, Budgeting and Evaluation (PPBE) process and related documents.

Common Procurement and Equipment Standardization: Significant strides have been made towards implementing a Common Procurement and Equipment Standardization program. The Defense Nuclear Security Office of Field Support (NA-72) established a "Security Commodity Team," consisting of contractor, federal, and union representatives from each NNSA and DOE field site, which will be the mechanism for discussion, research, evaluation, and selection of security equipment to be standardized across the enterprise. The DNS Office of Field Support also established a business relationship with the NNSA Supply Chain Management Center (SCMC), which has provided a Safeguards and Security Commodity Manager to develop and manage the strategic sourcing part of this initiative. The first phase of the effort is changing and standardizing the procurement process for ammunition. A business relationship with the DoD Joint Munitions Command (JMC) has been established, which offers the use of its existing ammunition contracts for future procurements. This will supply nearly 90 percent of DNS ammunition requirements at a much-reduced price and help avoid existing overhead taxes imposed by the sites. The new process will also promote more granular reporting of the actual ammunition needs and use for each site. As a result, Defense Nuclear Security expects to save close to $1,000,000 in FY 2010 and several million dollars in the outyears.

Strategic Framework: A Strategic Framework was issued in June 2009 which captures the latest analysis of the challenges facing the DNS Program; identifies four strategies for achieving a more effective, efficient, and sustained nuclear security posture for the enterprise; and outlines an approach to strategy execution designed to overcome potential barriers to success. It is aligned with the broader missions and strategic direction of NNSA and the Department of Energy and establishes a new planning "baseline" by accounting for previous strategic and programmatic plans and numerous independent analyses.

Vulnerability Assessment Peer Review Process: Defense Nuclear Security has led a year-long effort to improve the quality and consistency of the site-level vulnerability assessments by focusing on improving the rigor and formality of the analysis process at each site, working with the sites to identify better and more cost effective security upgrades, and employing risk management in the development of the site security strategy.

Graded Security Protection Policy Implementation Planning: Using the lessons learned from the 2003 Design Basis Threat (DBT) a project-oriented approach has been adopted which provides for the comprehensive management of all activities covered in the site implementation plans - including detailed cost, scope, and schedule data for each site. With the replacement of the 2005 DBT policy by the Department's Graded Security Protection (GSP) policy in 2008, a reassessment of the site-level

activities contained within the implementation plans is being conducted to determine their utility in meeting the new GSP policy. Following completion of the revised vulnerability assessments, new implementation plans will be developed for each of the four enduring Category I sites. A follow-on assessment effort will also be conducted at all NNSA sites to determine if upgrades are needed to reach full compliance with the GSP policy - including "mission critical" activities, operations, and/or facilities.

Major Outyear Priorities and Assumptions

The outyear projections for Defense Nuclear Security total $2,930,127,000 for FY 2012 through FY 2015. The trend through the five-year period is level, which allows for maintaining a security protection posture consistent with the 2003 DBT. A full analysis is being conducted to ascertain cost and schedule estimates in order to implement new requirements identified in the 2008 GSP policy.

To improve the efficiency of the NNSA security operation, Defense Nuclear Security will continue its efforts to reduce the costs of protective forces across NNSA. Defense Nuclear Security is actively engaged with the inter-agency community to identify, field test and deploy state-of-the-art detection and weapons systems that will lead to more efficient utilization of security police officers. Additionally, greater emphasis will also be placed on using risk acceptance methodologies to understand the relative value of additional security increases and defer investments in areas where the risk of adverse security outcomes are at acceptable levels.

The construction program outyear projections support the safeguards and security mission within the nuclear security enterprise and future physical security upgrades in support of the Graded Security Protection Policy and infrastructure modernization.

Project 10-D-708, Security Improvements Project at Y-12 will no longer require additional funds beyond those requested in FY 2010 that fully funds the CD-2/3 validated estimate approved August 2009.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Operations and Maintenance (Homeland Security)	**689,510**	**720,044**	**667,954**

Physical Security integrates personnel, equipment and procedures to protect a facility's physical assets and resources against theft, sabotage, diversion, or other criminal acts. Each NNSA site or facility has an approved Site Safeguards and Security Plan (SSSP) or a facility Master Security Plan detailing protection measures and resources needed to safeguard site security interests. The Physical Security program will: continue to improve security to counter known and projected adversary threat capabilities; manage a focused program to identify and deploy improved physical security systems and equipment; work to improve the integration between personnel (protective forces) and technology capabilities; and address protective force overtime rates. Other initiatives include reducing security overhead costs and addressing life cycle equipment issues. The technology deployment endeavor will work with DOE laboratories and parallel government efforts to deploy technologies that demonstrate promise to improve effectiveness and minimize cost growth.

- **Protective Forces** **418,694** **453,000** **414,166**

  Funding requested for Protective Forces provides for specialized training and sustains protective forces hired in support of the 2003 DBT and to begin planning activities for implementation of the 2008 GSP policy and Tactical Response Force policy. These forces are a site's primary front-line protection, consisting of armed uniformed officers. Protective Forces are an integral part of a site's security posture, trained and practiced in various tactics and procedures to protect site interests.

  In FY 2011, the request will allow sites to maintain additional forces hired to meet the 2003 DBT. In addition to providing daily site protection, these forces function as first responders, train to manage chemical and biological events, and provide special contingency response capabilities. Funding needs are determined by Site Safeguards and Security Plans (SSSPs) supported by Vulnerability Assessments, and protection strategies designed to ensure adequate protective force staffing levels, equipment, facilities, training, management and administrative support.

  The large reduction is mostly attributable to reductions to specific posts and patrols identified in the Zero-Based Security Review, and in response to the Deputy Secretary's Security Reform Initiative. The reduction is also due to the one-time FY 2010 Appropriation increase of $10,000,000 for training and equipment.

- **Physical Security Systems** **77,245** **74,000** **73,794**

  Physical Security Systems provide intrusion detection and assessment capabilities, access controls, and performance testing and maintenance of security systems according to the approved site performance testing plan.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

In FY 2011, the request supports focus on life cycle replacement of assessment, detection and other security systems and equipment and implement new technologies to maximize cost effectiveness as we fully integrate security capital asset requirements into the NNSA site ten-year planning process.

- **Transportation** **420** **0** **0**

  The Transportation subcategory was eliminated in FY 2010. Support of the movement and consolidation of special nuclear material inventories is now included in Protective Forces.

- **Information Security** **25,880** **25,300** **25,943**

  The Information Protection element of the budget includes program management and administration, and maintenance costs associated with: protection and control, planning, training, administrative requirements for maintaining security containers and combination, marking, control systems, operations security, special access programs, technical surveillance countermeasures (TSCM), and classification and declassification.

  In FY 2011, the request supports continued reviews at Headquarters and field sites of classified and sensitive information, to ensure proper document marking, storage and protection of information.

- **Personnel Security** **31,263** **30,600** **30,913**

  Personnel Security encompasses the processes for security clearance determinations at each site to ensure that individuals are eligible for access to classified information or matter, and/or access to, or control over, special nuclear material or nuclear weapons.

  In FY 2011, the request continues this effort, and supports the Human Reliability Program, Control of Classified Visits, Security Awareness Programs, and processing of unclassified visits and assignments by foreign nationals.

- **Materials Control and Accountability** **35,929** **35,200** **35,602**

  Materials Control and Accountability (MC&A) provides for the control and accountability of special nuclear material and other accountable nuclear materials through measurements, quality assurance, accounting, containment, surveillance, and physical inventory.

  In FY 2011, the request provides for tracking movements of accountable nuclear materials between sites and reporting those movements to a national level tracking system. The request provides for assessment, testing, transfers, verifications and measurements, reconciliation and statistical analyses related to MC&A requirements.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Program Management**	**71,364**	**83,944**	**80,311**

Program Management provides direction, oversight and administration, planning, training, and development for security programs in these areas: Security Program Planning, Annual Operating Plans (AOPs), Site Security Plans and Site Safeguards and Security Plans, Vulnerability Analysis, Performance Testing and Assurance activities, Security Incident and Reporting Management, Surveys and Self-Assessments, activities related to deviation requests, Control of Security Technology Transfer Activities, and Facility Clearance and Foreign Ownership, Control or Influence (FOCI) activities.

In FY 2011, the request provides for the assessment of security implementation efforts through the review of updated security plans and performance testing, review of vulnerability assessments, and revised threat and vulnerability analysis. To formalize the process, a detailed Program Management Plan, including annual performance goals and baselines for each site's security program, is in place.

▪ **Technology Deployment, Physical Security**	**9,431**	**8,000**	**7,225**

This effort will identify and facilitate the deployment of security technology to address both short- and long-term solutions to specific physical security and MC&A needs at NNSA sites.

In FY 2011, the request ensures focus on promising, emerging technologies that will provide operational efficiencies for the NNSA security program.

▪ **Graded Security Protection Policy (formerly Design Basis Threat)**	**19,284**	**10,000**	**0**

GSP policy funding will provide for implementation of the 2008 GSP policy in accordance with approved implementation plans. The FY 2010 Appropriation included $10,000,000 for security upgrades promulgated in the 2004 DBT Special Annex letter and incorporated into the 2008 Graded Security Protection Policy. Funding to continue GSP upgrades will be integrated into functional categories.

Construction	**45,698**	**49,000**	**52,000**

The Construction program includes the cost of new and ongoing line-item construction projects that support the safeguards and security mission within the nuclear security enterprise.

FY 2011 funding of $52,000,000 supports the construction phase of the Nuclear Materials Safeguards and Security Upgrades (NMSSUP) project, 08-D-701, at the Los Alamos National Laboratory. Project 10-D-708, Security Improvements Project at Y-12 will no longer require additional funds beyond those requested in FY 2010.

Total, Defense Nuclear Security	**735,208**	**769,044**	**719,954**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Defense Nuclear Security (Physical Security)	
▪ **Protective Forces**	
The decrease reflects efficiencies achieved through risk-informed decisions regarding staffing levels to support the enterprise mission, and common procurement of equipment and supplies. Reductions to specific posts and patrols have been identified through the DNS Zero-Based Security Review and in response to the Deputy Secretary's Security Reform Initiative, both which seek to streamline security requirements using cost-benefit analyses and the acceptance of risk.	**-38,834**
▪ **Physical Security Systems**	
The decrease allows for only essential upgrades to existing physical security systems, as well as systems maintenance and improvements to compensate for life cycle concerns.	**-206**
▪ **Information Security**	
The minor increase maintains current levels for implementation of a more formalized information protection program, including enhanced procedures for documentation, and centralized storage of classified and sensitive information.	**+643**
▪ **Personnel Security**	
The minor increase maintains current levels for processing of clearances, granting access authorizations for visitors at NNSA sites, managing the Human Reliability Program, providing security awareness training, and processing visit requests for foreign national unclassified visits and assignments.	**+313**
▪ **Materials Control and Accountability**	
The minor increase maintains the current levels for programmatic efforts in support of materials consolidation, and revised processes and procedures for process and item monitoring for more timely and accurate tracking of accountable nuclear material.	**+402**

	FY 2011 vs. FY 2010 ($000)
▪ **Program Management**	
The decrease is attributable to completion of expanded efforts in FY 2009 and FY 2010 to conduct Vulnerability Analysis, Performance Testing, and Survey and Self-Assessment activities in support of Departmental requirements (DOE Order 470.1), including the revised Graded Security Protection policy.	**-3,633**
Technology Deployment, Physical Security	
▪ The decrease does not significantly impact planned deployment of technology to address specific physical security and MC&A needs at NNSA sites.	**-775**
▪ **Graded Security Protection Policy (formerly Design Basis Threat)**	
The FY 2010 Appropriation language included $10,000,000 for security upgrades promulgated in the April 2004 special annex letter and incorporated into the 2008 Graded Security Protection Policy. Funding to continue GSP upgrades will be integrated into functional categories.	**-10,000**
Construction	
Completion of construction funding for Project 10-D-708, Security Improvements Project at Y-12 ($-49,000,000). Funding for 08-D-701, Nuclear Materials Safeguards and Security Upgrades Project, LANL ($+52,000,000).	**+3,000**
Total, Defense Nuclear Security	**-49,090**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	19,314	19,739	20,173
Capital Equipment	5,953	6,084	6,218
Total, Capital Operating Expenses	**25,267**	**25,823**	**26,391**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	20,617	21,071	21,535	22,009
Capital Equipment	6,355	6,495	6,638	6,784
Total, Capital Operating Expenses	**26,972**	**27,566**	**28,173**	**28,793**

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
05-D-170, Project Engineering and Design (PED), VL						
05-D-170-1, PED NMSSUP II, LANL	43,094	43,094	0	0	0	0
05-D-170-2, PED Security Improvements Program, Y-12	10,421	9,343	1,078	0	0	0
08-D-701, NMSSUP II, LANL	176,822	48,550	44,620	0	52,000	31,652
10-D-170, Security Improvements Program, Y-12	49,000	0	0	49,000	0	0
Total, Construction			**45,698**	**49,000**	**52,000**	**31,652**

Outyear Construction Projects

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
08-D-701, NMSSUP II, LANL	31,652	0	0	0
12-D-XXX Outyear Infrastructure Upgrades & Modernization, NNSA	24,063	57,265	57,254	59,390
Total, Construction	**55,715**	**57,265**	**57,254**	**59,390**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

08-D-701, Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II, Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project Data Sheet is for Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decisions (CD) is CD-3B Approve Start of Construction that was approved on December 16, 2009 with a Total Project Cost (TPC) of $245,166,000 and CD-4 of January 2013.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is an update of FY 2009 PDS. The performance baseline scope does not include the Technical Area Isolation Zone and the Airborne Mitigation System. These two items that were included in the preliminary scope were found to be no longer essential.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2008	4QFY2002	2QFY2007	1QFY2008	1QFY2008	2QFY2008	3QFY2012	N/A	N/A
FY 2009	4QFY2003	1QFY2007	1QFY2008	2QFY2008	4QFY2008	4QFY2011	N/A	N/A
FY 2011	08/25/2003	05/30/2008	09/30/2009	06/23/2009	06/23/2009	2QFY2013	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

	CD-3A	CD-3B
FY 2009	06/23/2009	
FY 2010		12/16/2009

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2008			214,755	25,245	N/A		240,000
FY 2009	43,094	170,715	213,809	25,245	N/A	25,245	239,054[a]
FY 2011	43,094	176,822	219,916	25,250	N/A	25,250	245,166

[a] The FY 2008 appropriated funding was reduced based on the rescission of 0.91 percent ($71,000) and use of prior year balances from construction projects ($82,000) in accordance with the FY 2008 Consolidated Appropriations Act, (P.L. 110-161).

4. Project Description, Justification, and Scope

Project Description

The project is being conducted in accordance with the project management requirements in DOE O 413.3A and DOE M 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

The Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II will support the viability of stockpile management and other current missions carried out in Technical Area (TA)-55 at the Los Alamos National Laboratory (LANL) by providing an effective, robust physical security system to address the core essential physical security systems, protection strategies, and security requirements.

The LANL nuclear missions, as they currently exist and as they are planned in the future, require a reliable safeguards and security system to assure the protection and control of special nuclear materials (SNM), classified matter, and NNSA property. The nuclear materials operation at TA-55 involves the ability to securely store, move, process, and track nuclear materials that are attractive to the adversaries both in terms of the quantity of materials and the forms. The NMSSUP Phase II project plays a key role in the support of this mission by replacing or improving the aging exterior physical security systems and installing enhanced systems to support a new protection strategy for the TA-55 site.

The primary components of the project include, at a minimum:

Perimeter Intrusion Detection, Assessment, and Delay System (PIDADS)
East Vehicle and Pedestrian Entry Control Facility (ECF)
Utility Infrastructure (to support the items above)
West Vehicle Access (WVA)

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED[a]			
FY 2005	10,000	10,000	0
FY 2006	33,094	33,094	770
FY 2007	0	0	15,252
FY 2008	0	0	14,031
FY 2009	0	0	10,569
FY 2010	0	0	2,472
Total, PED	43,094	43,094	43,094
Construction			
FY 2008	48,550	48,550	0
FY 2009	44,620	44,620	3,571
FY 2010	0	0	50,142
FY 2011	52,000	52,000	85,940
FY 2012	31,652	31,652	37,169
Total, Construction	176,822	176,822	176,822
TEC			
FY 2005	10,000	10,000	0
FY 2006	33,094	33,094	770
FY 2007	0	0	15,252
FY 2008	48,550	48,550	14,031
FY 2009	44,620	44,620	14,140
FY 2010	0	0	52,614
FY 2011	52,000	52,000	85,940
FY 2012	31,652	31,652	37,169
Total, TEC	219,916	219,916	219,916

[a] PED funds were appropriated in FY 2005 and FY 2006 under PED Line Item 05-D-170.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
Prior years cost	9,357	9,357	9,357
FY 2006	5,855	5,855	5,855
FY 2007	370	370	370
FY 2008	358	358	358
FY 2009	200	200	200
FY 2010	1,100	1,100	1,100
FY 2011	6,280	6,280	6,280
FY 2012	1,730	1,730	1,380
FY 2013	0	0	350
Total, OPC except D&D	25,250	25,250	25,250
D&D	NA	NA	NA
FY	NA	NA	NA
Total, D&D	NA	NA	NA
Total, OPC	25,250	25,250	25,250
Total Project Cost (TPC)			
Prior years cost	19,357	19,357	9,357
FY 2006	38,949	38,949	6,625
FY 2007	370	370	15,622
FY 2008	48,908	48,908	14,389
FY 2009	44,820	44,820	14,340
FY 2010	1,100	1,100	53,714
FY 2011	58,280	58,280	92,220
FY 2012	33,382	33,382	38,549
FY 2013	0	0	350
Total, TPC	245,166	245,166	245,166

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	41,133	28,473	43,094
Contingency	1,961	14,621	0
Total, PED	43,094	43,094	43,094
Construction			
Site Preparation	41,711	43,257	42,447
Equipment	19,836	39,777	20,866
Other Construction	69,878	77,486	74,252
Contingency	45,397	10,195	39,257
Total, Construction	176,822	170,715	176,822
Total, TEC	219,916	213,809	219,916
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	11,925	11,925	11,925
Conceptual Design	4,473	3,700	3,700
Start-Up	7,361	7,464	8,332
Contingency	1,491	2,156	1,293
Total, OPC except D&D	25,250	25,245	25,250
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	25,250	25,245	25,250
Total, TPC	245,166	239,054	245,166
Total Contingency	48,849	26,972	40,550

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2008	TEC	138,590	49,000	27,165						214,755
	OPC	20,987	1,866	658	1,734					25,245
	TPC	159,577	50,866	27,823	1,734	-	-	-	-	240,000
FY 2009	TEC	137,644	49,000	27,165						213,809
	OPC	20,987	1,866	658	1,734					25,245
	TPC	158,631	50,866	27,823	1,734	-	-	-	-	239,054
FY 2010	TEC									-
	OPC									-
	TPC	-	-	-	-	-	-	-	-	-
FY 2011	TEC	136,264		52,000	31,652					219,916
	OPC	16,140	1,100	6,280	1,730					25,250
	TPC	152,404	1,100	58,280	33,382	-	-	-	-	245,166

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2QFY2013
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	2QFY2063

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	18,480	42,962	924,000	2,148,100
Maintenance	1,600	1,510	80,000	75,500
Total, Operations & Maintenance	20,080	44,472	1,004,000	2,223,600

9. Required D&D Information

The limited D&D is considered incidental to construction and has been included in the construction costs.

Area	Square Feet
Area of new construction	N/A
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced: N/A

10. Acquisition Approach

NNSA has assigned management and execution of this project to LANL major contracts through a firm fixed-priced contract. Interfaces between the contractor(s) and other entities at LANL will be managed

by a dedicated project team and minimized to facilitate clear lines of responsibilities and contractual obligations. The contracts will be incrementally funded by annual appropriations.

Cyber Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Cyber Security (Homeland Security)			
Infrastructure Program	93,776	99,011	97,849
Enterprise Secure Computing	25,500	21,500	21,500
Technology Application Development	2,010	2,000	4,996
Total, Cyber Security (Homeland Security)	**121,286**	**122,511**	**124,345**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Cyber Security (Homeland Security)				
Infrastructure Program	99,550	99,326	98,211	99,693
Enterprise Secure Computing	21,500	21,500	22,500	22,500
Technology Application Development	4,996	4,996	4,996	4,996
Total, Cyber Security (Homeland Security)	**126,046**	**125,822**	**125,707**	**127,189**

Mission

The goal of the National Nuclear Security Administration (NNSA) Cyber Security program is to ensure that sufficient information technology and information management security safeguards are implemented throughout the NNSA enterprise to adequately protect the NNSA information assets and to provide the requisite guidance in compliance with the Department of Energy's (DOE) Defense-in-Depth Cyber Security strategy and the NNSA Information Management Strategic Plan. The Cyber Security program is a Homeland Security related activity.

Benefits

The Cyber Security program makes contributions to Government Performance and Results Act (GPRA) Unit Program Number 58 by maintaining NNSA's Cyber Security defenses against cyber threats that are increasing in number, complexity, and sophistication while supporting the application of advanced information technologies to the NNSA national security and other missions. NNSA sites continue to improve the scope and quality of cyber security programs through implementation of NNSA cyber security guidance and by addressing the increasing number of requirements issued by Office of Management and Budget.

The NNSA strategy for a long term cyber security program includes several components:

- Planning – Planning is a collaborative effort among Headquarters, sites and Management and Operating (M&O) contractors to understand the threat landscape and identify weaknesses through compliance reviews and performance measurement. This information is fed back into the site planning activities to generate both a long-term strategic plan and an annual tactical plan. Processes and documentation produced include cyber security working group, strategic and tactical plans, and both a Departmental threat statement and risk assessment.
- Cyber security policy and guidance – The policy component is very closely aligned with both the governance program and the planning component. Cyber security policies establish the high-level

goals and outcomes for the overall DOE Cyber Security program. Enhanced through guidance, and performance metrics, the policy is in place to drive the program's implementation. The focus is on top-level "thin-policy" supported by guidance at the Departmental level.

- Architecture and Technology – Installing well-defined, high level department structure, processes and principles puts the department in position to successfully manage the technology it employs. To achieve the best possible results from this structure and to ensure that a standard approach across the department is achieved, the set of sub processes, which fall within the leadership decision process, address the management and technology component. Products stemming from this component include architectural guidance, enterprise licensing of security tools and products, and a technology review and development process.
- Services – Sizeable changes to any organization can be difficult. As field sites adapt to the new processes and policies, it is the role of the NNSA Office of the Chief Information Officer (OCIO) to facilitate that adjustment at NNSA sites through various services and through the performance of several key initiatives that protect the entire department. The aim of these services is to develop an intelligent, proactive approach to mitigate the security threat to the department. Processes stemming from this component include cyber security communications, education and awareness, asset management, advice and assistance, and awards and recognition.
- Performance Measurement – Performance measurement provides a clear and consistent way to measure success and demonstrate results to senior management. Process and documents stemming from this component include compliance review and monitoring and cyber security metrics.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Priority: Security: Reduce nuclear dangers and environmental risks. **GPRA Unit Program Number:** 58. Cyber Security											
Cyber Security Reviews: Annual average percentage of Cyber Security reviews conducted by the Office of Health, Safety, and Security (HSS) at NNSA sites that resulted in the rating of "effective" (based on the last HSS review at each site over 2 Cyber Security topical areas). (Long-term Outcome)	R : 41% T: 57%	R : 57% T: 57%	R: 100% T: 100%	R: 100% T: 100%	T: 100%	T: 100%	T : 100%	T : 100%	T : 100%	T : 100%	Annually, achieve an effective rating of at least 100% of OA Cyber Security reviews.
Cyber Security Site Assessment (SAV): Annual percentage of Cyber Security Site Assessment Visits (SAV) conducted by the Office of the Chief Information Officer (OCIO) Cyber Security Program Manager (CSPM) at NNSA sites that resulted in the rating of "effective". (Annual Output)	N/A	N/A	R: 85% T: 100%	R: 100% T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, achieve an effective rating of 100% of OCIO SAV.
Cyber Certification and Accreditation: Annual number of NNSA information assets reviewed for certification and accreditation. (Efficiency)	N/A	N/A	R: 30 T: 30	R: 35 T: 35	T: 40	T: 45	T: 55	T: 65	T: 65	T: 65	By FY 2013, increase the number of assets reviewed per year to 65.

FY 2009 Accomplishments

- The Cyber Security program maintained a flexible, comprehensive, and risk-based cyber security program that protects the NNSA information and information assets.
- Completed the DOE Office of Health, Safety and Security (HSS) independent oversight inspection at NNSA sites with 100 percent effective ratings.
- All Site Assessment Visits (SAV) conducted by the Cyber Security Program Manager (CSPM) at NNSA sites resulted in an effective rating.
- Maintained and improved the NNSA cyber security architecture for NNSA Headquarters and sites
- Designed and built ESN-SIPRNet Gateway. Testing of the Gateway and the integration into ESN will begin in FY 2010.

Major Outyear Priorities and Assumptions

The outyear projections for Cyber Security total $504,764,000 for FY 2012 through FY 2015. With the increased prioritization of cyber security within NNSA, the program is working to develop a more robust set of performance metrics to better align the budget requirements to anticipated and demonstrated NNSA Cyber Security program performance outcomes.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Infrastructure Program**	**93,776**	**99,011**	**97,849**

The infrastructure program supports the cyber security operations and activities at NNSA sites. The cyber security operations and infrastructure program is built around a defense-in-depth approach for achieving cyber security in a highly networked environment. The defense-in-depth approach is a combination of known best practices and cost strategy that relies on the intelligent application of techniques and technologies which exist today. The defense-in-depth approach consists of three major components: personnel, technology and operations. This approach recommends a balance between the protection capability and cost, performance, and operational considerations. The implementation of this approach will enable maintenance of a cyber security posture that complies with all DOE and NNSA policies and processes, while addressing the increasing number and complexity of cyber security threats, vulnerabilities and risks.

In FY 2011, the request will provide for the implementation of enhanced cyber security capability, daily operations, cyber security infrastructure, and risk management. During FY 2010 and FY 2011, the Cyber Security program will provide leadership in the development and deployment of cyber security technologies for enhancement in incident management and the reduction of insider threat capabilities. During this period, Cyber Security funding will support research, development and deployment of the following technologies enterprise-wide:

- Cyber Tracer – this tool will provide the department with the capability to handle cyber security incidents enterprise-wide. The developed technology will provide each site with the capability to share incident information real time within that site and allow for enterprise-wide corrective actions to take place.
- Raytheon Oakley Systems' InnerView – this tool is an insider threat solution that integrates monitoring, investigation, and forensics capabilities that protect against insider threats. This tool is an agent-based insider threat protection that provides visibility and control of desktops and laptops, whether connected to the network, at home, or completely offline.
- Fidelis XPS – this tool provides a data detection leakage capability. It is a two-tiered architecture that consists of multiple policy sensors placed around the network to detect and/or prevent data leakage, and a central management console to distribute policies and collect/organize alerts.
- Symantec/Vontu's Data Loss Prevention Product – this tool provides the capability to quickly discover exposed confidential data wherever it is stored, with the broadest coverage of enterprise data repositories, and web content and applications.

▪ **Enterprise Secure Computing**	**25,500**	**21,500**	**21,500**

Enterprise Secure Computing provides state-of-the-art enterprise level classified computing infrastructure that enables effective collaboration and information sharing necessary for the NNSA complex.

In FY 2011, activities will focus on daily operations, infrastructure enhancements and application deployment. Enterprise Secure Computing funding will support research, develop and deployment of the following technology enterprise-wide:

(dollars in thousands)

FY 2009	FY 2010	FY 2011

BMC Remedy Service Desk incident and problem management solution - BMC Remedy IT Service Management Suite, ITIL-based solution reduces the number of incidents handled, improves resolution times, and prevents future incidents from occurring.

- **Technology Application Development** **2,010** **2,000** **4,996**

Technology Application Development is responsible for developing and advancing policies and initiatives that will support short and long-term solutions to specific cyber security needs at the NNSA sites and headquarters locations. Technological innovation, research and development are critical components for NNSA to protect its assets in national and global technology driven environments. The research and technology development efforts will focus on emerging technologies and leverage existing technology resources to create a more secure environment. In addition, new strategies can be developed to support cyber security activity across NNSA and foster collaboration between organizations.

In FY 2011, activities will focus on the enhancement of cyber security capability in the areas of incident management and disk encryptions. Funds will be used to implement risk mitigation processes to provide for improvement in the cyber security architecture. Actions will be taken to ensure these improvements are made which will include strengthening NNSA cyber security architecture for NNSA Headquarters and sites. NNSA will baseline the cyber security controls for confidentiality, integrity, and availability and will incorporate the certification and accreditation process into the cyber security architecture life-cycle model. Additionally, NNSA will employ a layered defense-in-depth cyber security model across the NNSA enterprise that will ensure integrated and layered protections are implemented consistently across NNSA computing environments.

Total, Cyber Security	**121,286**	**122,511**	**124,345**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
▪ **Cyber Security (Homeland Security)**	
Infrastructure Program	
The decrease in the infrastructure program reflects a reduction in the CAMS (configuration management, patch management and asset management) project. The funds were shifted to Technology Application.	**-1,162**
Enterprise Secure Computing	
No change.	**0**
Technology Application Development	
The increase supports the implementation of risk mitigation processes complex-wide.	**+2,996**
Total, Cyber Security	**+1,834**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	4,400	5,000
Capital Equipment	352	360	368
Total, Capital Operating Expenses	**352**	**4,760**	**5,368**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	376	384	392	401
Total, Capital Operating Expenses	**376**	**384**	**392**	**401**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Science, Technology and Engineering Capability

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Operations and Maintenance	**30,000**	**0**	**20,000**
Total, Science, Technology and Engineering Capability	**30,000**	**0**	**20,000**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Operations and Maintenance	**0**	**0**	**0**	**0**
Total, Science, Technology and Engineering Capability	**0**	**0**	**0**	**0**

Mission

The program mission for Science, Technology and Engineering Capability (STEC) program's mission is to make strategic investments in the national security science, technology and engineering capabilities and infrastructure base that are necessary to address current and future global security issues. The STEC budget is separated into its own budget line in order to more clearly describe the nature of these technical investments and seeks to honor the intent for which the investment funding is allocated. This program integrates the management, development, and maintenance of STEC capabilities that are relied upon by agencies across the Federal government and provides transparency, alignment, and accountability into the investments made in workforce and infrastructure to preserve national security STEC capability into the future.

The facilities and the expert multidisciplinary workforce within the nuclear security enterprise provide decision makers with the ability to understand the state of international scientific and technological advances as well as project how these advances could affect national security. Furthermore, their unique multidisciplinary infrastructure is key to anticipating technological surprise and for providing rapid innovative solutions to complex technical problems faced by multiple agencies. To address these national security challenges beyond the nuclear stockpile, the administration is committed to both retain and nurture national security research and development (R&D) capabilities to serve broader national security interests.

The principal objective of the FY 2011 request is to fund a joint program between the Department of Defense-Under Secretary of Defense for Acquisition, Technology and Logistics/Defense Threat Reduction Agency (DTRA) and the Department of Energy-National Nuclear Security Administration (NNSA) to conduct R&D on counterterrorism, survivability, and weapon effects. The nuclear weapons design and engineering facilities of the NNSA laboratories and DTRA's capability to assess radiation hardness and weapon effects will be used in a long term, jointly funded effort to achieve this objective. The DTRA/NNSA program will organize into the following five focus areas:

1. Advanced Science and Forensics,
2. Experimental Capabilities,
3. Science Based Output,
4. Active Interrogation of Special Nuclear Material (SNM), and

5. Nuclear Weapons Effects Modeling and Simulation.

The preponderance of the funding is targeted at two of these focus areas within the DTRA/NNSA program. The Advanced Science and Forensics focus area will concentrate on the advancement of theory in material science, plasma and nuclear science, investigation of innovative designs by computational modeling, experimental testing of innovative designs, demonstration of capabilities to customers, and forensics of a nuclear device for attribution. Research in this focus area will develop a new generation of transportable high performance radiation sources to support counter terrorism and weapon effects missions. The objective of the Active Interrogation of SNM focus area is to advance understanding of the phenomenology and technologies associated with various approaches to standoff detection of SNM and of nuclear weapons. These efforts seek to evaluate and to develop models, experiments, interrogation sources, signature detection systems, and supporting tools and capabilities. This focus area enhances and applies long-term NNSA nuclear weapon science capabilities related to probing materials and objects through developing active interrogation methodologies for detecting terrorist nuclear activities.

Benefits

NNSA's nuclear security enterprise infrastructure, with its unparalleled R&D capabilities, has underpinned national nuclear security from the Manhattan Project to the present. However, the national security landscape in the twenty-first century has changed dramatically. Nations and non-state actors pose unconventional warfare threats to the United States (U.S.) and our allies that could lead to significant loss of life, major damage to the nation's infrastructure, severe economic consequences, and/or technological surprise.

Other Federal agencies have made good use of the breadth of science and technology expertise of the NNSA laboratories. However, past focus has been on short-term and tactical projects of some urgency with specific deliverables that answer an immediate need. Using the partnership model with the unique, multidisciplinary workforce and infrastructure resident within the enterprise, results in an agile and responsive STEC enterprise that is cost efficient, includes accelerated capability development, and has quick response built-in.

This enterprise would help assure political and military decision makers that flexible intellectual and infrastructure capabilities are available to respond to technological surprise and provide innovative solutions to complex technical problems faced by agencies across the Federal government. To address these national security challenges beyond the nuclear stockpile, the administration is committed to both retaining and nurturing national security R&D capabilities that serve broader national security interests.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 61, Science, Technology and Engineering Capability[a]											
Tools for Counter Terrorism and Weapons Effects: Percent complete toward delivery of a new generation of transportable, high-performance radiation source. (Long-term Output)	N/A	N/A	N/A	N/A	N/A	T : Baseline	T : 25%	T : 40%	T : 65%	T : 100%	Complete delivery of a new generation of transportable, high-performance radiation sources by FY 2015.
Tools for Nuclear Nonproliferation: Percent complete toward delivery of a prototype enhanced particle accelerator that can be used for proton and x-ray radiography diagnostics (Long-term Output)	N/A	N/A	N/A	N/A	N/A	T : Baseline	T : 25%	T : 40%	T : 65%	T : 100%	Complete delivery of a prototype enhanced particle accelerator that can be used for proton and x-ray radiography diagnostics by FY 2015.

[a] The program is developing an efficiency measure for inclusion in the FY 2012 OMB budget request.

FY 2009 Accomplishments

While this is a new GPRA unit beginning in FY 2011, the $30,000,000 provided by Congress in the Supplemental Appropriations Act, 2009, was placed in this budget. That funding is a building block that will help create a more robust strategic partnership between the intelligence community and the three NNSA national security laboratories. This partnership envisions an increased analysis capacity, as well as continually improving experimental and computational capabilities. The near-term, draft milestones for the workload associated with this investment include the following:

- Produce plan for transitioning technical analyses of foreign nuclear weapons to modern simulation tools, including modern baselines (3Q FY 2010).
- Develop approach to assessing how foreign nuclear weapon programs could advance under a Comprehensive Test Ban Treaty, including full technical assessments (4Q FY 2010).
- Develop and evaluate new capability to assess specific foreign nuclear weapon technologies (4Q FY 2010).
- Develop and evaluate new capability to assess foreign neutron initiator technology, from reanalysis of U.S. archival data through assessment with modern tools (4Q FY 2011).

Major Outyear Priorities and Assumptions

Outyear funding requests are pending the completion of a number of program plans in this area, including deliverables to Congress required by the Supplemental Appropriations Act, 2009, and associated with the 5-year Memorandum of Understanding with DTRA.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Science, Technology and Engineering Capability			
Operations and Maintenance	**30,000**	**0**	**20,000**
▪ **Weapons of Mass Destruction Analysis and Assessments**	**8,000**	**0**	**1,000**

This subprogram addresses two significant challenges in the area of weapons of mass destruction (WMD) analysis and assessments that are of particular relevance to NNSA capabilities. First is the challenge to deliver high specificity detection of nuclear materials that are often at a distance in complex scenarios (e.g., cargo, moving target). A second challenge is that of rapid, robust analysis and data evaluation of nuclear materials and debris to enable attribution. These two challenges provide opportunities to develop and maintain nuclear security capabilities including new radiation sources, measurement and instrumentation expertise, extension of high performance code capabilities, and material science expertise.

▪ **Actinide Chemistry, Diagnostics, and Remote Detection**	**2,000**	**0**	**7,750**

Actinide Chemistry, Diagnostics and Remote Detection subprogram critical efforts are aimed at preventing the terrorist use of nuclear weapons. Actinide chemistry and diagnostics enable rapid and robust identification of the materials interdicted or collected. Key initiatives include the development of comprehensive nuclear materials databases, newly predicted signatures and rapid, high fidelity analytical techniques. Emphasis on debris forensics broadens radiochemistry research, nuclear cross section evaluation, and particle transport modeling.

▪ **Impacts of Energy and Environment on Global Security**	**0**	**0**	**1,000**

This subprogram supports development and application of the nuclear security enterprise's resident expertise and methodologies needed to maintain the U.S. nuclear security mission that are adjacent to and strongly complement broader energy security problems. This includes modeling, simulation, theory and experimental capabilities that underpin problems in energy security from laser-based applications, fission/fusion systems, carbon treaty verification capabilities, special nuclear materials metallurgy skills associated with nuclear security, safety and disposal.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Advanced Analysis, Tools, and Technologies**	**20,000**	**0**	**10,250**

This sub-program invests in a portfolio of tools and technologies that will address threats across multiple national security domains including threat design, international safeguards, radiochemistry analysis, and material disablement. Integrated software tools that incorporate uncertainty quantification methodologies and validation of simulation results will benefit the nuclear security enterprise and a number of the national security partners that prioritize these important and emerging analysis concepts. Interagency interest in weapons effects and NNSA expertise will seek tools in areas such as consequence management and electromagnetic pulse threatened environments. Although nuclear materials characterization is directly relevant to nuclear emergency response operations and for surveillance of the current U.S. stockpile, simulation, development, and engineering of new materials and algorithms will enable robust characterization of aging or less well-characterized nuclear materials. High performance computing is integral to enabling a robust predictive capability in the service of national defense. Special purpose hardware and software, advancement in algorithm design and performance, advanced distributed processing, and appropriately secured computing facilities are aspects of this foundational technology.

Total, Science, Technology and Engineering Capability	**30,000**	**0**	**20,000**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Science, Technology and Engineering Capability	
▪ **Operations and Maintenance**	
Weapons of Mass Destruction Analysis and Assessments	
Increase is due to the establishment of a new program to deliver high specificity detection of nuclear materials and to enable attribution of nuclear materials and debris. Including technical and core capabilities and infrastructure that support a range of WMD assessments and related national security threats.	**+1,000**
Actinide Chemistry, Diagnostics, and Remote Detection	
Increase is due to the establishment of a new program task enable rapid and robust identification of the materials interdicted or collected. Including activities designed to integrate technical core capabilities and tools across the portfolio of threat environments and among nuclear security enterprise partners.	**+7,750**
Impacts of Energy and Environment on Global Security	
Increase is due to the establishment of a new program to develop and apply expertise and methodologies needed to maintain the U.S. nuclear security mission that complements energy security problems. Specific tasks include the range of capabilities needed to analyze the potential effects of climate change and energy supplies on global security.	**+1,000**
Advanced Analysis, Tools, and Technologies	
Increase is due to the establishment of a new program to investigate a portfolio of tools and technologies that will address threats across multiple national security domains including threat design, international safeguards, radiochemistry analysis, and material disablement.	**+10,250**
Total Funding Change, Science, Technology and Engineering Capability	**+20,000**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects			
Capital Equipment	0	0	250
Total, Capital Operating Expenses	**0**	**0**	**250**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects				
Capital Equipment	250	250	250	250
Total, Capital Operating Expenses	**250**	**250**	**250**	**250**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program does not budget separately for capital equipment and general plant projects.

Congressionally Directed Projects

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Congressionally Directed Projects	**22,836**	**3,000**	**0**

Description

Starting in FY 2008, funding for Congressionally Directed projects was appropriated as a separate funding line although specific projects may relate to ongoing work in a specific programmatic area. The FY 2009 Omnibus Appropriations Act (P.L. 111-8) included 13 Congressionally Directed projects within the Weapons Activities appropriation. The FY 2010 Energy and Water Development and Related Agencies Appropriations Act (P.L. 111-85) includes $3,000,000 for one Congressionally Directed Project in support of Center for Innovation through Computational Simulation and Visualization, Purdue University, Calumet (IN). For FY 2011, no follow-on funding is requested.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Congressionally Directed Projects			
• Advanced Engineering Environment for Sandia National Laboratories (MA)	1,427	0	0
• Cimtrak Cyber Security (IN) for cyber security software	952	0	0
• Secure Advanced Supercomputing Platform at Nextedge (OH)	3,806	0	0
• Multi-Disciplined Integrated Collaborative Environment (MDICE) (MO)	952	0	0
• Laboratory for Advanced Laser-Target Interactions (OH)	2,379	0	0
• Center for Innovation through Computational Simulation and Visualization, Purdue University, Calumet (IN)	4,757	3,000	0
• Technical Product Data Initiative (OH)	952	0	0
• Arrowhead Center, NM State University, Las Cruces, NM, to promote economic prosperity in New Mexico through economic development	952	0	0
• Restore Manhattan Project Sites (NM), LANL, Los Alamos, NM, for historic preservation	475	0	0
• Renewable Energy Planning (NV), NNSA, Nevada Test Site, for planning to maximize renewable energy production	475	0	0
• Electronic Record for Worker Safety and Health (NV), UNLV, Clark County, project to digitize NTS worker's records to help Nevada Site Office improve response to worker claims	1,427	0	0
• Distributed data driven test environment (OH)	3,330	0	0
• Matter Radiation interactions in extremes (MARIE) (NM)	952	0	0
Total, Congressionally Directed Projects	**22,836**	**3,000**	**0**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Congressionally Directed Projects	
Decrease results from no follow-on funding being requested for project.	-3,000
Total, Congressionally Directed Projects	**-3,000**

Defense Nuclear Nonproliferation

Defense Nuclear Nonproliferation

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Defense Nuclear Nonproliferation

Proposed Appropriation Language

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other incidental expenses necessary for defense nuclear nonproliferation activities, in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, and the purchase of not to exceed one passenger motor vehicle for replacement only, [$2,136,709,000] $2,687,167,000, to remain available until expended: [*Provided*, That, of the amount appropriated in this paragraph $250,000 shall be used for the projects specified under the heading ''Congressionally Directed Defense Nuclear Nonproliferation Projects'' in the joint explanatory statement accompanying the conference report on this Act]. (Energy and Water Development and Related Agencies Appropriations Act, 2010.)

Explanation of Change

The FY 2011 Request increase reflects the shift of the Pit Disassembly and Conversion Facility (PDCF) project from the Weapons Activities appropriation, with the goal of aligning management and funding responsibilities for the interrelated surplus plutonium disposition activities under a single appropriation. In addition, the increase supports $100,000,000 of the $400,000,000 the U.S. pledged to support the Russian plutonium disposition and supports the Research & Development of the Gas Turbine-Modular Helium Reactor (GT-MHR) located in Russia, as required under the Plutonium Management Disposition Agreement (PMDA).

The funding increase for International Nuclear Materials Protection and Cooperation reflects new or additional Materials Protection, Control, and Accounting (MPC&A) upgrades at Rosatom Weapons Complex sites, expanded MPC&A upgrades at selected buildings to address outsider and insider threats, additional support for the sustainability of installed MPC&A upgrades, and expansion of MPC&A work to countries outside of Russia and the Former Soviet Union. The funding increase for Nonproliferation and Verification Research and Development primarily support a new testing and evaluation program at the Nevada Test Site (NTS) to address emerging technical challenges associated with the Administration's nonproliferation objectives. The new capability at NTS will ultimately support U.S. capabilities to monitor international treaties and cooperative agreements, such as the Nuclear Non-Proliferation Treaty (NPT) and the proposed Fissile Material Cutoff Treaty (FMCT).

Funding increases for the Global Threat Reduction Initiative reflect an acceleration of efforts to remove and/or dispose of high priority vulnerable nuclear materials from the out years into FY 2011 in support of the international effort the President announced in Prague on April 5, 2009 to secure all vulnerable nuclear materials around the world within four years. In addition, the funding increase reflects an acceleration of the pace of reactor conversions and of establishing a capability to produce Molybdenum-99 in the United States without the use of highly enriched uranium (HEU).

The Nonproliferation and International Security funding decrease is primarily the result of a reduction in program activities in support of verification of disablement of the Democratic People's Republic of Korea nuclear program.

Defense Nuclear Nonproliferation

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research and Development	356,281	317,300	351,568
Nonproliferation and International Security	150,000	187,202	155,930
International Nuclear Materials Protection and Cooperation	460,592 [a]	572,050	590,118
Elimination of Weapons-Grade Plutonium Production	141,299	24,507	0
Fissile Materials Disposition	41,774	701,900	1,030,713
Global Threat Reduction Initiative	404,640 [b]	333,500	558,838
Congressional Directed Projects	1,903	250	0
Subtotal, Defense Nuclear Nonproliferation	**1,556,489**	**2,136,709**	**2,687,167**
Use of Prior Year Balances	-11,418	0	0
Total, Defense Nuclear Nonproliferation	**1,545,071**	**2,136,709**	**2,687,167**

NOTES: FY 2009 funds appropriated in Other Defense Activities for the Mixed Oxide Fuel Fabrication Facility, and in Weapons Activities for the Waste Solidification Building and Pit Disassembly and Conversion Facility (FY 2009 and FY 2010) are not reflected in the above table.

Public Law Authorization:

Energy and Water and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
National Nuclear Security Administration Act, (P.L. 106-65), as amended
National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)

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[a] FY 2009 amount includes international contributions of $4,067,065 from Government of Canada, $387,335 from New Zealand, $837,600 from Norway, and $300,000 from South Korea.

[b] FY 2009 amount includes international contributions of $3,918,000 from the Government of Canada, and $5,722,212 from the United Kingdom of Great Britain and Northern Ireland.

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	315,941	317,558	328,194	351,145
Nonproliferation and International Security	161,083	165,275	169,861	181,741
International Nuclear Materials Protection and Cooperation	570,798	561,790	558,492	623,670
Fissile Materials Disposition	859,375	1,010,642	789,558	743,600
Global Threat Reduction Initiative	599,994	659,926	987,138	1,056,172
Total, Defense Nuclear Nonproliferation	**2,507,191**	**2,715,191**	**2,833,243**	**2,956,328**

Mission

The convergence of heightened terrorist activities and the ease of moving materials, technology and information across borders have made the potential for terrorism involving weapons of mass destruction (WMD) the most serious threat facing the Nation. Preventing WMD from falling into the hands of terrorists is a major national security priority of this Administration. The FY 2011 budget request for DNN reflects the need to protect the United States (U.S.) and its allies from this threat.

The DNN mission is to provide policy and technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons -- in short, to detect, deter, secure, or dispose of dangerous nuclear material.

Benefits

The National Nuclear Security Administration's (NNSA) nonproliferation programs seek to secure nuclear materials worldwide that could be used for weapons and to convert such materials for peaceful applications. Within the Nuclear Nonproliferation Research and Development activities, improved detection of nuclear material is being achieved through instrument development and extensive cooperation among federal and international agencies. These advanced detection techniques and analysis capabilities are a major part of the U. S. capability to detect nuclear weapon tests and nuclear materials production processes to assure that intelligence information and agreed material controls are adequate in the face of increasing efforts by adversaries to obtain these capabilities. Demonstration of improved detection techniques, relying on state-of-the-art instrument advances to detect smaller and more specific types of material, in many cases remotely, are uniquely contributed by NNSA. Novel verification technologies and methodologies and realistic testing of detectors are also solely available from NNSA. Frequent interagency technical meetings and international comparisons, along with scientific peer review of each activity, guide these specific research and development programs.

The DNN program supports the NNSA and Department of Energy (DOE) mission to protect our national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and rogue states. These efforts are implemented in part through the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, formed at the G8 Kananaskis Summit in June 2002, and the Global Initiative to Combat Nuclear Terrorism, launched in Rabat Morocco in October 2006.

Performance

All of the programs within the Defense Nuclear Nonproliferation appropriation support Secretarial Goal 3 - ***Security: Reduce nuclear dangers and environmental risks.*** NNSA will secure the most vulnerable nuclear materials worldwide within four years consistent with the commitmetns the President's announced in Prague; strengthen the international safeguards system by developing new technologies, expertise, policies and partnerships; develop comprehensive models of the full life-cycle of fissile materials for analyzing weapons material properties, predictive simulation and proliferation risk; and enable ratification of new arms control measures through NNSA's technical capabilities.

In addition, select programs within this appropriation support Secretarial Goals 1 - ***Innovation: Lead the world in science, technology and engineering*** and Goal 2 - ***Energy: Build a competitive, low-carbon economy and secure America's energy future.***

NNSA will leverage its nuclear security science, technology, and engineering capabilities to promote solutions to Energy initiatives and support Innovation and education.

Means and Strategies

The pursuit of nuclear weapons by terrorists and states of concern makes it clear that our nonproliferation programs are urgently required, and must proceed on an accelerated basis. We will fully exploit the world-class expertise of our National Laboratories to increase our design, testing, and fielding capabilities for safeguards, detection, and verification technologies.

The pace and nature of treaties and agreements, extremely poor economic conditions in many host countries, political and economic uncertainties in the former Soviet Union, and the unwillingness of threshold states to engage in negotiations can all have dramatic effects on the pace of program implementation and effectiveness. The Department will implement the following strategies:

Interfaces, Partnerships and Working Relationships: NNSA partners with many U.S. agencies, international organizations, and non-governmental organizations to further our nonproliferation goals. All major policy issues are coordinated with the National Security Council, and we also work closely with the Departments of State, Defense, Homeland Security, Justice**,** Treasury, and Commerce. We leverage our nuclear nonproliferation research and development base within the National Laboratory complex to achieve program goals. In addition, NNSA coordinates with the Department of State and Nuclear Regulatory Commission on selected aspects of the fissile materials disposition program, and works with the IAEA to further international safeguards. We work with the United States Enrichment Corporation (USEC), the Tennessee Valley Authority (TVA), Babcock and Wilcox, and Nuclear Fuel Services in the disposition of surplus U.S. HEU, and USEC is also involved in the Russian HEU purchase agreement. The U.S. Industry Coalition is NNSA's partner in the Global Initiative for Proliferation Prevention. The U.S. Agency for International Development, the Nuclear Energy Agency, the Intelligence Community, and other agencies are also participants. We anticipate continued frequent collaborations with the Department of Homeland Security**,** providing technical assistance and training for domestic interdiction and export control cases.

The goal of the Russian Plutonium Disposition program is to work with Russia to dispose of at least 34 MT of surplus Russian weapon-grade plutonium. In November 2007, DOE and its Russian counterpart agency, Rosatom, agreed on a revised program to dispose of surplus Russian weapon-grade plutonium. The Russian program relies on the use of fast reactors for plutonium disposition (the

existing BN-600 and the BN-800 currently under construction), operating under certain nonproliferation restrictions. Simultaneously, Russia continues to support research and development of the Gas Turbine-Modular Helium Reactor (GT-MHR) on a cost shared basis with the U.S., which could also be used for disposition should that technology become operational during the disposition period. The U.S. and Russian governments have completed negotiations of a Protocol that will amend the PMDA to reflect this revised program. It is expected that the Protocol to the 2000 PMDA containing these amendments will be signed in early 2010 and that both countries will begin disposing of their surplus plutonium in the 2018 timeframe.

The PMDA Protocol, once approved by the two governments, calls for the U.S. to make available $400,000,000 to support plutonium disposition in Russia, subject to future appropriations. The balance of the more than approximately $2,000,000,000 remaining cost of Russia's plutonium disposition would be borne by Russia and, if available, non-U.S. government contributions. Additional funds separate from the $400,000,000 would also be required to continue U.S. cost sharing of GT-MHR research and development in Russia, U.S. management and oversight of the overall Russian plutonium disposition program and to implement a bilateral monitoring and inspection regime. The request for FY 2011 includes the first $100,000,000 of the $400,000,000 pledge. Failure of the U.S. to execute the Protocol with Russia and contribute $400,000,000 would likely cause Russia to delay or terminate efforts to dispose of its weapon-grade plutonium.

Securing Nuclear Weapons, Material and Expertise: For over a decade, the U.S. has been working cooperatively with the Russian Federation to enhance the security of facilities containing fissile material and nuclear weapons. The scope of these efforts has been expanded to protect weapons-usable material in countries outside the former Soviet Union as well. These programs fund critical activities such as installation of intrusion detection and alarm systems, and construction of fences around nuclear sites. Efforts to complete this work and to secure facilities against the possibility of theft or diversion have been accelerated. DOE has also established the Global Initiatives for Proliferation Prevention Program (GIPP), which is the only program in the U.S. Government that works to transition Former Soviet Union WMD scientists, engineers and related technical experts to commercial, non-weapons-related activities.

Security upgrades were completed for Russian Navy nuclear fuel and weapons storage at the end of FY 2006 and were completed for Rosatom buildings covered by the February 2005 Bratislava Agreement at the end of calendar year 2008. Security upgrades to the nuclear warhead storage sites of the Russian Strategic Rocket Forces were completed in 2007 and upgrades to the Russian Ministry of Defense's 12th Main Directorate nuclear warhead storage sites were completed at the end of calendar year 2008. Although the Bratislava Agreement workscope was completed in 2008, as agreed, a number of important areas/buildings have been added to the scope of joint work; and these additional Materials Protection Control and Accounting (MPC&A) upgrades will be completed by 2012.

Revitalizing International Safeguards: With the increasing number, size, and complexity of nuclear facilities deployed worldwide, the widespread entry into force of International Atomic Energy Agency (IAEA) additional protocols, and the emergence of new proliferation threats from both state and sub-state terrorist actors, the current workload of the IAEA far exceeds its resources. At the same time, the current generation of safeguards technologies is becoming outdated and the safeguards "human capital" base is aging and shrinking. As nuclear energy continues to expand, opportunities for proliferation will multiply and the gap between IAEA needs and resources will grow wider.

NNSA's Next Generation Safeguards Initiative focuses on revitalizing the U.S. safeguards technology and human capital base to ensure that the IAEA has the authorities, capabilities, technologies, expertise, and resources it needs to meet current and future challenges. In particular, NNSA coordinates and implements a dedicated program focused on developing advanced safeguards approaches, technologies, and equipment that will cultivate a new generation of specialists with expertise in a broad range of safeguards-relevant disciplines.

***Verifying Nuclear Programs in Countries of Proliferation Concern*:** The Nuclear Noncompliance Verification (NNV) program develops advanced technology applications to verify declared nuclear activities, detect undeclared nuclear materials and activities, and carry out dismantlement and verification of nuclear programs in countries of proliferation concern. The program also provides technical and operational support for U.S. Government policies and activities related to countries of proliferation concern. In FY 2011, the program will continue to support the Six Party Talks and related USG efforts to prepare for denuclearization and verification activities in North Korea. The program also will develop and deliver new verification technologies or methods and will support continued U.S. and international efforts related to the dismantlement and verification of proliferant-state nuclear programs.

Countering Illicit Supplier Networks: DOE has a long history of providing the technical input to the interagency in the various interdiction activities conducted by the U.S. Government. However, in light of the escalation in these activities catalyzed by the uncovering of A. Q. Khan's clandestine nuclear supply network, and the continued efforts by North Korea and Iran to pursue WMD technologies, the Nonproliferation and International Security program has developed a comprehensive capability to extract *actionable* information dealing with proliferation networks, technology transfers and involvement of entities and persons of interest in proliferation and terrorism.

In addition, the program provides real-time technical and policy support for efforts by the U.S. Government in a timely manner to facilitate a wide range of counter proliferation and counterterrorism interdiction options. The backbone of this capability is comprised of various customized electronic database applications that exploit information and provide rapid, real-time technical support to the interagency on illicit transfers of proliferation-sensitive technology and commodities; technology assessments in the DOE complex and U.S. industry; updates on proliferation network off-shoots; support to the new IAEA role investigating proliferation networks; and evaluation of the impact of proliferation networks on global safeguards and export controls systems.

Pre-Screening Cargo Containers for Nuclear and Radiological Materials: The world's shipping network, with millions of cargo containers in transit, could conceal nuclear and radiological materials. The Megaports Program provides the tools for law enforcement officials to pre-screen the bulk of the cargo in the world trade system through work with international partners to deploy and equip key ports with the means to detect and deter illicit trafficking in nuclear and other radioactive materials. This effort supports the U.S. Department of Homeland Security's Container Security Initiative. The FY 2011 budget supports the completion of four additional ports, which will increase the number of ports participating in and equipped through the Megaports Initiative to forty seven.

NNSA Support to Presidential Initiative for Research and Development: The Nonproliferation and Verification Research and Development program continues to provide basic and applied research in advanced materials for radiation detection sensors, special nuclear material movement, uranium enrichment detection, and plutonium reprocessing/production detection. These multi-use technologies

are designed to support the nonproliferation mission, but also support fundamental research and development critical for Defense, Homeland Security, and the Intelligence Community. Additionally, the program provides research, development, production, and delivery of space- and ground-based sensors to detect nuclear detonations in support of national security and treaty monitoring/verification.

Eliminating Russian Plutonium Production: The Elimination of Weapons Grade Plutonium Production (EWGPP) Program will result in the permanent shutdown of three nuclear reactors that currently have produced weapons-grade plutonium for Russian nuclear weapons. These reactors, which were the last three reactors in Russia that produced plutonium for military purposes, also provide necessary heat and electricity to two "closed cities" in the nuclear weapons complex. The two reactors in Seversk were shut down six months ahead of schedule in June 2008, leaving only the Zheleznogorsk reactor in operation.

The FY 2011 budget requests no funding for EWGPP. Previous budgets contained funding to shutdown the three reactors through (1) refurbishment of an existing fossil-fuel (coal) power plant in Seversk completed in December 2008; and (2) construction of a new fossil-fuel plant at Zheleznogorsk by 2011. The program officially received Critical Decision (CD)-4 approval on September 26, 2008, effectively terminating the Seversk project. The remaining activities to expand the full U.S. commitment of $285,000,000 to the Russian Federation will continue through the first quarter in FY 2010. This will eliminate the production of 1.2 MT annually of weapons-grade plutonium. The program is of high-value because plutonium that is never created does not have to be accounted for, or secured, and cannot be used by terrorists.

Disposing of Surplus U.S. and Russian Weapon-Grade Fissile Material: The Fissile Materials Disposition program disposes of inventories of surplus Russian and U.S. weapon-grade plutonium and surplus U.S. weapon-grade HEU. The FY 2011 budget request supports continuing efforts to dispose of surplus U.S. HEU including support for the Reliable Fuel Supply Program, and for design and construction of several plutonium disposition projects. In addition, funds will be used to support implementation of a revised program for disposition of Russian surplus weapon-grade plutonium based on the use of existing and planned fast reactors with certain nonproliferation conditions. These activities are of critical importance because they help to ensure that surplus fissile materials in the U.S. and Russia are permanently disposed of, and demonstrate U.S. and Russian leadership in working towards a nuclear-free world. A complementary fissile material reduction program, the HEU Transparency Program, continues to confirm the permanent elimination of HEU from the Russian weapons stockpile by monitoring the conversion of 30 MT of HEU to low-enriched uranium annually. The program has eliminated over 350 MT of HEU from dismantled Russian nuclear weapons of the 500 MT planned by the end of the HEU Purchase Agreement in 2013.

Joint Action Plan for Cooperation on Security Upgrades of Russian Facilities: An agreement on Nuclear Security Cooperation was reached between the Presidents of the U.S. and the Russian Federation during their February 2005 Bratislava Summit. This agreement includes, for the first time, a comprehensive joint action plan for the cooperation on security upgrades of Russian nuclear facilities at Rosatom and Ministry of Defense sites and cooperation in the areas of nuclear regulatory development, sustainability, secure transportation, MPC&A expertise training and protective force equipment.

Preventing a Possible Terrorist Attack Using Civilian Nuclear or Radiological Materials: The GTRI mission is to reduce and protect vulnerable nuclear and radiological materials located at civilian sites

worldwide. GTRI directly supports the Administration's goal announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years. The Joint Statement from the Moscow Summit in July 2009 and the September 2009 UNSC Resolution 1887 provide further global commitments to removal of nuclear materials and conversion of research reactors.

Establishing a Capability to Produce Molybdenum-99: Molybdenum-99, or moly-99, is widely used in medical diagnosis and has been produced commercially with reactors using highly enriched uranium (HEU) fuel. Because of the nonproliferation mission to remove HEU from use, NNSA's GTRI program has the lead for moly-99. As part of its nuclear nonproliferation mission, and in light of the current moly-99 supply shortage, GTRI is working to demonstrate moly-99 production without the use of HEU. GTRI is implementing projects to demonstrate the viability of non-HEU based technologies for large-scale commercial moly-99 production, including accelerator technology, low-enriched uranium (LEU) target technology, LEU solution reactor technology, and neutron capture technology.[a]

Global Partnership: Our nonproliferation objectives cannot be met without strong cooperation/ partnership with other nations. The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, formed at the G-8 Kananaskis Summit in June 2002, renewed the G-8 nations' (the U.S., Canada, France, Germany, Italy, Japan, Russia, and the United Kingdom) commitment to address nonproliferation, disarmament, counter-terrorism, and nuclear safety issues. The G-8 leaders pledged to devote up to $20,000,000,000 over ten years to support cooperative efforts, initially in Russia, and have invited other similarly motivated countries to participate in this partnership. The U.S. is committed to provide $10,000,000,000 over ten years to be matched by $10,000,000,000 from the other members, attesting to the firm belief that nonproliferation concerns are of the highest government priority, and that this work is of paramount importance for the security of the nation and the world. A total of $3,855,000,000 has been costed from FY 2002 through FY 2009. The following table reflects the Department of Energy funds budgeted for FY 2010-2015, by country.

U.S. Nonproliferation and Threat Reduction Assistance to Former Soviet States

(dollars in millions)

Summary by Country	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Russia	365.0	347.3	259.1	119.7	117.4	117.4
Kazakhstan	15.1	9.1	15.6	10.4	5.1	5.1
Kyrgyzstan	1.3	1.6	4.4	0	0	0
Ukraine	9.3	11.2	18.1	19.3	31.7	31.7
Uzbekistan	0.2	0.2	0.2	0.2	0.2	0.2
Azerbaijan/Armenia	7.1	7.2	6.8	2.9	1.4	1.4
Georgia	5.8	4.5	1.4	1.7	1.7	1.7
Tajikistan	0	2.8	0	0	0	0
Turkmenistan	0	0	7.0	2.6	0.3	0.3
Total, Russia & FSU	**403.8**	**383.9**	**312.6**	**156.8**	**157.8**	**157.8**

[a] Isotope production at the Department of Energy is primarily the responsibility of the Office of Science with two exceptions: plutonium-238 production by the Office of Nuclear Energy (NE) and molybdenum-99 production is supported by NNSA's Global Threat Reduction Initiative (GTRI).

Validation and Verification

To verify and validate program performance, NNSA conducts various internal and external reviews and audits. NNSA's programmatic activities are subject to continuing review by the Congress, the Government Accountability Office, the Department's Inspector General, the National Security Council, the Defense Nuclear Facilities Safety Board, the Department's Office of Engineering and Construction Management, and the Department's Office of Independent Oversight and Performance Assurance. Each year numerous external independent reviews are conducted of selected projects. Additionally, NNSA Headquarters senior management and Field managers conduct frequent, in-depth reviews of cost, schedule, and scope to ensure projects are on-track and within budget.

NNSA has established a comprehensive validation and verification process as part of its Planning, Programming, Budgeting and Evaluation (PPBE) system. Long-term performance goals are established/validated during the Planning Phase and linked in a performance cascade to annual targets and detailed technical milestones. During the Programming Phase, budget and resources trade-offs and decisions are evaluated based on the impact to annual and long-term performance measures. These NNSA decisions are documented and used to develop the budget requests during the Budgeting Phase. Program and financial performance for each performance measure is monitored and progress verified during the Execution and Evaluation Phase.

NNSA validation and verification activities during the PPBE Execution and Evaluation phase include a set of tiered performance reviews to examine everything from detailed technical progress to program management controls to corporate performance against long-term goals. This set of reviews includes: (1) Budget Formulation Validation; (2) the Independent Assessment process; (3) NNSA Administrator Program Reviews; (4) Program Manager Detailed Technical Reviews; (5) the NNSA Mid-Year Finance and Performance Review; (6) quarterly reporting of progress through the Department's performance tracking system, and (7) the NNSA Administrator's Annual Performance Report.

NNSA is performing annual internal self-assessments of the management strengths and weaknesses of each NNSA program. Among other things, this process helps NNSA ensure that quality, clarity, and completeness of its performance data and results are in accordance with standards set in the Government Performance and Results Act of 1993.

The NNSA Administrator reviews each NNSA program as part of the NNSA's PPBE Evaluation process. These reviews, usually conducted annually, include the NNSA Management Council and focus on both technical and financial information to identify issues, monitor program progress, and make recommendations for corporate improvement. The focus of these reviews is to verify and validate that NNSA programs are on track to meet their long-term goals and annual targets. The program managers conduct more detailed reviews of each program. These Program Manager Detailed Technical Reviews are normally held at least quarterly during the year. The focus of these reviews is to verify and validate that NNSA contractors are achieving detailed technical milestones that result in progress towards annual targets and long-term goals. These two reviews work together to ensure that advance warnings are given to NNSA managers in order for corrective actions to be implemented.

The results of all of these reviews are reported quarterly in the Department's performance tracking system and annually in the NNSA Administrator's Annual Performance Report and the DOE Performance and Accountability Report (PAR). Both documents help to measure the progress NNSA programs are making toward achieving annual targets and long-term goals. These documents are at a

summary level to help senior managers verify and validate progress towards NNSA and Departmental commitments listed in the budget.

In addition, the Government Accountability Office, Inspector General, National Security Council, Foster Panel, Defense Nuclear Facility Safety Board, and Secretary of Energy Advisory Board provide independent reviews of NNSA programs.

Major Outyear Priorities and Assumptions

Defense Nuclear Nonproliferation will play a key role in meeting the Administration's nonproliferation objectives, to accelerate control of "loose nuclear materials" to secure and remove all vulnerable nuclear material from the most vulnerable sites by the end of 2012. In particular, Global Threat Reduction Initiative (GTRI) will have worked in 118 countries around the world to implement nuclear and radiological threat reduction in line with the Administration's nonproliferation initiatives. By the end of 2015, GTRI will have converted or verified the shutdown of 129 (65%) of the 200 HEU reactors at civilian sits, removed 4,597 kilograms (99%) of the approximately 4,604 kilograms of nuclear materials at civilian sites, and protected 3,946 (79%) of the 5,000 buildings with high-priority nuclear and radiological materials. The Second Line of Defense program will continue to make significant progress in the prevention and detection of illicit transfer of nuclear material through shipping ports and significant reduction of risk of terrorists acquiring radiological materials and include approximately 650 border sites and 100 Megaports by the end of 2015. Nonproliferation and International Security funding in the outyears reflects the growth of the Next Generation Safeguards Initiative to strengthen global safeguards institutions, in particular the International Atomic Energy Agency (IAEA), and revitalize the U.S. safeguards technology and human capital base. The Fissile Materials Disposition (FMD) program will continue to work with Russia to dispose of its surplus weapon-grade plutonium in a transparent and irreversible manner and to dispose of surplus U.S. weapon-grade plutonium and highly enriched uranium in a similar manner. Nonproliferation and Verification Research and Development began executing the ten-year Integrated University Program and has created a new national security capability at the Nevada Test Site providing a technical foundation for addressing the challenges of the President's nonproliferation objectives.

DOE Nuclear Nonproliferation Activities

($ in Millions)

	FY 2009 Actual	FY 2010 Appropriation	FY 2011 Estimate	FY 2012	FY 2013	FY 2014	FY 2015
NNSA							
Defense Nuclear Nonproliferation	1,545.1	1,499.0	1,909.9	1,796.0	1,874.9	2,251.7	2,546.5
Waste Solidification Building [a]	47.0	77.0	78.5	40.9	25.8	0	0
Pit Disassembly and Conversion Facility [b]	38.4	89.1	193.0	188.1	245.0	241.1	192.4
Mixed Oxide Fuel Fabrication Facility [c]	0	560.7	505.8	482.2	569.5	340.4	217.4
Subtotal, NNSA	1,630.5	2,225.8	2,687.2	2,507.2	2,715.2	2,833.2	2,956.3
Nuclear Energy/Other Defense Activities							
Mixed Oxide Fuel Fabrication Facility [c]	467.8	0	0	0	0	0	0
Total, DOE Funding	**2,098.3**	**2,225.8**	**2,687.2**	**2,507.2**	**2,715.2**	**2,833.2**	**2,956.3**

The FY 2011 DNN budget request reflects a shift in emphasis from the Bratislava agreement accomplishments to increasing Second Line of Defense sites, and expansion of nuclear and radiological material removal under the GTRI in line with the Administration's goal; as well as realigning the funding for fissile materials disposition within DNN.

Department of Energy (DOE) Working Capital Fund (WCF) Support

Beginning in FY 2011, NNSA programs will fund a pro rata share by appropriation of certain DOE Working Capital Fund activities. FY 2011 projected NNSA program allocations are as follows: DOEnet ($482,000) for DOE telecommunications services; Financial Statement Audits ($4,514,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($3,076,000) for procurement management; iManage ($3,121,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,502,000). The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2011 is projected at $35,942,000.

The NNSA Defense Nuclear Nonproliferation appropriation projected allocation of the DOE Working Capital fund for FY 2011 is $3,205,618.

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[a] Funding in FY 2009 was appropriated in the Weapons Activities appropriation account. FY 2010 - FY 2015 funding is included in the DNN Appropriation.

[b] Funding in FY 2009 - FY 2010 was appropriated in the Weapons Activities appropriation account. FY 2011 - FY 2015 funding is included the DNN Appropriation.

[c] Funding in FY 2009 was appropriated within the Other Defense Activities appropriation. FY 2010 - FY 2015 funding is included in the DNN appropriation.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established the program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the national security enterprise. The majority of the efforts directly support program activities, and programs funded in the Defense Nuclear Nonproliferation appropriation plans to fund research with the HBCU totaling up to approximately $3,000,000 in FY 2011, in areas including engineering, radiochemistry, material sciences, and sensor development.

Nonproliferation and Verification Research and Development

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Nonproliferation and Verification R&D			
Operations and Maintenance (O&M)			
Proliferation Detection	195,400	181,839	225,004
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection	142,421	135,461	126,564
Subtotal, O&M	**337,821**	**317,300**	**351,568**
Construction	18,460	0	0
Total, Nonproliferation and Verification R&D	**356,281**	**317,300**	**351,568**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Nonproliferation and Verification R&D				
Operations and Maintenance				
Proliferation Detection (PD)	182,614	183,549	189,696	202,962
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection	133,327	134,009	138,498	148,183
Total, Nonproliferation and Verification R&D	**315,941**	**317,558**	**328,194**	**351,145**

Mission

This program reduces the threat to national security posed by nuclear weapons proliferation/detonation or the illicit trafficking of nuclear materials, through the development of new and novel technologies and the development of national and international treaty monitoring and verification capabilities.

Benefits

Using the unique facilities and scientific skills of NNSA and DOE national laboratories and plants, in partnership with industry and academia, the program conducts research and development that supports nonproliferation mission requirements necessary to close technology gaps identified through close interaction with NNSA and other U.S. government agencies and programs. This program meets unique challenges and plays an important role in the federal government by developing new technologies applicable to nonproliferation, homeland security, and national security needs.

The Nonproliferation and Verification Research and Development (R&D) program has two subprograms that make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 39.

The Proliferation Detection (PD) subprogram leads the nonproliferation community R&D effort in advancing next-generation nuclear detection capabilities and methods to detect foreign nuclear materials and weapon production facilities and processes. The PD subprogram develops the tools, technologies, and techniques used to detect, locate, and analyze the global proliferation of nuclear weapon

technologies, with special emphasis on capabilities to detect the illicit diversion of special nuclear materials and on support for U.S. commitments to international treaties, such as the Nuclear Non-Proliferation Treaty (NPT) and the proposed Fissile Material Cutoff Treaty (FMCT).

The Nuclear Detonation Detection subprogram develops and builds the nation's operational space-based sensors to detect and report surface, atmospheric, or space nuclear detonations; produces and delivers advanced technology that enable operation of the nation's ground-based monitoring networks to detect atmospheric nuclear detonations; and develops tools, technologies, and related science for collecting and analyzing forensic information related to nuclear detonations. Further, this subprogram forms the core U.S. R&D capability to support U.S. implementation and monitoring of treaties, such as the Comprehensive Nuclear Test Ban Treaty (CTBT).

The R&D program supported a joint effort between the DOE Office of Science (SC) and the Department of Homeland Security (DHS) to construct approximately 200,000 gross square feet of laboratories, offices, and facilities, known as the Physical Sciences Facility (PSF), on the Horn Rapids Triangle at Pacific Northwest National Laboratory. In addition, the program supports the life extension upgrades to Building 325 in the Hanford 300 Area. This upgrade effort will replace and extend existing research capabilities being displaced, as a result of the closure and cleanup of the Hanford 300 Area. NNSA completed its commitment to support the PSF construction funding in FY 2009; no additional funds are requested in the outyears.

Annual Performance Results and Targets

(R= Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 39, Nonproliferation and Verification R&D											
Uranium-235 Production Detection: 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"). (Long-term Outcome)	R: 10% T: 10%	R: 15% T: 15%	R: 20% T:20%	R: 25% T: 25%	T: 30%	T: 50%	T: 60%	T: 75%	T: 90%	T: 95%	By 2016, demonstrate the next generation of technologies and methods to detect Uranium-235 Production activities.
Plutonium Production Detection: 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"). (Long-term Outcome)	R: 10% T: 10%	R: 20% T: 20%	R: 25% T: 25%	R: 30% T: 30%	T: 50%	T: 65%	T: 75%	T: 90%	T: 95%	T: 100%	By 2015, demonstrate the next generation of technologies and methods to detect Plutonium Production activities.
Special Nuclear Material Detection: 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"). (Long-term Outcome)	R: 10% T: 10%	R: 20% T: 20%	R: 27% T: 27%	R: 33% T: 33%	T: 60%	T: 80%	T: 90%	T: 100%	N/A	N/A	By 2013, demonstrate the next generation of technologies and methods to detect Special Nuclear Material movement.
R&D Detonation Detection: 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 Output)	R: 90% T: 90%	R: 90% T: 90%	R: 95% T: 90%	R: 90% T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	Annually achieve timely delivery of NNSA nuclear detonation detection products (90% target reflects good on-time delivery. Index considers factors beyond NNSA's control and impact on customer schedules).

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Independent Merit Review: 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). (Efficiency)	R: 100% T: 100%	R: 100% T: 100%	R: 100% T: 100%	R: 100% T: 100%	T: 100%	T: 100%	T:100%	T: 100%	T: 100%	T: 100%	By 2006, ensure that 100% of the active research projects have completed an independent R&D peer assessment of the project's scientific quality and mission relevance within a 2–3 year cycle.
Merit Reviewed Journals/ Fora: Annual number of articles published in merit reviewed professional journals/ for a representing leadership in advancing science and technology knowledge. (Annual Output)	R: 200 T: 200	R: 220 T: 200	R: 235 T: 200	R: 331 T: 200	T: 200	T: 200	T: 200	T: 200	T: 200	T: 200	Annually, achieve goal of 200 articles published in merit reviewed professional journals/for a representing leadership in advancing science and technology knowledge.

FY 2009 Accomplishments

- Completed initial analysis of multiple signatures at uranium conversion plant(s) leading to new detection opportunities.
- Completed design and testing of advanced focal plane array mass spectrometry detector.
- Developed and fielded a robust detection system for stand-off detection and real-time characterization of Special Nuclear Materials (SNM) at distances of tens of meters.
- Developed a technology to combine broad area search with focused high-resolution SNM detection technologies in real time.
- Developed the plan for establishing a new capability at the Nevada Test Site in FY 2010 that addresses technical challenges associated with the Administration's nonproliferation objectives, especially those relating to emerging treaties and cooperative agreements.
- Began execution of the Integrated University Program to develop the next generation of nuclear engineering and nuclear science researchers for nonproliferation applications.
- Designed, built, and delivered two operational sensors for the Global Positioning System (GPS) satellite constellation that monitor the Earth's surface, atmosphere, and space environment for nuclear tests.
- Delivered the Regional Seismic Travel Time (RSTT) code for improved ground-based nuclear detonation detection.

Major Outyear Priorities and Assumptions

The FY 2012 – FY 2015 outyear projections for the R&D program total $1,312,838,000 and support R&D leading to detection systems for strengthening U.S. capabilities to respond to current and projected threats to national security posed by the proliferation of nuclear weapons, diversion of SNM, as well as support to international treaties and regimes. Almost a third of this funding is for production of sensors to support the nation's operational nuclear detonation detection and reporting infrastructure through joint programs with DoD and provides both U.S.-only and international support to treaties.

Detailed Justification

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Nonproliferation and Verification R&D O&M

- **Proliferation Detection** **195,400** **181,839** **225,004**

  The Proliferation Detection (PD) subprogram provides technical expertise and leadership. The R&D efforts are focused on advanced technologies and approaches for detecting foreign proliferant activities, including fissile material and weapon production facilities, equipment, and processes. This also includes developing technologies for identifying and exploiting indicators of the use of these processes, facilities, or associated equipment and infrastructure, both locally and remotely. The PD subprogram is especially interested in developing detection capabilities for the illicit diversion of special nuclear materials, both internal and external to facilities.

  The PD subprogram executes NNSA's part of the Integrated University Program, which is a Congressionally mandated three-way effort between NRC, DOE, and NNSA to enable development of the next generation of nuclear engineers and scientific researchers. In 2010, a new testing and evaluation program was started at the Nevada Test Site (NTS) to address emerging technical challenges associated with the Administration's nonproliferation objectives. The new capability at NTS will ultimately support U.S. capabilities to monitor international treaties and cooperative agreements, such as the Nuclear Non-Proliferation Treaty (NPT) and the proposed Fissile Material Cutoff Treaty (FMCT).

  Additionally, the PD subprogram provides developed and validated technical knowledge to U.S. Government acquisition programs and the U.S. industrial base to support national and homeland security missions. Technical advances, new proven methodologies, and improvements to capabilities are transferred to operational programs through technical partnerships, including the development of special prototypes to assist major acquisition efforts. A four-way Memorandum of Understanding between NNSA, DHS, DoD, and DNI enables a high degree of interagency coordination, leverages capability development across application boundaries, and eliminates unnecessary duplication of funding and effort, particularly in the cross-cutting research area of radiation detection.

- **Homeland Security-Related Proliferation Detection [Non-Add]** **[50,000]** **[50,000]** **[50,000]**

- **Nuclear Detonation Detection** **142,421** **135,461** **126,564**

  The Nuclear Detonation Detection (NDD) subprogram builds the Nation's operational treaty monitoring and Integrated Tactical Warning/Threat Assessment space sensors, conducts R&D to advance analytic forensic capabilities related to nuclear detonations, and produces and updates the regional geophysical datasets and analytical understanding to enable operation of the Nation's ground-based treaty monitoring networks.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011

The satellite-based segment of the program builds the Global Burst Detector (GBD) and Space and Atmospheric Burst Reporting System (SABRS) payloads for detecting and reporting nuclear detonations. These payloads are launched on Global Positioning System (GPS) satellites and missile warning replenishment satellites. In addition to building the payloads, the program supports the integration, initialization, and operation of these payloads. The NDD subprogram supports the research, development, and engineering efforts to prepare next generation sensors. For FY 2011, production and delivery of GBD and SABRS payloads will continue at a pace to support timely Air Force launch of host satellites.

The ground-based segment of the NDD research program provides research products, with appropriate testing, demonstration, and technical support for use in the U.S. National Data Center and U.S. Atomic Energy Detection System. Through a Memorandum of Understanding with U.S. nuclear detonation detection agencies, NNSA provides the integrated geophysical models and nuclear event source models that enable global, regional, and specific site threat detection, reporting, and interpretation of nuclear events. The NDD subprogram also conducts a limited amount of applied research and system support in non-seismic ground-based detection technologies.

The NDD forensics research program conducts research, technology development, and related science to improve post-detonation technical nuclear forensic capabilities. This segment addresses both debris and prompt signatures from a nuclear detonation, including the modeling to predict signatures for collection planning, collection technology, measurement or counting, and evaluation.

Total, Nonproliferation and Verification Research and Development O&M	**337,821**	**317,300**	**351,568**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Nonproliferation and Verification R&D O&M	
▪ **Proliferation Detection (PD)**	
The increase supports the Nevada Test Site for testing & evaluation of new technologies in support of treaty monitoring and verification.	**+43,165**
▪ **Nuclear Detonation – Detection (NDD)**	
The decrease reflects a return to baseline funding after a one-time Congressional increase in FY 2010.	**–8,897**
Total Funding Change, Nonproliferation Verification R&D	**+34,268**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	503	518	534
Capital Equipment	37,458	38,582	39,739
Total, Capital Operating Expenses	**37,961**	**39,100**	**40,273**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	550	562	574	586
Capital Equipment	40,931	41,831	42,731	43,628
Total, Capital Operating Expenses	**41,481**	**42,393**	**43,305**	**44,214**

Construction Projects[b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
07-SC-05, Physical Sciences Facility, PNNL, (Construction), VL	180,000–245,000	0	18,460	0	0	0
Total, Construction			**18,460**	**0**	**0**	**0**

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

[b] This is a joint project funded by two DOE organizations, the SC and NNSA, and DHS. This table reflects NNSA funding only, except for the TEC.

Nonproliferation and International Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Nonproliferation and International Security			
Dismantlement and Transparency	47,529	72,763	49,207
Global Security Engagement and Cooperation	44,076	50,708	47,289
International Regimes and Agreements	40,793	42,703	39,824
Treaties and Agreements	17,602	21,028	19,610
Total, Nonproliferation and International Security	**150,000**	**187,202**	**155,930**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Nonproliferation and International Security				
Dismantlement and Transparency	50,832	52,155	53,602	57,351
Global Security Engagement and Cooperation	48,852	50,124	51,514	55,117
International Regimes and Agreements	41,141	42,210	43,383	46,417
Treaties and Agreements	20,258	20,786	21,362	22,856
Total, Nonproliferation and International Security	**161,083**	**165,275**	**169,861**	**181,741**

Mission

The Nonproliferation and International Security (NIS) mission is to prevent and counter the proliferation of weapons of mass destruction (WMD), including materials, technology and expertise, by state and non-state actors. In FY 2011, NIS will provide policy and technical support for nonproliferation and associated treaties and agreements, domestic and international legal and regulatory controls, and diplomatic and counter-proliferation initiatives, and through cooperation with international organizations and foreign partners on export controls, safeguards, and security.

Benefits

Within the NIS program, four subprograms make unique contributions to Government Performance and Results Act (GPRA) Unit Program Number 41. These four subprograms are described below.

The Dismantlement and Transparency (D&T) subprogram provides policy and technical support for nonproliferation and arms control treaties and agreements that promote transparent WMD reductions; develops effective verification options for dismantlement of nuclear equipment, weapons and components; and develops monitoring equipment, technology and tools to ensure obligations of foreign governments are being met. D&T will administer activities involving the incorporation of safeguards into facility designs and development of related verification tools and methods.

The Global Security Engagement and Cooperation (GSEC) subprogram supports implementation of United Nations Security Council Resolution (UNSCR) 1540 and the Global Initiative to Combat Nuclear Terrorism, by engaging in global cooperative efforts to strengthen nuclear infrastructure, safeguards, border security and export control systems, and to redirect WMD expertise in selected countries of concern to non-weapons related activities. GSEC works with foreign partners to ensure that

the development of their nuclear infrastructure emphasizes safeguards, security and related nonproliferation norms.

The International Regimes and Agreements (IRA) subprogram provides policy and technical support to the International Atomic Energy Agency (IAEA) safeguards, multilateral supplier regimes, nuclear interdiction efforts, nonproliferation treaties and agreements, international physical protection activities designed to limit the spread of WMD and related items and technologies, and WMD export control and interdiction activities. IRA will work with domestic and international partners on developing a new global framework for civil nuclear commerce including developing a credible and reliable fuel supply concept. IRA will also review and recommend enhancements of the U. S. Government's (USG) nuclear export control regime to be in-line with the development of new nuclear technologies and the new civil nuclear framework. IRA will work with the IAEA and other partners to continue the enhancement of physical protection and safeguards.

The Treaties and Agreements (TA) subprogram supports implementation of bilateral and multilateral, Presidential-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level nonproliferation initiatives, agreements and treaties. Specifically, the TA program conducts policy and technical analysis on urgent national security issues, proliferation trends in regions of concern, and options to strengthen international mechanisms for preventing proliferation. The TA program also will coordinate all activities and funding for the Next Generation Safeguards Initiative (NGSI).

The NIS makes vital contributions to strengthen international security and the nuclear nonproliferation regime in four main areas: (1) Nuclear Safeguards; (2) Nuclear Controls; (3) Nuclear Verification/ Transparency; and (4) Nonproliferation Policy. The NIS safeguards nuclear material to ensure it is not diverted for non-peaceful uses, controls the spread of WMD material, technology and expertise, and verifies nuclear reductions and programs. In FY 2011, the program will strengthen its efforts through the following activities: supporting the maintenance and improvement of international nonproliferation regimes, including the Nuclear Non-Proliferation Treaty, the system of International Atomic Energy Agency safeguards, multilateral supplier regimes, and bilateral nuclear cooperation agreements; cooperating with foreign partners to improve national export controls, safeguards, physical protection systems, border security systems and to redirect WMD expertise; and applying technology in support of treaty and agreement verification and monitoring and international nuclear safeguards.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 41, Nonproliferation and International Security											
Russian Weapon-Usable Highly Enriched Uranium (HEU) Eliminated: Cumulative metric tons of Russian weapon-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement. (Long-term Outcome)	R: 285 T: 282	R: 315 T: 312	R: 345 T: 342	R: 375 T: 372	T: 402	T: 432	T: 462	T: 492	T: 500	N/A	By the end of calendar year 2013, confirm that 500 metric tons of weapons-usable HEU has been permanently eliminated from the Russian stockpile.
Global Initiatives to Prevent Proliferation (GIPP) Non-USG Project Funding: Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions. (Efficiency)	R: 70% T: 70%	R: 75% T: 75%	R: 80% T: 78%	R: 81% T: 81%	T: 82%	T: 85%	T: 88%	T: 90%	T: 91%	T: 92%	By 2019, obtain non-USG funding contributions equal to 100% of the cumulative USG GIPP funding contributions.
Nuclear Export Control Program: Cumulative number of countries where International Nonproliferation Export Control Program (INECP) is engaged that have export control systems that meet critical requirements. (Long-term Outcome)	R: 5 T: 5	R: 7 T: 7	R: 8 T: 8	R: 9 T: 9	T: 11	T: 12	T: 14	T: 16	T: 19	T: 22	By 2020, 38 0f 41 countries where INECP is engaged have export control systems that meet critical requirements, defined as having (1) control lists consistent with the WMD regimes; (2) initiated outreach to producers of WMD-related commodities; (3) developed links between technical experts and license reviewers and front-line enforcement officers; and (4) begun customization of WMD Commodity Identification Training (WMD CIT) materials and technical guides.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Safeguards Systems: Annual number of safeguards systems deployed and used in international regimes and other countries that address an identified safeguards deficiency. (Annual Output)	R: 2 T: 2	R: 3 T: 3	R: 3 T: 3	R: 3 T: 3	T: 4	T: 4	T: 4	T: 5	T: 5	T: 5	By 2015, 38 technologies are deployed and used in international regimes and other countries that address an identified safeguards deficiency.
Elimination of Russian HEU: Annual number of special monitoring visits completed to the four Russian processing facilities that downblend highly enriched uranium (HEU) to low-enriched uranium to monitor and confirm the permanent elimination of 30 metric tons of Russian HEU from the Russian weapons stockpile under the HEU Purchase Agreement. . (Annual Output)	R: 24 T: 24	R: 24 T: 24	R: 24 T: 24	R: 24 T: 24	T: 24	T: 24	T: 24	T: 24	N/A	N/A	By 2014, complete transparency monitoring observations and data gathering at 4 Russian uranium processing facilities to confirm that all 500 metric tons of weapons-usable HEU has been permanently eliminated from the Russian stockpile.

FY 2009 Accomplishments

Nuclear Safeguards

- Recruited over 100 students for international safeguards internships at national laboratories, and funded 9 post-doctoral positions in international safeguards at the national laboratories, as part of NGSI efforts to reinvigorate the human capital resource base in international safeguards at the labs;
- Conducted 3 NGSI Lab summer courses on international safeguards for interns and other students;
- Co-sponsored with EURATOM an international workshop on human capital development and safeguards education for the next generation of safeguards professionals;
- Continued 2008 activity to partner with 6 countries to develop safeguards systems concepts;
- Trained over 1,000 foreign nationals in nuclear safeguards applications;
- Engaged with 14 countries, ABACC and EURATOM on safeguards implementation and technology evaluation, and infrastructure for peaceful uses;
- Hosted 2 regional infrastructure workshops for countries interested in pursuing nuclear power;
- Expanded the technology program with sufficient funds to explore advanced safeguards applications;
- Developed several new safeguards technologies and analytical methodologies;
- Surveyed safeguards technology development in USG, industry, and academia, and
- Completed the update to five-year NGSI Program Plan.

Nuclear Controls

- Continued to lead the five-state 'core group' efforts to update IAEA INFCIRC/225;
- Advanced policy discussions on strengthened guidelines for enrichment and reprocessing technology in the Nuclear Suppliers Group (NSG);
- Reviewed approximately 3,000 foreign WMD/missile procurements for sanctionable activity or diplomatic/interdiction response;
- Reviewed 6,900 export licenses/requests for proliferation risk, recommending denial of 240;
- Brought on-line the Proliferation Trade Control Directory;
- Provided nearly $50,000,000 to the IAEA to establish an international nuclear fuel reserve;
- Agreed to several important technical amendments to the NSG control lists including amendments for stable isotope separations, machine tools, and UF6 resistant valves;
- Engaged thousands of technical personnel at more than 100 former WMD facilities, in the former Soviet Union, Iraq, and Libya;
- Trained 400 officials from 75 countries in IAEA physical protection training;
- Conducted bilateral physical protection assessments in seven countries;
- Secured partnership between NNSA and the U.S. Department of Defense on Middle East/South Asia border security;
- Trained roughly 2000 licensors, enforcement officials, and industry representatives on export controls (both domestically and internationally);
- Supported the first UNSCR 1540 regional assistance request for the Caribbean community (CARICOM);
- Established an on-going WMD Commodity Identification Training partnership with South Africa;
- Re-established export control training and cooperation with Turkey;
- Expanded export control internal compliance engagement in Russia;
- Expanded industry outreach collaborations with India, China, Pakistan, and Argentina;
- Initiated proliferation risk analysis and commodity-based training in Southeast Asia;
- Conducted dozens of training sessions on all aspects of WMD fuel and weapons manufacturing technologies for U.S. enforcement agencies (Department of Homeland Security (DHS), FBI);

- Completed national versions of guidebooks to the Nuclear Suppliers Group Trigger List with both Russia and China, and
- Engaged the Government of Iraq in border security capacity-building in line with its UNSCR 1540 request for assistance.

Nuclear Verification/Transparency
- Since 1995, monitored the conversion of a cumulative 375 metric tons (MT) of Russian highly-enriched uranium (HEU) from weapons (15,000 weapons) to low enriched uranium (LEU) (30 MT/1,200 weapons converted in FY 2009);
- Completed 24 HEU monitoring visits annually to four Russian uranium processing facilities;
- Supported Six-Party Talks and performed and monitored agreed disablement activities at nuclear facilities in North Korea, and
- Monitored shutdown of reactors and over 9 MT of Russian weapons-grade plutonium under the Plutonium Production Reactor Shutdown Agreement.

Nonproliferation Policy
- Managed 22 policy analysis projects undertaken by national laboratories, NGOs, and institutes of higher learning;
- Commenced negotiations on arrangements and procedures to effect reprocessing consent provisions contained in U.S.-India Agreement for Cooperation;
- Served as DOE/NNSA representative to the interagency process on the Fissile Material Cut-Off Treaty and the Comprehensive Test Ban Treaty;
- Supported negotiations on a START follow-on treaty;
- Commenced negotiations with URENCO countries and France on a nuclear cooperation agreement to create a legal framework for construction of an AREVA enrichment facility in the United States;
- Supported the entry into force of the India Agreement for Cooperation;
- Participated in and organized Track II engagement activities;
- Developed policy analysis and options for downblending additional quantities of HEU, and
- Completed a draft Nonproliferation Impact Assessment for the Global Nuclear Energy Partnership.

Major Outyear Priorities and Assumptions
The NIS outyear funding profile totals $677,960,000 (FY 2012 – FY2015) will place increasing emphasis on the Next Generation Safeguards Initiative (NGSI), a program designed to strengthen IAEA safeguards and revitalize the U.S. technical and human capital base that supports them. The program will address looming gaps in IAEA safeguards through generational improvements in safeguards technology, recruitment of expertise, political and technical analyses of issues and challenges, assistance in implementing safeguards, and collaboration with foreign partners.

NGSI complements related NIS priorities to reduce proliferation risks associated with growing international interest in the use of nuclear power. IAEA safeguards must be credible and effective in deterring the diversion of nuclear materials and reassuring states that peaceful-use commitments are upheld. Another priority is the development and implementation of reliable fuel services as an alternative to the further spread of enrichment and reprocessing capabilities. NIS will work with other Departmental elements and U.S. agencies to promote such concepts. Assuring that states adopt safeguards and security measures in line with the highest international nonproliferation standards is another priority.

The NIS funding profile also will provide for activities that prevent and counter WMD proliferation, including continued support for U.S. efforts to address proliferation by Iran, North Korea, and proliferation networks, implement nuclear arms reduction and associated agreements, strengthen international nonproliferation agreements and standards, implement statutory export control and safeguards requirements, encourage global adherence to and implementation of international nonproliferation requirements, and support high-priority diplomatic initiatives.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Dismantlement and Transparency	**47,529**	**72,763**	**49,207**

The Office of Dismantlement and Transparency reduces or eliminates proliferation concerns by promoting transparent arms reductions, including negotiating, implementing and strengthening U.S. nonproliferation and arms control treaties and agreements, and developing the required verification technologies and approaches and associated transparency-monitoring tools. This office is responsible for the following program elements: U.S.-Russian Federation Plutonium Production Reactor Agreement (PPRA); U.S.-Russian Federation Highly Enriched Uranium (HEU) Purchase Agreement; the Chemical Weapons Convention (CWC); nuclear testing limitations; policy development for the Strategic Arms Reduction Treaty (START) and the Treaty of Moscow; future nonproliferation initiatives; and activities under Next Generation Safeguards Initiative (NGSI) to develop advanced safeguards equipment and technologies for the U.S. Government and in coordination with the International Atomic Energy Agency (IAEA). This office will promote the incorporation of safeguards into facility designs and design new related verification tools and methods.

- **Warhead Dismantlement and Fissile Material Transparency** **15,883** **18,132** **16,911**

  The Warhead Dismantlement and Fissile Material Transparency (WDT) program develops technologies and approaches for transparent reductions and monitoring of nuclear warheads and fissile material, and supports U.S. Government policy development and implementation for potential future transparency initiatives and the following current treaties and agreements: START, the Treaty of Moscow, the Threshold Test Ban Treaty; Limited Test Ban Treaty, the CWC, and the PPRA. The WDT program is responsible for all monitoring and policy aspects of PPRA implementation, and works on behalf of the Secretary of Energy to fulfill DOE's responsibilities as the U.S. Government's Executive Agent for the Agreement. In addition, the WDT program provides DOE/NNSA support to activities of international organizations to develop an International Monitoring System for detecting nuclear explosions worldwide and serves as the DOE/NNSA focal point for U.S. interagency policy development and international negotiations and activities associated with the potential ratification and entry-into-force of the Comprehensive Test Ban Treaty (CTBT). The WDT program also serves as the DOE/NNSA focal point for U.S. Interagency policy development and international negotiations associated with implementation of the START and Moscow Treaties, and the development of a START follow-on agreement with Russia. This work includes the development and assessment of advanced technical concepts for warhead and fissile material transparency, monitoring and dismantlement verification to assure the technologies needed to protect our national interests, including those needed to verify arms control and nonproliferation agreements essential to our security, are developed.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Nuclear Noncompliance Verification**	**14,983**	**36,865**	**15,728**

The Nuclear Noncompliance Verification (NNV) program provides advanced technology applications to verify declared nuclear activities, detect undeclared nuclear materials and activities, and support the verifiable dismantlement of nuclear programs in countries of proliferation concern. Program activities are closely coordinated with the work of the NNSA Nonproliferation and Verification Research and Development program to ensure that state of the art technology is incorporated into the work. In addition, the NNV program oversees DOE support for the U.S. Support Program (USSP) to IAEA Safeguards, which develops equipment and technologies and provides inspector training and technical consultant support to the IAEA Department of Safeguards. USSP assistance aims to increase the overall effectiveness and efficiency of IAEA safeguards and strengthen IAEA capabilities to detect undeclared nuclear activities. Other specially-designed tools and technologies will also be developed to address unique proliferation threats. In FY 2011, the NNV program will complete the development of three verification tools, technologies, or analyses, and accelerate planning and readiness to support verifiable dismantlement of nuclear programs in countries of proliferation concern. In supporting NGSI through a joint roadmap to develop enabling technologies for international safeguards, these efforts will need to involve significant coordination with the IAEA, particularly in the area of new and emerging proliferation threats.

▪ **HEU Transparency Implementation**	**16,663**	**17,766**	**16,568**

The HEU Transparency program annually monitors the conversion of 30 metric tons (MT) of Russian HEU into low enriched uranium (LEU), to provide confidence that the LEU purchased under the 1993 HEU Purchase Agreement is derived from dismantled Russian nuclear weapons processed and eliminated from Russia's weapons stockpile and used for peaceful purposes in the United States. Reciprocal transparency monitoring visits are conducted to ensure the nonproliferation objectives of the Agreement are met. The program also provides support to Transparency Review Committee negotiating sessions with Russian counterparts to update transparency procedures as new facilities and processes are introduced, and to resolve issues related to program implementation. In FY 2011, the HEU Transparency program will complete 24 monitoring visits, monitor the conversion of 30 MT of Russian HEU to LEU for a cumulative total of 432 MT downblended and verifiably eliminated, support a Russian monitoring visit to the United States, and continue to monitor and assess Russian transparency data.

Global Security Engagement and Cooperation	**44,076**	**50,708**	**47,289**

The Office of Global Security Engagement and Cooperation (GSEC) engages in global cooperative efforts to assist partner states in implementing and enforcing nonproliferation obligations and in detecting and deterring proliferators seeking weapons of mass destruction (WMD). GSEC helps states to strengthen nuclear safeguards and infrastructure requirements to prevent the diversion of nuclear materials; strengthen national WMD export control systems at the governmental and industry level; develop technically effective approaches to enhance regional security and prevent proliferation in volatile areas; and transition and engage WMD scientific communities to advance security objectives. This office is responsible for the

(dollars in thousands)

FY 2009	FY 2010	FY 2011

following program elements: Confidence Building Measures program; International Nuclear Safeguards and Engagement program; International Nonproliferation Export Control program; Cooperative Border Security program; and Global Initiatives for Proliferation Prevention.

- **Confidence Building Measures** **1,000** **2,000** **1,911**

  The Confidence-Building Measures (CMBS) program promotes international technical collaboration in regions of proliferation concern. The program currently promotes international cooperation on nonproliferation nuclear forensics and seismic monitoring cooperation in the Middle East. CMBS also will support a number of seismology collaborations in the Middle East, such as assisting in the sustainment and operation of the Comprehensive Test Ban Treaty (CTBT) International Monitoring System. The program also will strengthen its support of regional centers of nonproliferation excellence to promote regional capacity-building and foster sustainability of assistance efforts. In particular, CMBS will assume management of the Cooperative Monitoring Center in Amman, Jordan and this change is reflected in this budget request.

- **International Nuclear Safeguards and Engagement Program** **12,418** **13,831** **12,883**

  The International Nuclear Safeguards and Engagement Program (INSEP) supports U.S. and international nonproliferation objectives by strengthening the international safeguards regime. In FY 2011, INSEP will continue to serve as a key implementing element of the Next Generation Safeguards Initiatives, working with foreign partners to develop safeguards technologies to detect illicit diversion or transfer of nuclear material throughout the nuclear fuel cycle and to strengthen indigenous safeguards systems. Also, INSEP will expand its cooperation with countries in the Middle East and North Africa that have credible plans for nuclear power development to establish infrastructures that emphasize safety, security, and appropriate safeguards.

- **International Nonproliferation Export Control**[a] **12,939** **12,501** **11,643**

  The International Nonproliferation Export Control Program (INECP) strengthens national systems of export control, focusing on countries and regions of proliferation concern. INECP has two primary program components: international cooperation and training for USG export enforcement agencies. Internationally, INECP works with established and emerging supplier states, high volume trans-shipment countries, and transit states located close to suppliers. In FY 2011, INECP will continue to focus on industry outreach and Commodity Identification Training, which teaches customs agents and other officials to recognize WMD-sensitive goods. In addition, INECP will capitalize on regional outreach opportunities and leverage INECP-trained experts in regional best practices engagements.

[a] In FY 2010, the International Nonproliferation Export Control activities became a stand alone program to differentiate its distinct mission from the Cooperative Border Security Program. Funds for INECP only are reflected for FY 2009 and FY 2010.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Training for USG agencies will provide specialized, commodity-specific information to U.S. law enforcement agencies with the authority to investigate export control violations, including DHS/Custom and Border Protection, DHS/Immigration and Custom Enforcement, FBI and others.

- **Cooperative Border Security Program**[a] **2,311 2,669 2,489**

The Cooperative Border Security Program (CBSP) provides comprehensive analytical and technical support to facilitate the development of sustainable border control systems in regions of proliferation concern. The program will improve surveillance, detection, and interdiction capabilities to mitigate the risks of illicit smuggling in WMD and related commodities through border control analysis to identify deficiencies and develop solutions to mitigate the identified weaknesses. CBSP is currently engaging with the Iraqi Ministry of Interior on a proof of concept project to demonstrate a border control system. In FY 2011, the program will expand efforts within high-priority regions of the Middle East and Central Asia.

- **Global Initiatives for Proliferation Prevention 15,408 19,707 18,363**

The Global Initiatives for Proliferation Prevention (GIPP) advances global nonproliferation efforts by helping to impede transfers of weapons of mass destruction expertise and know-how to terrorist organizations and rogue states by working with former WMD scientists and technical personnel in non-weapons related activities aimed at advancing security and nonproliferation objectives. In FY 2011, the program will continue to exclusively target high priority institutes in line with an interagency risk assessment. In Russia, new work will focus on technologies that support global security and nonproliferation, and cost-share activities will be emphasized where possible. In Iraq, engagement will remain steady based on assessed risk.

International Regimes and Agreements 40,793 42,703 39,824

The Office of International Regimes and Agreements (IRA) raises WMD proliferation barriers and strengthens international nonproliferation regimes and agreements. The IRA negotiates, implements and strengthens multilateral supplier regimes, conventions, treaties, guidelines, and other institutions that limit the spread of nuclear and other WMD and their supporting technologies and systems for delivery. The IRA also is responsible for implementing statutory requirements for the regulation of U.S. exports and the application of international safeguards in the U.S., and cooperates with other U.S. agencies to support the interdiction of WMD items and enforcement of export controls. In support of NGSI and U.S. efforts to manage the global expansion of nuclear power, in FY 2011, IRA will focus on policy and analytical support to IAEA safeguards and strengthening the pool of U.S. experts to support IAEA safeguards; promote concepts for reliable fuel services to discourage the spread of sensitive fuel cycle technologies;

[a] In FY 2010, the Cooperative Border Security activity has become a stand alone program to differentiate its distinct mission. Funds for this activity are now reflected under Cooperative Border Security section.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

support completion of improved international physical protection standards; and provide technical support for diplomatic efforts relating to the Nuclear Non-Proliferation Treaty, a Fissile Material Cut-Off Treaty, and associated agreements. IRA will also provide statutorily mandated support for the negotiations and implementation of 123 Agreements and physical protection requirements associated with U.S. obligated nuclear exports.

- **WMD Interdiction and Multilateral Supplier Policy**[a] **3,926** **4,136** **7,107**

  The WMD Interdiction and Multilateral Supplier Policy program has a dual role of developing multilateral supplier regime policies and contributing to WMD interdiction at home and abroad. Specifically, the Interdiction Technical Analysis Group (ITAG) provides critical technical support, real-time "reach-back" capabilities, and policy guidance to USG interdiction groups and activities and support for the Proliferation Security Initiative and the implementation of U.S. nonproliferation sanctions. The program also provides technical support to U.S. Government diplomacy within the Nuclear Suppliers Group (NSG), the NPT Exporter's (Zangger) Committee, the Missile Technology Control Regime (MTCR), the Australia Group (AG), and the Wassenaar Arrangement, and provides analyses of WMD proliferation risk and technology needs of countries of proliferation concern (choke-points). The program also is the lead for the U.S. Government in developing and negotiating guidelines for the minimization and management of HEU. In FY 2011, the program will enhance DOE National Laboratory technical support to the USG interdiction groups; increase coverage of WMD technologies in the technical reference guides; and provide assessments of WMD-related items, proliferation program choke-points and international trade flows to determine interdiction opportunities. Also, in FY 2011, the program will continue its leading role in supporting the development of supply policies in the multilateral supplier regimes (such as the NSG) to ensure they adequately reflect the latest technology developments in the nuclear fuel cycle and dual-use technology. In 2011, the program will continue playing a leading role in the Fundamental Review of the NSG control lists. The program also seeks to bring innovative ideas and briefings on WMD proliferation to the NSG Information Exchanges Meetings to raise awareness among suppliers.

- **Global Regimes** **3,221** **7,628** **3,864**

  The Global Regimes program develops policy and provides program oversight on nuclear nonproliferation and international security issues and nuclear treaties and agreements, including support for issues pertaining to the NPT, multilateral regimes and groups, and the United Nations Conference on Disarmament. Issues include negotiations on a Fissile Material Cut-Off Treaty; the IAEA Technical Cooperation (TC) program that facilitates access by IAEA Member States to the peaceful use of nuclear energy; bilateral Agreements for Cooperation in the Peaceful Uses of Nuclear Energy (under Atomic Energy Act Section 123); the Biological Weapons and Toxins Convention (BWC); and development of reliable nuclear fuel service concepts. The Global Regimes program also assists in the formulation

[a] In 2011, the Interdiction and Multilateral Export Control Teams have been combined to streamline functions. The new name is WMD Interdiction and Multilateral Supplier Policy.

of internationally-agreed mechanisms to ensure that states have reliable access to the nuclear fuel market, providing policy and technical expertise to these agreements. Moreover, the program ensures that the development and implementation of such arrangements meet U.S. national security and foreign policy objectives. In FY 2011, the program will provide statutorily-mandated technical assistance to negotiations supporting agreements for cooperation and their administrative arrangements, represent DOE/NNSA in potential negotiations on a Fissile Material Cut-Off Treaty (FMCT) and all NPT meetings and consultations, represent DOE/NNSA at the BWC Intersession Working Group meetings, and lead the development of assured fuel supply concepts and activities. The program will also support the development and implementation of a new framework for civil nuclear cooperation as called for by the President to reduce reliance on indigenous development of enrichment and reprocessing efforts by recipient states.

- **Nuclear Safeguards Program** **12,391** **12,946** **12,073**

The Nuclear Safeguards program develops and implements DOE and international safeguards policies and approaches through several efforts in support of U.S. and departmental priorities, principally the NGSI. The Nuclear Safeguards program develops safeguards policy positions in the interagency process and supports the development of policy at the IAEA through the Director General's Standing Advisory Group on Safeguards Implementation. The program's Voluntary Offer Agreement (VOA) Safeguards implementation meets existing treaty obligations through the application of safeguards at selected U.S. sites and maintains the DOE portion of the Eligible Facilities List. The program's Additional Protocol (AP) implementation addresses issues and concerns arising within the DOE complex regarding obligations under the U.S. AP. The Nuclear Safeguards program develops new approaches and safeguards concepts to improve the effectiveness and efficiency of IAEA safeguards verification, including the incorporation of safeguards into facility designs, and works to reinvigorate the human capital aspects of the safeguards regime, which will be essential to combat proliferation in view of a rapidly growing and dynamic international fuel cycle. In FY 2011, the program will investigate new safeguards concepts for enrichment plants. The program also will provide technical analysis and support for international safeguards and nonproliferation policy, including the assessments necessary to support regulatory and governance processes and conduct proliferation risk assessments of new technologies and facilities including those related to the global expansion of nuclear power.

- **Export Control Licensing Operations** **11,686** **12,136** **11,318**

IRA has statutory requirements to support domestic export licensing operations. This includes reviewing and providing advice on U.S. export license applications for dual-use items (equipment, materials, technology and software) and munitions that could have uses in the development of nuclear, chemical, and biological weapons and their delivery systems. The Licensing Operations program performs technical and nonproliferation reviews of DOE sensitive software code requests and DOE programs/projects involving foreign nationals. For these purposes, the program maintains the Proliferation Information Network System (PINS), an automated, wide-area, classified system for the review and evaluation of export requests and technology transfers to foreign nationals, as well as providing for the development and coordination of technical and nonproliferation studies on sensitive technology and related policy. The program also operates and maintains a state-of-the-art Nuclear

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Suppliers Group (NSG) Information Sharing System (NISS), a secure internet-based system that allows NSG members to share real-time information on license denials to prevent proliferation and provides related technical support to regime members; and has under development an information sharing system for the Australia Group, the multilateral regime for controls of chemical and biological warfare related dual-use items. The Licensing Operation program draws on unparalleled technical expertise to support control list changes in multilateral export control regimes and ensure consistency with U.S. export control regulations.

In cooperation with the Department of Homeland Security, the program also provides export enforcement training on WMD-related technologies to DOD border security programs; performs technical reviews of suspicious shipments for proliferation risk; shares technical proliferation assessments to identify export control vulnerabilities and critical technology needs of countries of proliferation concern; and provides access to the Proliferation Trade Control Directory (PTCD) for identification of manufacturers of export-controlled goods to aid in inspection and seizure of illegal shipments. The program participates in weekly USG interagency export licensing groups; interacts closely with the interagency on dual-use license application reviews; and maintains, with the Department of Commerce, the "Nuclear Referral List," which identifies nuclear dual-use items requiring special attention. It also provides export control and nonproliferation guidance to U.S. industry and a wide range of DOE activities to help ensure compliance across the DOE complex and its contractors.

- **Export Control Multilateral**[a] **3,880** **0** **0**

The Export Control Multilateral program provides technical and policy support to U.S. Government diplomacy within the Nuclear Suppliers Group (NSG) and the NPT Exporters' (Zangger) Committee, the Missile Technology Control Regime (MTCR), the Australia Group (AG) for chemical/biological-related items, and the Wassenaar Arrangement for items controlled for national security reasons. The Export Control Multilateral program draws on the unparalleled technical expertise in the national laboratories and is a recognized international leader in the area of nuclear export controls. This program develops timely and topical analyses of WMD proliferation risk and programs of concerns, identifying export control vulnerabilities and critical technology needs of countries of proliferation concern (choke-points). In FY 2011, the program will continue to lead the U.S. effort to conduct a fundamental review of the NSG control list to ensure it adequately reflects the latest technology developments in the nuclear fuel-cycle and dual-use technology.

[a] In 2011, the Interdiction and Multilateral Export Control Teams have been combined to streamline functions. The new name is WMD Interdiction and Multilateral Supplier Policy.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
▪ **International Nuclear Security**	**5,689**	**5,857**	**5,462**

The International Nuclear Security program strengthens global physical security norms and practices by conducting bilateral physical protection assessments, as required under the 1978 Nuclear Nonproliferation Act, to verify that foreign sites holding U.S. nuclear material are adequately protected. The program supports these objectives by assisting the IAEA in its execution of International Physical Protection Advisory Service (IPPAS) and other missions; conducting physical protection training for foreign officials; and aiding in the design and implementation of new physical protection guidelines in conjunction with the IAEA and other Member States. The program also works with the IAEA and national physical protection officials to help states implement physical protection requirements, such as those required in the amended Convention on the Physical Protection of Nuclear Materials (CPPNM). The program coordinates with the Office of Global Threat Reduction to provide assessments to assist with future physical protection upgrades. In FY 2011, the program will begin training on a global basis on new provisions of a revised IAEA INFCIRC/225. The program will continue providing assistance to the IAEA on document development associated with the new Nuclear Security Plan. The program will also focus to enhance its engagement with other countries on a bilateral basis. In support of the global expansion of nuclear energy, the program will work with international partners to ensure that physical protection standards for new fuel and facilities are consistent with internationally agreed-upon physical protection standards and recommendations codified in the CPPNM and INFCIRC/225.

Treaties and Agreements	**17,602**	**21,028**	**19,610**

The Treaties and Agreements Office supports implementation of President-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level nonproliferation initiatives, agreements and treaties. Specifically, the program conducts policy and technical analysis on urgent national security issues, strategic engagement, proliferation trends in regions of concern, and options to strengthen international mechanisms for preventing proliferation. This includes funding research and engagement activities by non-governmental organizations and institutes of higher learning that support NNSA's mission and policy requirements. Examples of this work include analysis of regional nuclear fuel cycle growth and engagement of technical experts in a dialogue on nonproliferation infrastructure requirements for emerging and existing nuclear power programs. The program continues to provide for unexpected, unplanned responses to requirements of an immediate nature based on U.S. national security needs. Examples of unforeseen activities in the past have included: providing technical and policy support to U.S. delegations to the Six-Party Talks denuclearization and energy assistance working groups; analysis of procurement associated with the emergence of proliferation networks; and dismantlement and removal of nuclear materials from clandestine WMD programs. In FY 2011, the program will coordinate activities and funding for all NGSI activities aimed at strengthening international safeguards and revitalizing the U.S. technical and human capital resource base that supports them, and will conduct 20 policy studies/analyses undertaken by National Laboratories, non-government organizations, or institutes of higher learning in support of the Department's implementation of high-level nonproliferation initiatives such as UNSCR 1540, the Global Initiative to Combat Nuclear Terrorism, and the Proliferation Security Initiative. In addition, the program will provide policy and technical analyses of, and responses to, emerging and immediate nonproliferation and counter-proliferation security issues including the global expansion of nuclear energy and evolution of the nuclear fuel cycle. The Treaties and Agreements Office will coordinate work in the five main NGSI program areas to: (1) support U.S. safeguards policy

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
development and work with international partners to strengthen the international safeguards system as an essential element of the global nuclear nonproliferation regime; (2) develop advanced safeguards system-level concepts, approaches, and assessment methodologies to enhance the effectiveness, efficiency and credibility of international safeguards; (3) develop and apply tools, technologies, and methods that optimize the effectiveness and efficiency of safeguards implementation; (4) attract and train a new generation of talent to rejuvenate the international safeguards human capital base; and (5) develop national infrastructures in countries that have nuclear power or credible plans for nuclear power.			
Total, Nonproliferation and International Security	**150,000**	**187,202**	**155,930**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
▪ **Dismantlement and Transparency**	
Funding decrease results from a reduction to Democratic People's Republic of Korea activities.	**-23,556**
▪ **Global Security Engagement and Cooperation (GSEC)**	
Funding decrease is a result of operational efficiencies to streamlining management processes for the GIPP and completion of development of export control training curricula for recently undertaken outreach initiatives.	**-3,419**
▪ **International Regimes and Agreements**	
Funding decrease reflects refinement of analytical tools resulting in greater efficiencies in reviewing export and interdiction cases. The decrease also reflects the accomplishments from previous year investments in human capital development efforts.	**-2,879**
▪ **Treaties and Agreements**	
Funding decrease reflects the elimination of the requirement to draft strategic/analytical policy planning papers for the incoming Administration.	**-1,418**
Total Funding Change, Nonproliferation and International Security	**-31,272**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	2,281	2,331	2,832
Total, Capital Operating Expenses	**2,281**	**2,331**	**2,832**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	
Capital Equipment	2,434	2,488	2,543	2,599
Total, Capital Operating Expenses	**2,434**	**2,488**	**2,543**	**2,599**

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

International Nuclear Materials Protection and Cooperation

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
International Nuclear Materials Protection and Cooperation			
Navy Complex	30,316	33,880	34,322
Strategic Rocket Forces/12th Main Directorate	51,767	48,646	51,359
Rosatom Weapons Complex	76,070	71,517	105,318
Civilian Nuclear Sites	45,542	63,481	59,027
Material Consolidation and Conversion	21,560	13,611	13,867
National Programs and Sustainability	54,901	68,469	60,928
Second Line of Defense	174,844	272,446	265,297
International Contributions	5,592 [a]	0	0
Total, International Nuclear Materials Protection and Cooperation	**460,592**	**572,050**	**590,118**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
International Nuclear Materials Protection and Cooperation				
Navy Complex	31,764	0	0	0
Strategic Rocket Forces/12th Main Directorate	37,830	0	0	0
Rosatom Weapons Complex	52,000	0	0	0
Civilian Nuclear Sites	18,502	0	0	0
Material Consolidation and Conversion	14,306	14,627	14,627	16,433
National Programs and Sustainability	61,967	39,006	39,006	43,623
Second Line of Defense	354,429	508,157	504,859	563,614
International Contributions	0	0	0	0
Total, International Nuclear Materials Protection and Cooperation	**570,798**	**561,790**	**558,492**	**623,670**

Mission

The International Nuclear Materials Protection and Cooperation (INMP&C) program prevents nuclear terrorism by working in Russia and other regions of concern to (1) secure and eliminate vulnerable nuclear weapons and weapons exploitable material; and (2) install detection equipment at international crossing points and Megaports to prevent and detect the illicit transfer of nuclear material.

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[a] FY 2009 amount includes international contributions of $4,067,065 from Government of Canada, $387,335 from New Zealand, $837,600 from Norway, and $300,000 from South Korea.

Benefits

Within INMP&C, 7 subprograms each make unique contributions to Government Performance and Results Act (GPRA) Unit Program Number 42, which supports the Administration's efforts to secure all vulnerable nuclear material around the world within 4 years.

In February 2005, the Bratislava Initiative resulted, for the first time, in a comprehensive plan for the cooperation on security upgrades of Russian nuclear facilities at Rosatom and Ministry of Defense sites and cooperation in the areas of nuclear regulatory development, sustainability, secure transportation, Materials Protection Control and Accounting (MPC&A) expertise training, and protective force equipment. Workscope as of February 2005 was completed at the end of 2008. However, a number of important areas/buildings have been added to the scope of joint work since February 2005. The MPC&A upgrades at most of these additional areas/buildings will be completed in 2010, while some work scope will continue through 2012.

The Navy Complex program element improves security of Russian Navy warhead and weapons exploitable material by installing improved security systems at Russian Navy nuclear warhead sites, Russian Navy HEU fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. There are 50 sites, 39 Russian Navy nuclear warhead sites and 11 Russian Navy fuel/nuclear material storage sites. The program also improves security systems at checkpoints near upgraded sites, the Personnel Reliability Program (PRP) for the Russian Ministry of Defense (MoD), and sustainability activities consisting of training and site-level maintenance support for upgraded MoD sites.

The Strategic Rocket Forces (SRF)/12th Main Directorate program element improves security of Russian warheads maintained by the Russian Ministry of Defense by installing improved security systems at Strategic Rocket Forces and 12th Main Directorate nuclear warhead sites. A total of 25 SRF sites (at 11 bases) and nine 12th Main Directorate sites have received MPC&A upgrades.

The Rosatom Weapons Complex program element improves the security of nuclear weapons and materials at seven Rosatom nuclear weapons, uranium enrichment, and material processing/storage sites, which are located within the closed cities of the Rosatom Weapons complex. The Civilian Nuclear Sites program improves security at 32 civilian nuclear sites (19 Russian and 13 sites outside of Russia).

The Material Consolidation and Conversion (MCC) program element reduces the complexity and the long-term costs of securing weapons exploitable nuclear material in Russia. The MCC program is designed to significantly reduce the proliferation risk associated with weapons exploitable nuclear materials by consolidating excess, non-weapons exploitable highly enriched uranium (HEU) and plutonium into fewer, more secure locations. The MCC program achieves further risk reduction by downblending weapons exploitable HEU to non-weapons exploitable low enriched uranium (LEU).

The National Programs and Sustainability element assists Russia and other partner countries in developing and maintaining a nation-wide MPC&A infrastructure, thereby ensuring that U.S.-funded security upgrades and an effective infrastructure can be sustained. Activities include developing and revising regulations, developing inspection capabilities, training, education and regional support, site

sustainability planning, nuclear security culture activities, and secure transportation and protective force improvements.

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

The SLD Core Program installs radiation detection equipment at borders, airports, and strategic ports in Russia, other former Soviet Union states, Eastern Europe**,** and other key countries. Under the Core Program, detection equipment is deployed to scan commercial cargo, passenger vehicles, and pedestrians regardless of direction or destination. Approximately 650 sites in 32 countries have been identified to potentially receive detection equipment installations under the Core Program, including approximately 170 sites in Russia.

The SLD Megaports Initiative provides radiation detection equipment to key international seaports to screen cargo containers for nuclear and other radioactive materials regardless of the container destination. The Megaports Initiative also cooperates closely with the U.S. Department of Homeland Security's Bureau of Customs and Border Protection (CBP) to support the Container Security Initiative (CSI) and to implement the Secure Freight Initiative (SFI) at international ports. The primary goal of the Megaports Initiative is to scan as much container traffic for radiation as possible, (including imports, exports, and trans-shipments) regardless of destination and with minimal impact to port operations. Under this initiative, NNSA plans to implement this program in up to 100 international seaports by the end of 2015. NNSA is currently engaged in negotiations with governments in Europe, Asia**,** the Middle East, Latin America, the Caribbean**,** and Africa for the implementation of the Megaports Initiative. NNSA continues to engage with governments and commercial terminal operators in those countries where it is important to implement the Megaports Initiative.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 42, International Materials Protection and Cooperation											
Materials Protection, Control and Accountability (MPC&A) Upgrades – Buildings: Cumulative number of buildings containing weapons-usable material with completed MPC&A upgrades. (Long-term Output)	N/A	N/A	R: 181 T: 191	R: 210 T: 210	T: 213	T: 218	T: 229	N/A	N/A	N/A	By December 2012, complete MPC&A upgrades on approximately 229 buildings containing weapons-usable nuclear material including Post Bratislava work-scope.
Buildings Secured: Cumulative number of buildings with weapons-usable material secured. (Long-term Output)	R: 175 T: 175	R: 193 T: 190	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By September 2007, secured (rapid or comprehensive upgrades complete) 193 buildings containing weapons-usable nuclear material. This measure is replaced as a result of the FY 2007 OMB PART review.
Materials Protection, Control and Accountability (MPC&A) Upgrades: Cumulative number of warhead sites with completed MPC&A upgrades. (Long-term Output)	R: 50[a] T: 53	R: 64 T: 58	R: 65 T: 64	R: 73 T: 73	N/A	N/A	N/A	N/A	N/A	N/A	Completed MPC&A upgrades at 73 warhead sites in December 2008.
Highly Enriched Uranium (HEU) Conversion to Low Enriched Uranium (LEU): Cumulative metric tons of Highly-Enriched Uranium	R: 8.4 T: 8.6	R: 9.8 T: 9.5	R: 10.7 T: 11.0	R: 11.7 T: 11.7	T: 12.6	T:13.5	T: 14.4	T: 15.3	T: 16.2	T: 17	By December 2015, convert 17 MTs of HEU to LEU.

[a] The number previously presented in the Performance and Accountability Report was inaccurately reported as 53.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
converted to Low-Enriched Uranium. (Long-term Outcome)											
MPC&A Regulations: Cumulative number of MPC&A regulations in the development phase for Russian and other FSU countries. (Long-term Output)	N/A	N/A	N/A	R: 162 T : 165	T: 194	T: 198	T: 203	T: 226	T: 249	N/A	By the end of FY 2014, place a total of approximately 249 MPC&A regulations in the development phase for the Russian and other FSU countries.
Second Line of Defense (SLD) Sites: Cumulative number of Second Line of Defense (SLD) sites with nuclear detection equipment installed (Cumulative number of Megaports completed). (Long-term Output)	R: 104 (6) T: 114 (10)	R: 162 (12) T: 173 (12)	R: 232 (19) T: 224 (23)	R: 335 (27) T: 312 (28)	T: 404 (43)	T: 463 (45)	T: 529 (55)	T: 619 (70)	T: 709 (85)	T: 750 (100)	By December 2015, install radiation detection equipment at approximately 650 border crossing sites and 100 Mega ports (750 total SLD sites) (assuming no expansion of program sites).
Megaports with Host Country Cost Sharing: Cumulative number of Megaports with host country cost-sharing, resulting in decreased cost to the US program (Estimated cost sharing value). (Efficiency)	N/A	N/A	R:3/$14M T:5/$24M	R: 7/$36.8 T: 8/$40M	T: 12/$66M	T: 14/$73M	T: 18/$87M	T: 24/$101M	T: 25/$115	N/A	By the end of FY 2014, complete host country cost sharing on approximately 25 Megaports for an estimated value of $115M.

FY 2009 Accomplishments:

- Completed MPC&A upgrades at a cumulative total of 210 of 229 buildings containing weapons exploitable material in Russia and NIS/Baltics;
- Downblended approximately a cumulative total of 11.7 metric tons (MTs) of HEU to LEU;
- Facilitated the enactment of 11 additional MPC&A regulations in Russia;
- Placed a cumulative total of 162 MPC&A regulations in the development phase for Russia and other FSU countries, and
- Completed installation of radiation detection equipment at a cumulative total of 335 sites, 308 SLD Core sites and 27 Megaports.

Major Outyear Priorities and Assumptions

The outyear projections for the INMP&C program total approximately $2,314,750,000 (FY 2012 – FY 2015). The Program supports efforts to secure and eliminate vulnerable nuclear weapons and weapons exploitable materials in Russia and other countries of concern and efforts to prevent and detect the illicit transfer of nuclear material. Near level funding during the outyears reflects the completion of MPC&A upgrades to warhead and material sites in Russia and the transition to greater Russian cost sharing on sustainability activities. Funding for the SLD program increases as the program is expanded to include additional land border sites and Megaports in targeted countries of strategic interest and in countries where NNSA is working with its Department of Homeland Security counterparts to implement requirements of the "Implementing Recommendations of the 9/11 Commission Act of 2007."

To meet the NNSA strategic long-term goal of Nuclear Nonproliferation, the INMP&C program completed MPC&A upgrades in Russia at a total of 73 warhead sites at the end of calendar year 2008 and plans to: (1) complete approximately 229 buildings containing weapons exploitable nuclear material by the end of 2012; (2) downblend a total of approximately 17 MTs of HEU by the end of 2015; and (3) install radiation detection equipment at approximately 650 border crossings around the world and at approximately 100 ports of interest in approximately 40 countries by the end of 2015. These results will directly support the goal of Nuclear Nonproliferation by providing a first line of defense (securing warheads and weapons exploitable nuclear materials at their source), and a second line of defense (preventing and detecting the illicit transfer of nuclear materials).

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Navy Complex	**30,316**	**33,880**	**34,322**

The Navy Complex program element was established to improve security of Russian Navy warhead and weapons exploitable material by installing improved security systems at Russian Navy nuclear warhead sites, Russian Navy Highly Enriched Uranium (HEU) fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These sites include a total of 50 sites: 39 Russian Navy nuclear warhead sites and 11 Russian Navy fuel and other nuclear material storage sites.

Comprehensive upgrades were completed at all 11 Navy fuel and other nuclear material storage sites in FY 2004. No new work is planned at those sites; however, sustainability and training efforts will continue for 7 of these sites to ensure that the equipment provided is effective in protecting the material. In addition, retrofit of MPC&A equipment at the end of its service life will be performed at 1 site, and upgrades to address insider threats will be completed at another site.

The INMP&C completed MPC&A upgrades at the final 2 Russian Navy nuclear warhead sites in FY 2006 (increasing the total Navy warhead sites secured with either completed rapid and/or comprehensive upgrades) to 39 sites. In FY 2011, INMP&C will provide: (1) sustainability support such as training and site level maintenance of installed MPC&A upgrades to 12 of these 39 sites which meet interagency requirements for such support; (2) nuclear detection at closed city entrances, including security upgrades to one checkpoint and sustainability support to 3 checkpoints with previously installed security upgrades; (3) support for personnel reliability programs; (4) replacement of outdated security equipment, and (5) additional upgrades for training and maintenance centers to ensure sustainability of upgrades.

Strategic Rocket Forces/12th Main Directorate	**51,767**	**48,646**	**51,359**

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

In FY 2011, INMP&C plans to provide sustainability support for 23 SRF and three 12th Main Directorate sites which will include: (1) development of training curriculum and courses; (2) construction and support of technical centers to ensure that the Russian Ministry of Defense will have a sufficient cadre of technicians and trainers to assume maintenance and sustainability of the

installed upgrades at all Russian Ministry of Defense sites; (3) infrastructure development, including performance assurance and procedure development, and (4) provide site level maintenance of installed MPC&A upgrades at these sites. INMP&C will also provide additional MPC&A upgrades to other SRF sites that will provide additional protection from theft and/or diversion of warheads from these sites.

Rosatom Weapons Complex **76,070** **71,517** **105,318**

The Rosatom Weapons Complex program element improves the security of nuclear weapons and materials at seven Rosatom nuclear weapons, uranium enrichment, and material processing/storage sites, which are located within the closed cities of the Rosatom Weapons Complex. The Rosatom Weapons Complex element primarily focuses on upgrades at seven large sites which have many nuclear material storage and handling locations. The goal of this joint cooperative program is to provide protection from internal and external theft scenarios at areas that handle highly attractive material.

In FY 2011, INMP&C will continue to fund selective new upgrades to buildings/areas at these sites that were added to the cooperative after the Bratislava Summit, including: (1) nuclear detection on closed city borders; (2) expanded MPC&A upgrades at some buildings to address both outsider and insider threats; (3) Rosatom protective force training center development; (4) improvements to site-wide material measurement and accounting practices, and (5) internal site nuclear transport security. The majority of this work is expected to be located at the All Russian Scientific Research Institute of Experimental Physics (A-16), the Mayak Production Association, and the Mining and Chemical Combine (K-26).

Significant efforts will be directed towards implementing a comprehensive MPC&A sustainability effort at all sites to include: (1) efforts to improve MPC&A management infrastructures, (2) training, (3) procedural development and adherence, (4) system maintenance and repair, (5) performance testing, (6) configuration management, and (7) operational cost analysis. Where necessary, the program will also finance the replacement of systems that were upgraded earlier in the cooperative that are at the end of their operational lifecycles.

Funding supports continued MPC&A activities outside of Russia, including sustainability activities at nine sites in Kazakhstan, Ukraine, Belarus and Uzbekistan, and engagement with the International Atomic Energy Agency to promote best practices related to nuclear material control, accounting and sustainability. Funding will also be allocated to the continued engagement with India on nuclear material security best practices.

Civilian Nuclear Sites **45,542** **63,481** **59,027**

The Civilian Nuclear Sites program element improves security at 32 civilian nuclear sites (19 Russian sites and 13 sites outside of Russia). The basic MPC&A upgrade objective is to employ a cost-effective, graded approach with an initial focus on installing upgrades for the most highly proliferant-attractive nuclear material at each site. Rapid MPC&A upgrades are installed to mitigate the

immediate risk of theft and diversion, until long term, more comprehensive MPC&A upgrades are designed, installed and placed into operation. Following the completion of initial rapid and comprehensive site upgrades, U.S. funding will continue at a reduced level to: (1) help foster site capabilities to operate and maintain installed security systems, and (2) support replacement of equipment and possible additional security enhancements, e.g., perimeter upgrades, as warranted. This program element will also continue to support those sites with completed MPC&A comprehensive upgrades.

In FY 2011, INMP&C plans to provide sustainability support to 15 civilian nuclear sites with completed MPC&A upgrades including support for training, procedures, maintenance, equipment repair, critical spare parts, and performance testing and other activities at these sites, in order to ensure the sustainability of those upgrades, and support additional MPC&A upgrades focused on addressing outsider and insider threats within the Civilian Nuclear sites. Sustainability support is not being provided to four Russian Civilian sites because three sites have withdrawn from cooperation, and all of the highly attractive nuclear material has been transferred from the fourth site.

In addition, in FY 2011, INMP&C plans to continue to cooperate with countries outside of Russia and the Former Soviet States in order to increase MPC&A awareness, and to provide assistance to protect weapons exploitable materials. This will include engagement with China on modern nuclear material security methodologies and best practices. Planned activities generally include training, technical exchanges, and consultations to improve security at nuclear material locations. It may be appropriate at some partners to support security upgrades for sites with weapons exploitable nuclear materials which are the most vulnerable to theft and/or diversion. This MPC&A assistance is expected to significantly reduce the risk of theft and/or diversion of weapons exploitable materials by potential terrorists seeking to produce nuclear weapons.

Material Consolidation and Conversion	**21,560**	**13,611**	**13,867**

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

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

In FY 2011, INMP&C plans to continue to implement the MPC&A strategy to simplify the nuclear security situation in Russia by converting attractive SNM to a less proliferant-attractive form (e.g., HEU to LEU) and to consolidate material to fewer sites and fewer buildings where possible. The program is expecting to convert an additional 0.9 MTs of the total 17 MTs of HEU to LEU, (for a cumulative total converted of 13.5 MTs).

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
National Programs and Sustainability	**54,901**	**68,469**	**60,928**

The National Programs and Sustainability element assists Russia and other partner countries in developing and maintaining a nation-wide MPC&A infrastructure, thereby ensuring that U.S.-funded security upgrades and an effective infrastructure can be sustained. Projects include developing and revising regulations, developing inspection capabilities, training, education and regional support, site sustainability planning, nuclear security culture activities, and secure transportation and protective force improvements. These projects develop the necessary MPC&A infrastructure for sustaining long-term MPC&A operations in Russia and other partner countries as well as the conditions by which U.S. technical and financial support can be transitioned to the partner countries.

In FY 2011, INMP&C will accelerate projects to assist Russia and other partner countries in establishing the necessary MPC&A support infrastructure to sustain effective MPC&A operations in the long term. Since a re-baseline was established in 2005, the regulatory development project is working to develop or revise 199 MPC&A regulations for the Russian Federation and Ukraine to support sustainable MPC&A operations. In FY 2011, a cumulative total of 198 MPC&A regulations will be in the development phase, with a total of 249 regulations in the development phase between FY 2009 and FY 2014. Regulatory analyses for the Russian Ministry of Defense, 12th Main Directorate, Navy, and Strategic Rocket Forces were completed in 2007-2008, and work to develop and revise regulations will culminate in a total of 120 regulations being completed by 2013. A decision is pending regarding a regulatory analysis for the Russian Federation Air Force with a possible 20 additional regulations being needed between 2010-2013. Regulatory revisions for all agencies will commence in 2013 as part of MoD sustainability activities; and 23 advanced Rostekhnadzor inspection exercises/Rosatom monitoring inspections and self-inspections will be conducted in the areas of physical protection and material control and accounting. The program will work cooperatively with Rosatom to sustain existing railcars and trucks. In addition, the program will support training activities, performance testing, and maintenance systems for transportation security.

INMP&C will assist the Russian Federation in improving the security of weapons exploitable nuclear material at high risk of insider theft or diversion. This will be done by helping to support a sustainable and effective measurement-based Material Control and Accountability (MC&A) program. In FY 2011; six MC&A measurement methodologies will be developed for approximately 12 sites, and 100 reference material standards will be developed for MC&A equipment calibration and operation. The program will also evaluate and provide updated command and control communications systems at Rosatom sites to improve response times of protective forces to potential threats. The Protective Force Project will complete upgrades to 2 national level training academies for MVD-IT nuclear guards at Gorelovo and Ozersk in FY 2010/ FY 2011.

INMP&C will continue to operate and maintain three regional technical support facilities to provide equipment repair, maintenance, calibration assistance, operations assistance, configuration control, warranty service, spare parts inventories, and training for critical MPC&A systems and components; and continue to develop MPC&A training, infrastructure curricula and support provisions of MPC&A courses. In FY 2011, 22 physical protection classes with 400 participants, 40 material control and accounting classes with 600 participants, and 20 protective force courses with 250 participants will be

(dollars in thousands)

FY 2009	FY 2010	FY 2011

conducted. Fifteen students will graduate from the Engineering Degree Program at the National Research Nuclear University (MEPhI); and Tomsk Polytechnic University will graduate its third class of 15 students from their Engineering Degree Program in February 2011.

INMP&C will also assist partner countries in achieving long-term effective operation of their MPC&A programs by assisting sites to establish dedicated MPC&A organizations, and develop site MPC&A management plans, operating procedures, human resource programs, operational cost analysis and performance test plans. The program will also work to bolster the nuclear security culture in Russia through various security culture enhancement efforts.

In addition, INMP&C will continue implementation of an MPC&A sustainability and transition strategy to achieve the goal of fully transitioning operations and maintenance of MPC&A upgrades to full partner country responsibility by working with these partner countries to develop the capabilities they need to maintain the safeguards and security of their weapons exploitable nuclear material.

Second Line of Defense	**174,844**	**272,446**	**265,297**
▪ **Core Program**	**71,917**	**78,432**	**140,413**

The Second Line of Defense (SLD) Core Program installs radiation detection equipment at borders, airports, and strategic ports in Russia, other former Soviet Union states, Eastern Europe and other key countries. The SLD Core Program also provides training and technical support for appropriate law enforcement officials and initial system sustainability support as the host government assumes operational responsibility for the equipment. The program selects sites to be addressed, through a site prioritization and selection methodology so as to effectively plan and utilize program resources.

In FY 2011, the SLD Core program plans to install radiation detection equipment at an additional 55 foreign sites in Azerbaijan, Estonia, Georgia, Kazakhstan, Lithuania, Latvia, Romania, Bulgaria, Hungary, Russia, Ukraine, Kyrgyzstan, Poland, Mongolia, Turkey, Croatia, Pakistan, Tajikistan and Mexico, increasing the total non-Megaport sites with completed installations to 418. Training will be provided in equipment maintenance and alarm response to law enforcement personnel in these countries. The SLD Core program plans to continue to provide mobile detection and stationary detection capability at points internal to borders of countries of strategic interest. The SLD Core program provides sustainability support in the form of maintenance and/or repair of equipment, training, and/or technical collaboration and support for radiation detection systems at up to 250 sites in countries where the SLD Core Program has installed such equipment, including Russia, Azerbaijan, Armenia, Austria, Estonia, Greece, Latvia, Lithuania, Mongolia, Kazakhstan, Kyrgyzstan, Romania, Turkmenistan, Slovakia, Slovenia, Romania, Georgia and Ukraine. Additionally, the program will continue to maintain equipment installed by the U.S. Department of Defense in Uzbekistan. In addition to ongoing activities to implement the SLD Core program in countries of strategic importance, efforts to deploy radiation detection technologies at key land border crossings, airports, and seaports in support of various United Nations Security Council Resolutions will continue.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ **Megaports**	**102,927**	**194,014**	**124,884**

The SLD Megaports Initiative is pursuing cooperation with international partners to deploy and equip key ports with radiation detection equipment and to provide training to appropriate law enforcement officials, in order to provide them the technical means to detect, deter and interdict illicit trafficking in nuclear and other radioactive materials. The ports of interest to NNSA have been identified based upon a risk-based approach to guide implementation priorities considering factors such as container volume to the U.S., routing criteria, regional threat, strategic location, and traffic flow characteristics to guide the implementation priorities.

This program is closely coordinated and complements the Department of Homeland Security's (DHS) Bureau of Customs and Border Protection's Container Security Initiative (CSI) with DHS's Secure Freight Initiative (SFI), introduced on December 7, 2006. NNSA efforts under the Megaports Initiative also support implementation of new requirements in the "Implementing Recommendations of the 9/11 Commission Act of 2007," which calls for the integrated scanning of 100 percent of U.S.-bound container cargo at foreign seaports. The Megaports program is also planning to provide a single radiation portal monitor (RPM) in close proximity to the non-intrusive imaging (NII) system at CSI ports to allow for the integration of RPM alarm data with the NII images.

By adding radiation detection capabilities at seaports, NNSA will be able to screen container cargo for nuclear and radioactive materials that could be used in a weapon of mass destruction or a radiological dispersal device (RDD) (dirty bomb) against the U.S., the host country, and/or our allies. Under SFI, NNSA will continue to work with DHS to provide the integrated scanning of containers bound for the U.S. with radiation detection equipment (provided by NNSA) and non-intrusive imaging equipment (provided by DHS) and the transmission of integrated data from the equipment to U.S. teams both in-country and in the U.S.

In FY 2011, the program plans to complete installations at 4 additional Megaports (increasing the number of completed ports to 45). This involves providing site surveys, engineering assessments, radiation detection equipment design procurement and installation. Sustainability support including equipment, maintenance, system checkups and diagnostics and supplemental training and technical collaboration will be provided for approximately 29 of the sites which have completed installations. In addition, NNSA will continue to work with DHS and other NNSA components to test new technologies that may be used to scan transshipped containers, including mobile technologies and crane based technologies. NNSA will continue to pursue cooperation with international partners interested in participating in the Megaports initiative.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
International Contributions	**5,592**	**0**	**0**

Section 3113 of the John Warner National Defense Authorization Act for FY 2007 authorized the Department of Energy to receive and use financial contributions, including from foreign governments, for programs with the GTRI.

FY 2009 amount includes international contributions of $4,067,065 from Government of Canada, $387,335 from New Zealand, $837,600 from Norway, and $300,000 from South Korea.

Total, International Nuclear Materials Protection and Cooperation	**460,592**	**572,050**	**590,118**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
▪ **Navy Complex**	
Increase reflects retrofit of MPC&A equipment at the end of its service life at 1 site and upgrades to address insider threats at another site.	**+442**
▪ **Strategic Rocket Forces/12th Main Directorate**	
Increase reflects additional support for the sustainability of installed MPC&A upgrades which includes the development of training curriculum and courses, construction and support of technical centers, and infrastructure development, including performance assurance and procedure development.	**+2,713**
▪ **Rosatom Weapons Complex**	
Increase reflects selected new or additional MPC&A upgrades at Rosatom Weapons Complex sites added after the Bratislava Agreement and expanded MPC&A upgrades at some buildings to address both outsider and insider threats and comprehensive upgrades to the external perimeter of the K-26 site in support of the President's goal to secure all nuclear material within 4 years (2013).	**+33,801**
▪ **Civilian Nuclear Sites**	
Decrease reflects programmatic shift from large-scale MPC&A upgrades at Russian sites towards more sustainability support.	**-4,454**
▪ **Material Consolidation and Conversion**	
Increase due to a higher projected availability of excess HEU to be downblended to LEU.	**+256**
▪ **National Programs and Sustainability**	
Decrease reflects the completion of the procurement of railcars and trucks to provide physical security protection for the transportation of Russian nuclear material.	**-7,541**

	FY 2011 vs. FY 2010 ($000)
▪ **Second Line of Defense**	
Decrease reflects offset to Megaports to fund high-priority activities in the SLD Core Program including: deployment of radiation detection systems in Ukraine and Kazakhstan; continued implementation of the communication integration project in Russia to link radiation alarms at Russian border sites to central headquarters locations; and expanded deployment of mobile radiation detection systems to countries for use by law enforcement personnel in support of anti-smuggling activities at green border and internal locations.	**-7,149**
Total Funding Change, International Nuclear Materials Protection and Cooperation	**+18,068**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	205	210	215
Total, Capital Equipment	**205**	**210**	**215**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	220	225	230	235
Total, Capital Equipment	**220**	**225**	**230**	**235**

[a] Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Elimination of Weapons-Grade Plutonium Production

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Elimination of Weapons-Grade Plutonium Production (EWGPP)			
Zheleznogorsk Plutonium Production Elimination (ZPPEP)	139,282	22,507	0
Crosscutting and Technical Support Activities	2,017	2,000	0
Total, Elimination of Weapons-Grade Plutonium Production (EWGPP)	**141,299**	**24,507**	**0**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Elimination of Weapons-Grade Plutonium Production	0	0	0	0

Mission

The Elimination of Weapons-Grade Plutonium Production (EWGPP) program enables the Russian Federation (RF) to permanently cease production of weapons-grade plutonium by replacing the heat and electricity produced by the plutonium-producing reactors, thus allowing the reactors to be shut down.

Benefits

The EWGPP program achieves a major U.S. non-proliferation policy objective by permanently halting weapons-grade plutonium production in Russia. Within the EWGPP program, three subprograms make unique contributions to Government Performance and Results ACT (GPRA) Unit Program Number 40.

The Seversk Plutonium Production Elimination Project subprogram enabled the shutdown of two of the last three weapons-grade plutonium production reactors by providing heat and electricity through refurbishment of an existing 1950s fossil-fueled facility. The two reactors at Seversk were shut down more than six months early (April and June 2008). The program received Critical Decision (CD)-4 approval on September 26, 2008, effectively terminating the project. The remaining project closeout activities to expend the full U.S. commitment of $285,000,000 to the Russian Federation continued into FY 2010.

The Zheleznogorsk Plutonium Production Elimination Project subprogram will enable the shutdown of the last weapons-grade plutonium production reactor by constructing a replacement fossil-fueled facility.

The Crosscutting and Technical Support Activities subprogram provides resources for crosscutting efforts, such as the Reactor Shutdown Project, International Participation coordination, and other various program technical support activities.

The Reactor Shutdown Project ensures the RF shuts down the three weapons-grade plutonium production reactors as fossil-fuel plants are constructed. Reactors ADE-4 and ADE-5 at Seversk were

shut down more than six months ahead of schedule, and the RF has approved the shutdown schedule for Reactor ADE-2 at Zheleznogorsk. The planned date for the Zheleznogorsk plant shutdown is December 2010.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 40, Elimination of Weapons-Grade Plutonium Production											
Refurbishing Seversk Fossil Plant: Cumulative percentage of progress towards refurbishing a fossil plant in Seversk facilitating the shut down of two weapons-grade plutonium production reactors. (Long-term Output)	R: 50% T: 55%	R: 73% T: 72%	R: 87% T: 90%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	By December 2008, complete refurbishment of fossil plant at Seversk.
Cost Performance Index (CPI) for Seversk: Annual Costs Performance Index (CPI) for Seversk construction as measured by the ratio of budgeted costs of work performed to actual costs of work performed. (Efficiency)	R: 1.0 T: 1.0	R: 1.0 T: 1.0	R: 1.0 T: 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Annually, complete work at or below budgeted cost (CPI greater than 1.0 indicates under budget).
Constructing Zheleznogorsk Fossil Plant: Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating the shut down of one weapons-grade plutonium production reactor. (Long-term Output)	R: 11.4% T: 9.6%	R: 34.0% T: 33.6%	R: 46% T: 50%	R: 71% T: 70%	T: 98%	T: 100%	N/A	N/A	N/A	N/A	By December 2010, complete construction of fossil plant at Zheleznogorsk.
Cost Performance Index (CPI) for Zheleznogorsk Fossil Plant: Annual Costs Performance Index (CPI) for Zheleznogorsk construction as measured by the ratio of budgeted costs of work performed to actual costs of work performed. (Efficiency)[a]	N/A	N/A	N/A	R: .93 T: 1.0	T: 1.0	N/A	N/A	N/A	N/A	N/A	Annually, complete work at or below budgeted cost (CPI greater than 1.0 indicates under budget).

[a] Two reactors shutdown in April/June 2008 and the remaining reactor shutdown will take place no later than December 2010.

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Russian Weapons-Grade Plutonium Production: Annual percentage of Russian weapons-grade plutonium production capability eliminated from its 2003 baseline of 1.2 MT/yr (0.4 MT per reactor per year). (Long-term Outcome)	N/A	N/A	N/A	R: 67% T: 67%	T: 67%	T : 100%	N/A	N/A	N/A	N/A	Eliminate 100% of Russian weapons-grade plutonium production capability by 2011.

FY 2009 Accomplishments

- The Seversk Plutonium Production Elimination Project completed the project scope of the refurbishment of an existing 1950s fissile-fueled facility.
- Physical completion of the Seversk project was accomplished with the exception of one turbine, obtaining high-level Russian Federation commitment to shut down the last (ADE-2) reactor in July 2010.

Major Outyear Priorities and Assumptions

FY 2010 is the final year of funding for the EWGPP program. The program will be complete in FY 2011 when the last of the three reactors is shut down.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Zheleznogorsk Plutonium Production Elimination	**139,282**	**22,507**	**0**

In FY 2009, the U.S. contractor continued to provide oversight for the project, while monitoring schedule and cost compliance from the Moscow-based program management office and the field office in the Krasnoyarsk region of southern Siberia. The U.S. contractor will continue to track Russian progress against the mutually agreed to quid pro quo reactor shutdown plan. By the end of FY 2009, the project was 71 percent complete.

In FY 2010, the project will complete and commission four boilers from Startup Areas One and Two, coal plant construction and all supporting infrastructure to supply hot water to Zheleznogorsk. By the end of FY 2010, the project is projected to be approximately 98 percent complete.

No new funding is requested for FY 2011. Remaining activities, including final documentation and outstanding invoices, will complete the post closeout phase.

Crosscutting and Technical Support Activities	**2,017**	**2,000**	**0**

The crosscutting and technical support activities funding provides the program with internal and external project reviews, preparation of external reporting (including reports to Congress), contract administration, intergovernmental contract negotiation support, quality assurance, foreign logistical support, and program financial management support. The crosscutting and technical support activities also provide the necessary supporting technical and engineering expertise for independent analyses of management processes, crosscutting of project management systems, and support to the Moscow Resident Officer for Construction. Other major crosscutting efforts include reactor shutdown planning and supporting close out activities of the Seversk Project and associated post shutdown requirements for reactors ADE-4 and ADE-5, under agreements with the RF. A detailed reactor shutdown plan for each site has been developed, which provides linkage between construction milestones for the power plant and shutdown of the plutonium-producing reactors.

Total, Elimination of Weapons-Grade Plutonium Production	**141,299**	**24,507**	**0**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Zheleznogorsk Plutonium Production Elimination	
Decrease reflects the ramp down of work as the project is completed.	**-22,507**
Crosscutting and Technical Support Activities	
Decrease reflects close out activities of the Seversk and Zheleznogorsk Projects.	**-2,000**
Total Funding Change, Elimination of Weapons-Grade Plutonium Production	**-24,507**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	0	0	0
Total, Capital Equipment	**0**	**0**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Equipment	**0**	**0**	**0**	**0**

Fissile Materials Disposition

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Current Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Fissile Materials Disposition (FMD)			
U.S. Surplus Fissile Materials Disposition			
Operations and Maintenance (O&M)			
U.S. Plutonium Disposition	0	90,896	278,940
U.S. Uranium Disposition	39,274	34,691	25,985
Supporting Activities	1,500	1,075	0
Subtotal, O&M	**40,774**	**126,662**	**304,925**
Construction	0	574,238	612,788
Total, U.S. Surplus FMD	**40,774**	**700,900**	**917,713**
Russian Surplus FMD			
Russian Materials Disposition	1,000	1,000	113,000
Total, Fissile Materials Disposition	**41,774**	**701,900**	**1,030,713**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Fissile Materials Disposition				
U.S. Surplus Fissile Materials Disposition (O&M)	302,276	482,185	478,897	459,827
Construction	556,099	527,457	309,661	282,773
Russian Surplus Fissile Materials Disposition	1,000	1,000	1,000	1,000
Total, Fissile Materials Disposition	**859,375**	**1,010,642**	**789,558**	**743,600**

Mission

The program goal is to eliminate surplus Russian weapon-grade plutonium and surplus United States (U.S.) weapon-grade plutonium and highly enriched uranium.

Benefits

Within the Fissile Materials Disposition (FMD) Program, two subprograms each make unique contributions to Government Performance and Results Act (GPRA) Unit Program Number 43.

Plutonium Disposition – The goal of the U.S. Plutonium Disposition program is to dispose of at least 34 metric tons (MT) of surplus U.S. weapon-grade plutonium in accordance with a long-standing U.S. policy and the September 2000 U.S. - Russia Plutonium Management and Disposition Agreement (PMDA). Three key U.S. facilities are being built at the Savannah River Site (SRS) in South Carolina by the FMD program to accomplish this goal: a Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) to fabricate plutonium oxide into MOX fuel for irradiation in domestic reactors; a pit disassembly and conversion capability to disassemble nuclear weapon pits and convert the resulting plutonium metal to a powder form suitable for MOX; and a Waste Solidification Building (WSB) to handle waste from the MFFF and pit disassembly operations. MFFF is scheduled to start operations to produce MOX fuel in October 2016. The WSB cold start-up activities are scheduled to begin operations in September 2013 to

support MOX cold start-up. An alternative analysis study has been completed and the Department is exploring the combination of NNSA's Pit Disassembly and Conversion Facility and Environmental Management's (EM) Plutonium Preparation (PuP) project into a single project to be located in K-Area Reactor Facility at the SRS and managed by NNSA.

The goal of the Russian Plutonium Disposition program is to work with Russia to dispose of at least 34 MT of surplus Russian weapon-grade plutonium. In November 2007, DOE and its Russian counterpart agency, Rosatom, agreed on a revised program to dispose of surplus Russian weapon-grade plutonium. The Russian program relies on the use of fast reactors for plutonium disposition (the existing BN-600 and the BN-800 currently under construction), operating under certain nonproliferation restrictions. Simultaneously, Russia continues to support research and development of the Gas Turbine-Modular Helium Reactor (GT-MHR) on a cost shared basis with the U.S., which could also be used for disposition should that technology become operational during the disposition period. The U.S. and Russian governments have completed negotiations of a Protocol that will amend the PMDA to reflect this revised program. It is expected that the Protocol to the 2000 PMDA containing these amendments will be signed in early 2010 and that both countries will begin disposing of their surplus plutonium in the 2018 timeframe.

Uranium Disposition – NNSA is also responsible for disposing of U.S. highly enriched uranium (HEU) that has been declared surplus to defense needs primarily by down-blending it into low enriched uranium (LEU). Once down-blended, the material can no longer be used for nuclear weapons. To the extent practical, the program seeks to recover the economic value of the material by using the resulting LEU as commercial or research reactor fuel. Four separate projects (H-Canyon Enriched Uranium (EU) Disposition Project, the 12 MT HEU Blend-Down project, Reliable Fuel Supply, and Research Reactor Fuel) are currently being implemented and additional projects are being planned. HEU disposition projects are expected to result in payments to the U.S. Treasury of over $1,000,000,000 for LEU purchases, based on current uranium market prices.

Significant Program Shifts

The Department is requesting funds for the PDCF in Defense Nuclear Nonproliferation, Fissile Materials Disposition (instead of Weapons Activities appropriation) with the goal of aligning management and funding responsibilities for the interrelated surplus plutonium disposition activities under a single appropriation.

Annual Performance Results and Targets

(R = Results; T= Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 43, Fissile Materials Disposition											
Mixed Oxide (MOX) Fuel Fabrication Facility: Cumulative percentage of the design, construction, and cold start-up activities completed for the Mixed Oxide (MOX) Fuel Fabrication Facility. (Long-term Output)[a]	R: 17% T: 17%	R: 24% T: 24%	R: 30% T: 30%	R: 38% T: 39%	T: 49%	T: 62%	T: 77%	T: 89%	T: 96%	T: 99%	By 2016, complete design, construction, and cold start-up activities for the MOX Facility.
Waste Solidification Building: Cumulative percentage of the design, construction, and cold start-up activities completed for the Waste Solidification Building (WSB). (Long-term Output)[b]	N/A	N/A	N/A	R: 26% T: 30%	T: 45%	T: 65%	T: 80%	T: 100%	N/A	N/A	By 2013, complete design, construction, and cold start-up activities for the WSB.
U.S. Highly Enriched Uranium (HEU) Downblended: Cumulative amount of surplus U.S. highly enriched uranium (HEU) down-blended or shipped for down-blending. (Efficiency)	R: 93 MT T: 93 MT	R:103 MT T: 103 MT	R:117 MT T: 112MT	R: 127 MT T: 125 MT	T: 130 MT	T: 133 MT	T: 136 MT	T: 138 MT	T: 140 MT	T: 142 MT	By 2050, complete disposition of 217 MT of surplus HEU.

[a] Prior to FY 2007, annual MOX and PDCF performance was derived by multiplying the percent complete for a project phase (R&D, design, construction) by an associated weighting factor. Starting in FY 2007, percent completion is derived by the earned value expressed as a percent of the Performance Measurement Baseline. .

[b] The WSB percent complete is measured by the earned value expressed as a percent of the Performance Measurement Baseline.

FY 2009 Accomplishments

- Installed over 54,000 cubic yards of reinforced concrete and more than 11,000 tons of rebar for the MFFF.
- Completed construction of 9 of the 18 auxiliary MOX buildings; two more buildings are under construction (Secured Warehouse Building and Electrical Substation).
- Received approval of Critical Decision (CD)-2 (performance baseline) and CD-3 (start of construction) for the WSB, and construction began in December 2008. Completed the first of two major phases of construction of the WSB, which entailed site preparation, facility excavation, and installation of underground utilities. The Balance of Plant subcontract for the WSB has been awarded for the remaining facility construction work scope.
- Successfully completed the PDCF Technical Independent Project Review, and continued with process design activities.
- Selected WesDyne International/Nuclear Fuel Services team as the down-blending and storage contractor for the new 12 MT HEU project.
- Completed all shipments of HEU for the Reliable Fuel Supply initiative, and enough LEU to supply fuel for multiple commercial reactor core reloads.
- Completed negotiations between the U.S. and Russian governments of a Protocol to amend the 2000 PMDA to reflect the current U.S. and Russian plutonium disposition program.

Major Out Year Priorities and Assumptions

The outyear requirements for FMD total $3,403,175,000 (FY 2012 – FY 2015). The funding trend for the five-year period for FMD accounts for the start of operations for MOX and the WSB, and beginning construction of the PDCF. The funding profile for the U.S. Uranium Disposition program is declining in the future because the large quantities of surplus HEU have already been disposed of or are in the pipeline, and the future supply of HEU for disposition (from dismantlements and Naval Reactors rejects) will be at a much lower rate. The HEU disposition program depends on the continuing ability to pay for commercial down-blending services by transferring title to a portion of the resulting low-enriched uranium to the contractors (barter arrangement).

The PMDA Protocol, once approved by the two governments, calls for the U.S. to make available $400,000,000 to support plutonium disposition in Russia, subject to future appropriations. The balance of the more than approximately $2,000,000,000 remaining cost of Russia's plutonium disposition would be borne by Russia and, if available, non-U.S. government contributions. Additional funds separate from the $400,000,000 would also be required to continue U.S. cost sharing of GT-MHR research and development in Russia, U.S. management and oversight of the overall Russian plutonium disposition program and to implement a bilateral monitoring and inspection regime. The request for FY 2011 includes the first $100,000,000 of the $400,000,000 pledge.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
U.S. Surplus Fissile Materials Disposition (O&M)	**40,774**	**126,662**	**304,925**
▪ **U.S. Plutonium Disposition**	**0**	**90,896**	**198,940**
• **MOX Irradiation, Feedstock, and Transportation**	**0**	**26,454**	**107,787**

Funding supports programmatic activities that are not part of the line item construction projects but are necessary to support the overall program to dispose of surplus weapon-grade plutonium as MOX fuel. These activities include: MOX fuel qualification and irradiation, obtaining plutonium and depleted uranium oxide feedstock, storage of feed materials, and transportation.

Irradiation—Funding supports qualification, licensing and irradiation of MOX fuel in existing nuclear reactors. In FY 2011, funding will support the pursuit of license amendments and modifications for commercial nuclear reactors to irradiate MOX fuel and the continuation of Post Irradiation Examinations (PIE) of irradiated MOX fuel lead test assemblies.

Feedstock—Funding supports activities necessary to characterize and convert plutonium and depleted uranium into chemical forms that can be used to fabricate MOX fuel. In FY 2011, Los Alamos National Laboratory (LANL) will continue to disassemble limited quantities of nuclear weapon pits and convert the resulting plutonium metal into an oxide form using the Advanced Recovery and Integrated Extraction System (ARIES) process as part of the campaign to produce 2 MT of feedstock to be used during start-up and initial operation of the MFFF. Activities associated with the conversion of DOE-owned depleted uranium hexafluoride to uranium dioxide for MOX fuel fabrication will increase in FY 2011. Activities to further characterize non-pit feed materials for MFFF will also continue.

Storage—Funding supports safe storage of surplus weapon-grade plutonium, both pits and oxide, including surveillance and monitoring activities. FY 2011 activities include continuing to store surplus plutonium at Pantex and LANL; continuing to package surplus pits for shipment from Pantex to LANL for ARIES conversion activities.

Transportation—Funding supports the development, certification and maintenance of containers and fuel loading equipment to transport pits, plutonium oxide and fresh MOX fuel necessary for plutonium disposition. In FY 2011, work will continue to develop a MOX fresh fuel shipping container and a new container for transporting MOX fuel for boiler water reactors. New containers will also be procured and fabricated to transport pits from Pantex to SRS/LANL. Containers will also be procured to support oxide packaging and shipping. Packaging and loading equipment development will continue during FY 2011.

FY 2009 funding of $16,900,000 was provided within Other Defense Activities (ODA) appropriation.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
• **MOX Other Project Cost Activities (OPC)**	**0**	**56,466**	**30,000**

MOX OPC Activities support project activities such as management oversight, design reviews, facility start-up testing and licensing. FY 2011 activities include continuing management oversight and licensing activities as well as planning for start-up and operation of the MFFF. OPC will also fund the design and testing support of the aqueous polishing process contained within the MOX project, environmental permitting, and the monitoring and support for the Nuclear Regulatory Commission (NRC) review of the possession and use license application for the MFFF.

Funding of $47,068,000 was provided in FY 2008 within the Nuclear Energy appropriation and these uncosted balances were used to support the work scope in FY 2009.

• **MOX Operating Expenses (OPEX)**	**0**	**976**	**865**

MOX Operating Expenses support activities associated with hot start-up testing and operations of the MFFF. FY 2011 activities include planning and support for hot start-up testing and operations of the MFFF.

In FY 2009, $2,300,000 was provided within ODA for this purpose.

• **Waste Solidification Building (WSB) (OPC)**	**0**	**7,000**	**21,500**

WSB OPC funding supports planning for facility operations (development of operating procedures and training program), program development activities (start-up testing, spare parts, emergency preparedness), waste management planning (development of waste compliance plans), interface management, and use of the Smart Plant foundation database (a software relationship management tool that provides the capability to transition engineering/project documents from design/construction/testing to eventual operations while maintaining requirements and configuration control).

In FY 2009, funding of $7,000,000 was provided within the Weapons Activities appropriation, Directed Stockpile Work (DSW) program.

• **Pit Disassembly and Conversion Facility (PDCF) (OPC)**	**0**	**0**	**112,999**

PDCF OPC funding supports Critical Decision package development and activities needed to support project management, project risk management, design authority, design oversight and reviews, planning for facility operations (development of operating procedures and training program), program development activities (start-up testing, planning spare parts, and emergency preparedness), waste management planning (development of waste compliance plans), interface

(dollars in thousands)

FY 2009	FY 2010	FY 2011

management, and use of the Smart Plant foundation database. LANL will continue Demonstration and Testing (D&T) preparations for hot testing of the hydride/dehydride furnace.

In FY 2009, funding of $13,472,000 was provided within the Weapons Activities appropriation, DSW program, and in FY 2010, funding of $58,800,000 was provided within Weapons Activities appropriation, RTBF for PDCF.

- **Plutonium Disposition Program Integration** **0** **0** **5,789**

  This funding supports the integration of the MOX, WSB and pit disassembly activities to ensure that the surplus weapon-grade plutonium disposition program is successful and implemented in a manner that supports the program's objectives. This includes the development of an integrated program plan and schedule and a programmatic risk analyses to assess and manage risk and uncertainty within the program. Funds also support development and maintenance of infrastructure activities that are required to support the three interrelated projects.

  Previously funded under Supporting Activities.

- **U.S. Uranium Disposition** **39,274** **34,691** **25,985**

This funding supports the disposition of U.S. HEU that has been declared surplus, primarily by down-blending it to LEU. Four separate disposition activities are on-going, and additional projects are being planned as HEU becomes available from anticipated weapon dismantlements. FY 2011 activities include:

- TVA HEU Down-blending Project: Continue down-blending of 5.6 MT of off-spec material at SRS. Derived LEU will be transferred to Tennessee Valley Authority (TVA) under the DOE-TVA Interagency Agreement.

- Research Reactor Fuel Project: Continue down-blending HEU to LEU for use as fuel for foreign research reactors as part of the Reduced Enrichment for Research and Test Reactors program.

- 12 MT HEU Project: Complete HEU shipments to Nuclear Fuel Services (NFS) by the end of 2011. The resulting LEU will create an inventory for potential backup use by utilities participating in the MOX plutonium disposition program.

- Planning for Additional Projects: Prepare plans to process, characterize and package additional surplus HEU for down-blending and ultimate disposition. The material is located at various sites in the DOE complex, including Y-12, SRS, LANL, Idaho National Laboratory, and Lawrence Livermore National Laboratory.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
▪ **Supporting Activities**	**1,500**	**1,075**	**0**
• **Monitoring and Inspection**	**1,000**	**675**	**0**

This subprogram was realigned and is funded under the Russian Surplus Fissile Materials Disposition Program beginning in FY 2011.

The U.S.-Russia PMDA agreement requires that the parties implement a bilateral monitoring and inspection (M&I) regime that will provide confidence that each party is disposing of 34 MT of surplus weapon-grade plutonium.

• **Plutonium Disposition Program Integration**	**500**	**400**	**0**

This subprogram was realigned and is funded under U.S. Plutonium Disposition beginning in FY 2011.

▪ **Construction**	**0**	**574,238**	**612,788**
• **99-D-141-01, Pit Disassembly and Conversion (PDC)**	**0**	**0**	**80,000**

A Pit Disassembly and Conversion (PDC) capability is needed to disassemble surplus nuclear weapon pits and convert the resulting weapon-grade plutonium metal to an oxide form that can be fabricated into MOX fuel. Approximately 75 percent of surplus plutonium to be dispositioned is in sealed pit form and must be disassembled and converted to an oxide form useable for MOX fuel. NNSA conducted an alternative analysis to identify potential cost-saving alternatives for the PDC mission. An Independent Review Team agreed with the alternative analysis report and recommended that the PDCF project scope and operations be combined with the Office of Environmental Management's (EM) Plutonium Preparation (PuP) project and be located in the K-Area Reactor Building at the SRS. On November 22, 2009, the Department approved exploring the combination of NNSA's PDCF and EM's PuP projects into a single project to be located in K-Area Reactor Facility at the SRS and managed by the NNSA. As a result the project team was authorized to develop a conceptual design report, including NEPA and other documentation to support Critical Decision (CD) -1 (Approve Alternative Selection and Cost Range), in accordance with DOE Order 413.3A. A detailed project integration plan is currently under development. An updated funding profile and detailed work scope will be provided as it becomes available.

In FY 2009 and FY 2010, PDCF funding of $24,900,000 and $30,300,000 was provided within the Weapons Activities appropriation, DSW and RTBF programs respectively.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
• **99-D-141-02 Waste Solidification Building (WSB)**	**0**	**70,000**	**57,000**

The WSB will receive liquid waste streams from the MOX facility and the PDC operations. The waste will be chemically treated and solidified for ultimate disposal. The WSB is a reinforced concrete facility that will contain storage tanks, evaporators, and cementation equipment, and will include an adjacent storage area for drums awaiting transfer to SRS packaging facilities. Construction of the WSB began in FY 2009.

In FY 2011, planned activities include testing/site acceptance of the cementation equipment, continuing installation of "trapped" equipment, completion of the final roof concrete placement, and installation of mechanical and electrical process systems.
In FY 2009, funding of $40,000,000 was provided within the Weapons Activities appropriation, DSW Program.

• **99-D-143, MOX Fuel Fabrication Facility (MFFF)**	**0**	**504,238**	**475,788**

The MFFF will provide the capability to fabricate plutonium oxide into MOX fuel for subsequent use in commercial nuclear reactors. The facility will contain the following key areas: shipping and receiving, storage, chemical processing, pellet manufacturing, fuel rod loading, fuel bundle assembly, fuel bundle storage and an analytical laboratory. Supporting facilities will be built, including an administration building, material receipt warehouse, technical support building, emergency and diesel standby generator buildings, and a chemical reagent building.

FY 2011 planned activities include completion of the main MFFF process building structure and installation of ventilation equipment, process piping and electrical equipment in the main process building. Assembly and testing of gloveboxes and process equipment in the Process Assembly Facility will continue. The project also intends to continue construction of support buildings (Technical Support Building and Emergency Diesel Building).

In FY 2009, funding of $467,800,000 was provided within Other Defense Activities (ODA) appropriation.

Russian Surplus Fissile Materials Disposition	**1,000**	**1,000**	**113,000**
▪ **Russian Surplus Fissile Materials Disposition (funds spent in the U.S.)**	**1,000**	**1,000**	**8,000**

FY 2011 funding will support U.S. technical oversight of work in Russia associated with the disposition of surplus Russian weapon-grade plutonium in the BN-600 and BN-800 fast reactors as well as the research and development of the GT-MHR technology. Funding will be used to continue with DOE contractual management and oversight of the Russian plutonium disposition

(dollars in thousands)

FY 2009	FY 2010	FY 2011

program and research and development of the GT-MHR. In addition, these funds will support the implementation of a monitoring and inspection (M&I) regime that will provide confidence that each party is disposing of 34 MT of surplus weapon-grade plutonium and support negotiations among the U.S., Russia, and the International Atomic Energy Agency (IAEA) on M&I issues.

- **Russian Surplus Fissile Materials Disposition (funds spent in Russia)** **0** **0** **105,000**

  This funding represents a portion of the $400,000,000 the U.S. pledged to support Russian plutonium disposition. Major activities include: modifying the existing BN-600 MOX fuel fabrication facility at the Research Institute for Atomic Reactors (RIAR), fabricating and installing non-plutonium breeding assemblies in the BN-600 to replace the plutonium breeding blanket assemblies, modifying the BN-600 reactor so it can be used to irradiate MOX fuel, modifying facilities to fabricate MOX fuel for the BN-800, and implementing a monitoring and inspection (M&I) regime at Russian disposition facilities to provide confidence that Russia is disposing of 34 MT of surplus weapon-grade plutonium.

  The additional $5,000,000 will support the research and development (R&D) of the GT-MHR in Russia as required under the PMDA. Major activities include fabrication and testing of particle nuclear fuels and testing of vertical turbo machine components. The funds used for the GT-MHR do not count against the $400,000,000 U.S. contribution.

Total, Russian Surplus Fissile Materials Disposition	**1,000**	**1,000**	**113,000**
Total, Fissile Materials Disposition	**41,774**	**701,900**	**1,030,713**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
U.S. Surplus Fissile Materials Disposition	
U.S. Plutonium Disposition: The increase supports the work scope associated with depleted uranium conversion and licensing, and modifications of reactors to use MOX fuel. In addition, it includes the PDCF OPC and related supporting activities transferred from Weapons Activities.	**+ 188,044**
U.S. Uranium Disposition: The decrease reflects the reduced availability of surplus HEU for disposition.	**- 8,706**
▪ **Supporting Activities:** The decrease reflects the realignment of work scope and funds to the Russian Program for M&I activities and the U.S. Plutonium Disposition Program for Plutonium Disposition Program Integration.	**-1,075**
Total, U.S. Fissile Materials Disposition O&M	**+178,263**
U.S. Fissile Materials Disposition Construction	
▪ **99-D-141-02 Waste Solidification Building (WSB):** The decrease reflects the completion of initial large outlays needed by the Balance of Plant sub-contractor and a decline in long-lead procurements.	**-13,000**
99-D-141-01 Pit Disassembly and Conversion (PDC): The increase supports the continuation of the design work scope and preparing the documentation for CD-1 (Approve Alternative Selection and Cost Range).	**+ 80,000**
99-D-143 Mixed Oxide (MOX) Fuel Fabrication Facility: The decrease reflects the completion of many long-lead equipment procurements and facility design activities.	**- 28,450**
Total, U.S. Fissile Materials Disposition Construction	**38,550**
Russian Surplus Fissile Materials Disposition	
▪ **U.S. Support for Russian Plutonium Disposition (funds spent in the U.S.):** The increase supports the continuation of DOE management and oversight of the Russian plutonium disposition program, implementation of a M&I regime at U.S. disposition facilities and the continuation of oversight of the GT-MHR research and development program.	**+7,000**

	FY 2011 vs. FY 2010 ($000)
▪ **U.S. Support for Russian Plutonium Disposition (funds spent in Russia):** The increase supports a portion ($100,000,000) of the $400,000,000 the U.S. pledged to support the Russian plutonium disposition and supports the R&D of the GT-MHR in Russia as required under the PMDA.	**+105,000**
Total, Russian Fissile Materials Disposition	**+112,000**
Total Funding Change, Fissile Materials Disposition	**+ 328,813**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**	**0**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, and are no longer budgeted separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding reflects estimates based on actual FY 2009 obligations.

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
99-D-141-01, Pit Disassembly and Conversion (PDC)	TBD	247,275 [a]	24,893 [c]	30,321 [e]	80,000	TBD
99-D-141-02, Waste Solidification Building (WSB)	244,331	59,749 [a]	40,000 [c]	70,000	57,000	17,582
99-D-143, MOX Fuel Fabrication Facility	3,975,828	1,315,060 [b]	467,808 [d]	504,238 [f]	475,788	1,212,934
Total, Construction		**1,622,084**	**532,701**	**604,559**	**612,788**	

Outyear Construction Projects

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
99-D-141-01, Pit Disassembly and Conversion (PDC)	158,000	200,000	200,000	157,000
99-D-141-02, Waste Solidification Building (WSB)	12,927	4,655	0	0
99-D-143, MOX Fuel Fabrication Facility	385,172	322,802	109,661	125,773
Total, Construction	**556,099**	**527,457**	**309,661**	**282,773**

[a] In FY 2008, Waste Solidification Building (WSB) ($33,600,000) and the Pit Disassembly and Conversion Facility (PDCF) ($22,447,0000) were appropriated under the Weapons Activities appropriation under the Directed Stockpile Work.

[b] In FY 2008, the Mixed Oxide (MOX) Fuel Fabrication Facility (O&M) ($47,068,0000) and Construction ($231,721,000) were appropriated under the Nuclear Energy appropriation.

[c] In FY 2009, WSB and PDCF funding were appropriated under the Weapons Activities appropriation under the Directed Stockpile Work.

[d] In FY 2009, MOX Fuel Fabrication Facility funding was appropriated in Other Defense Activities.

[e] In FY 2010, PDCF funding was requested under the Weapons Activities appropriation under the Readiness in Technical Base and Facilities Program.

[f] In FY 2010, MOX Fuel Fabrication Facility was requested under the Defense Nuclear Nonproliferation/FMD.

99-D-143, Mixed Oxide Fuel Fabrication Facility,
Savannah River Site, Aiken, South Carolina
Project Data Sheet is for Construction

1. Significant Changes

The most recent Department of Energy (DOE) Order 413.3A approved Critical Decision (CD) is CD-3, Start of Construction, and was approved on April 11, 2007, with a Total Project Cost (TPC) of $4,814,329,000 and CD-4 of FY 2017. However, as directed by the Revised Continuing Resolution, 2007, Public Law 110-5, construction began on August 1, 2007. The latest approved baseline change was on December 17, 2008, with a TPC of $4,857,129,000 and CD-4 of FY 2017.

A Federal Project Director certified at the appropriate level has been assigned to this project.

The sale of Mixed Oxide (MOX) fuel to nuclear utilities, (based on July 2009 market prices) could generate approximately $1.1 billion in revenue to the U.S. Treasury from this 34 metric ton (MT) disposition program.

This Project Data Sheet (PDS) is an update of the FY 2010 PDS. Significant changes include:

MOX engineering costs have increased (less than 5 percent) due to several factors including: the project's decision to procure additional process equipment and gloveboxes as "build to print" verses "design-build" contracts, thereby reducing schedule and technical risks; additional costs to place engineering personnel in vendor shops to ensure the required quality for purchased equipment; and unanticipated increases in personnel rates.

The reduction in contingency (29 percent) is primarily due to construction, process unit, and glovebox bids being significantly greater than government estimates. Major contributors to the higher bids included: a limited number of qualified suppliers; real and perceived risks for bidders resulting in increased margins in bids; anticipated and real uncertainties in material costs; expected difficulties in meeting National Quality Assurance (NQA)-1 quality standards; and availability of qualified personnel to perform work. Overall, project application of contingency and management reserve continues to be within acceptable limits for projects of this size and at this stage of the project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2000	N/A	2QFY1999	4QFY2001	N/A	1QFY2002	4QFY2005	N/A	N/A
FY 2001	N/A	2QFY1999	3QFY2002	N/A	4QFY2002	1QFY2006	N/A	N/A
FY 2002	N/A	2QFY1999	4QFY2002	N/A	2QFY2003	1QFY2007	N/A	N/A
FY 2003	N/A	2QFY1999	4QFY2003	N/A	2QFY2004	4QFY2007	N/A	N/A
FY 2004	N/A	2QFY1999	1QFY2004	N/A	2QFY2004	4QFY2007	N/A	N/A
FY 2005	N/A	2QFY1999	3QFY2004	N/A	3QFY2005	2QFY2009	N/A	N/A
FY 2006	N/A	2QFY1999	1QFY2005	N/A	3QFY2005	TBD	N/A	N/A
FY 2007	N/A	2QFY1999	4QFY2009	N/A	2QFY2007	4QFY2014	N/A	N/A
FY 2008	1QFY1997	2QFY1999	2QFY2011	2QFY2007	2QFY2007	4QFY2013	N/A	N/A

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2009	1QFY1997	03/22/1999	2QFY2013[a]	04/11/2007	08/01/2007[b]	4QFY2016	N/A	N/A
FY 2010	1QFY1997	03/22/1999	2QFY2013	04/11/2007	08/01/2007	1QFY2017	N/A	N/A
FY 2011	1QFY1997	03/22/1999	2QFY2013	04/11/2007	08/01/2007	1QFY2017	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

(fiscal quarter or date)

	NRC Construction Authorization	CD 2A/3A	Performance Baseline Validation	CD 2B/3B
FY 2004	N/A	N/A	N/A	N/A
FY 2005	03/30/2005	09/30/2005	N/A	N/A
FY 2006	N/A	N/A	07/07/2006	N/A
FY 2007	N/A	N/A	N/A	04/06/2006
FY 2008	N/A	N/A	N/A	N/A
FY 2009	N/A	N/A	N/A	N/A

CD 2A/3A - Approval to start Site Preparation
CD 2B/3B - Approval to begin long lead procurements ("trapped" tanks, steel embeds, reinforcing steel, barrier doors)

[a] Facility and process design will be completed in FY 2010, the equipment design will be completed in FY 2011 and the software design will be completed in FY 2013.

[b] The Department approved CD-3 (Start of Construction) on April 11, 2007, however, as directed by the Revised Continuing Resolution, 2007, Public Law 110-5, construction began on August 1, 2007.

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2000	TBD	TBD	383,186	0	N/A	TBD	N/A
FY 2001	TBD	TBD	398,186	0	N/A	TBD	N/A
FY 2002	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2003	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2004	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2005	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2006	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2007	TBD	TBD	3,277,984	354,108	N/A	354,108	3,632,092
FY 2008	TBD	TBD	3,868,628	830,701	N/A	830,701	4,699,329
FY 2009	TBD	TBD	3,938,628	875,701	N/A	875,701	4,814,329
FY 2010	TBD	TBD	3,975,828	881,301	N/A	881,301	4,857,129
FY 2011	960,925	3,014,903	3,975,828	881,301	N/A	881,301	4,857,129

4. Project Description, Justification, and Scope

Description and Scope

The U.S. MOX Fuel Fabrication Facility (MFFF) at the Savannah River Site will combine surplus weapon-grade plutonium oxide with depleted uranium oxide to form MOX fuel assemblies that will be used as fuel for U.S. commercial nuclear reactors. Once irradiated and converted into spent fuel, the resulting plutonium can no longer be readily used for nuclear weapons. The nominal design life of the facility is 40 years; however, it will take approximately 13 years to complete the 34 MT mission with additional surplus plutonium disposition planned. After completing its mission, the facility can be deactivated, decontaminated, and decommissioned in approximately three to four years.

The MOX facility has been designed with the capacity needed to receive and process 3.5 MT of plutonium oxide per year. The plutonium oxide will come from pit disassembly and conversion operations and from other selected inventories of weapon-grade plutonium within the DOE complex. The facility will have the capacity to store sufficient plutonium oxide for two years of operations.

The MOX facility will be approximately 441,000 square feet in size and provide all of the material processing and fabrication operations needed to produce MOX fuel. The MOX facility operations include: aqueous polishing (AP) to purify the plutonium oxide; blending and milling; pelletizing; sintering; grinding; loading fuel rods; bundling fuel assemblies; and storing feed material, pellets, and fuel assemblies. The facility also includes a laboratory and space for material sampling and use by a monitoring and inspection team. Adjacent to the MOX process areas is the secure shipping and receiving area to support material receipt, utilities, and technical support.

The design of the MOX Fuel Fabrication Facility (MFFF) is based on technologies, processes and facilities that have been successfully operating in France for decades, specifically AREVA's MELOX and La Hague facilities. The facility will meet U.S. conventions, codes, standards, and regulatory requirements, and will be licensed by the Nuclear Regulatory Commission (NRC).

The MFFF has the following Key Performance Parameters: (1) process and dispose of 3.5 MT of weapon-grade plutonium annually by producing mixed-oxide fuel qualified for use in U.S. commercial nuclear power plants; and (2) provide the capability to successfully process alternate (non-pit) feedstock.

FY 2010 and FY 2011 Description of Activities

In FY 2010, the facility and process design will be completed. Construction will continue with the third floor slab and walls being completed in Aqueous Polishing (AP), and the second floor slab being completed in the MOX processing area and trapped equipment will continue to be installed as the main processing facility construction progresses. Process piping installation will begin, and the Technical Support Building design and construction will begin. Electrical conduit and raceway installation will begin, along with initiation of the Heating, Ventilation, and Air Conditioning (HVAC) system installation and fire protection system installation. Construction of the Reagent Building and the Emergency Diesel Generator Building will begin.

In FY 2011, the MFFF structural construction package will be completed, including completion of the primary exterior wall and MFFF roof. HVAC, Reagent Building, Emergency Diesel Generator Building, and Technical Support Building construction will continue. Process piping installation will continue, and glovebox installation/connections, and electrical installation will begin.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 1999	28,000	9,600	2,545
FY 2000	12,375	30,775	33,512
FY 2001	25,943	25,943	29,938
FY 2002	65,993	65,993	52,513
FY 2003	92,088	92,088	82,022
FY 2004	81,081	81,081	93,457
FY 2005	251,195	251,195	216,801
FY 2006	119,853	119,853	165,618
FY 2007	65,133	65,133	62,342
FY 2008	56,045	56,045	58,958
FY 2009	72,509	72,509	68,395
FY 2010	55,937	55,937	59,587
FY 2011	33,036	33,036	32,951
FY 2012	1,582	1,582	2,081
FY 2013	155	155	205
Total, Design	960,925	960,925	960,925

(dollars in thousands)

	Appropriations	Obligations	Costs
Construction			
FY 2004	279,193	0	0
FY 2005	113,892	44,100	0
FY 2006	97,947	217,469	15,210
FY 2007	197,367	197,367	115,065
FY 2008	175,676	290,139	209,174
FY 2008 (rescinded PY unobligated balance)	-115,000	0	0
FY 2009	395,299	395,299	300,155
FY 2010	448,301	448,301	390,969
FY 2011	442,752	442,752	459,817
FY 2012	383,590	383,590	600,710
FY 2013	322,647	322,647	491,676
FY 2014	109,661	109,661	238,858
FY 2015	125,773	125,773	128,207
FY 2016	37,805	37,805	65,062
FY 2017	0	0	0
Total, Construction	3,014,903	3,014,903	3,014,903
TEC			
FY 1999	28,000	9,600	2,545
FY 2000	12,375	30,775	33,512
FY 2001	25,943	25,943	29,938
FY 2002	65,993	65,993	52,513
FY 2003	92,088	92,088	82,022
FY 2004	360,274	81,081	93,457
FY 2005	365,087	295,295	216,801
FY 2006	217,800	337,322	180,828
FY 2007	262,500	262,500	177,407
FY 2008	231,721	346,184	268,132
FY 2008 (rescinded PY unobligated balance)	-115,000	0	0
FY 2009	467,808	467,808	368,550
FY 2010	504,238	504,238	450,556
FY 2011	475,788	475,788	492,768
FY 2012	385,172	385,172	602,791
FY 2013	322,802	322,802	491,881
FY 2014	109,661	109,661	238,858
FY 2015	125,773	125,773	128,207
FY 2016	37,805	37,805	65,062
FY 2017	0	0	0
Total, TEC	3,975,828	3,975,828	3,975,828
Other Project Cost (OPC)			
OPC except D&D			
FY 1999	5,000	5,000	4,500
FY 2000	5,000	5,000	4,500
FY 2001	5,000	5,000	5,000
FY 2002	5,000	5,000	5,000
FY 2003	8,000	8,000	5,000
FY 2004	9,292	9,292	11,500

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2005	9,357	9,357	3,749
FY 2006	28,200	21,300	7,023
FY 2007	915	7,792	9,278
FY 2008	47,068	47,068	15,746
FY 2009	0	0	23,649
FY 2010	56,466	56,466	19,019
FY 2011	30,000	30,000	90,238
FY 2012	97,035	97,035	94,971
FY 2013	246,669	246,669	206,261
FY 2014	230,697	230,697	177,010
FY 2015	91,603	91,603	136,417
FY 2016	5,999	6,022	62,440
FY 2017	0	0	0
Total, OPC except D&D	881,301	881,301	881,301
D&D			
FY	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total Project Cost (TPC)			
FY 1999	33,000	14,600	7,045
FY 2000	17,375	35,775	38,012
FY 2001	30,943	30,943	34,938
FY 2002	70,993	70,993	57,513
FY 2003	100,088	100,088	87,022
FY 2004	369,566	90,373	104,957
FY 2005	374,444	304,652	220,550
FY 2006	246,000	358,622	187,851
FY 2007	263,415	270,292	186,685
FY 2008	278,789	393,252	283,878
FY 2008 (rescinded PY unobligated balance)	-115,000	0	0
FY 2009	467,808	467,808	392,199
FY 2010	560,704	560,704	469,575
FY 2011	505,788	505,788	583,006
FY 2012	482,207	482,207	697,762
FY 2013	569,471	569,471	698,142
FY 2014	340,358	340,358	415,868
FY 2015	217,376	217,376	264,624
FY 2016	43,804	43,827	127,502
FY 2017	0	0	0
Total, TPC	4,857,129	4,857,129	4,857,129

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	960,925	916,148	916,148
Contingency	0	0	0
Total, PED	960,925	916,148	916,148
Construction			
Site Preparation	39,957	39,038	39,929
Equipment (MOX & AP equip.)	344,590	200,415	251,791
Other Construction	2,197,139	2,153,444	2,067,639
Contingency	433,217	666,783	663,121
Total, Construction	3,014,903	3,059,680	3,022,480
Total, TEC	3,975,828	3,975,828	3,938,628
Contingency, TEC	433,217	666,783	663,121
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	37,723	37,723	37,723
Conceptual Design	0	0	0
Start-Up	672,903	662,328	650,468
Contingency	170,675	181,250	187,510
Total, OPC except D&D	881,301	881,301	875,701
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	881,301	881,301	875,701
Contingency, OPC	170,675	181,250	187,510
Total, TPC	4,857,129	4,857,129	4,814,329
Total, Contingency	603,892	848,033	850,631

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009	TEC	1,964,589	395,674	308,722	301,938	382,802	158,325	125,611	300,967	3,938,628
Performance	OPC	173,832	55,000	87,036	180,269	136,669	149,192	85,771	7,932	875,701
Baseline	TPC	2,138,421	450,674	395,758	482,207	519,471	307,517	211,382	308,899	4,814,329
	TEC	2,014,589	504,238	475,788	385,172	322,802	109,661	125,773	37,805	3,975,828
FY 2010	OPC	122,832	56,466	30,000	97,035	246,669	230,697	91,603	5,999	881,301
	TPC	2,137,421	560,704	505,788	482,207	569,471	340,358	217,376	43,804	4,857,129
	TEC	2,014,589	504,238	475,788	385,172	322,802	109,661	125,773	37,805	3,975,828
FY 2011	OPC	122,832	56,466	30,000	97,035	246,669	230,697	91,603	5,999	881,301
	TPC	2,137,421	560,704	505,788	482,207	569,471	340,358	217,376	43,804	4,857,129

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY2017
Expected Useful Life (number of years) (after hot startup)[a]	13
Expected Future Start of D&D of this capital asset (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Ave. Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	314,600	142,900	4,089,800	1,857,100
Security	99,100	41,500	1,288,300	539,500
Total, Operations & Security [b]	413,700	184,400	5,378,100	2,396,600

9. Required D&D Information

Area	Square Feet
Area of new construction	441,000
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced:
The new construction is not replacing an existing facility.

[a] The nominal design life of the facility is 40 years, however, it will take approximately 13 years to complete the 34 MT mission.

[b] Previous life cycle costs were estimated in 2005 dollars. The current estimates are expressed in 2010 dollars and should be considered preliminary. The Government is negotiating Option II of the MFFF contract to add start-up and initial operation of the facility to the current contract scope in order to reduce the government's risk that the facility will be unable to produce specification MOX fuel. NNSA is also negotiating security and other overhead costs with Environmental Management --the SRS Landlord. When the process is completed the project life cycle costs will be updated.

10. Acquisition Approach

The procurement strategy for the MOX facility involved awarding a base contract to Duke Cogema Stone & Webster (now Shaw AREVA MOX Services) in March 1999 for design, licensing and irradiation services associated with fuel qualification activities and reactor licensing. Three options were included in the base contract, for (1) construction and management oversight; (2) hot start-up, operations and irradiation services; and (3) deactivation can be awarded separately. Option 1 was exercised by DOE in May 2008. In January 2009, an Early Option 2 proposal was submitted to NNSA for consideration. The proposed work scope included the fabrication of eight (8) fuel assemblies as a part of the facility hot start-up plan. Negotiations on Early Option 2 are currently in process.

Actual physical construction is being conducted through fixed-price subcontracts to the extent practical, with incentive and award fee contracts for construction management services and glovebox assembly.

99-D-141-02, Waste Solidification Building (WSB)
Savannah River Site, Aiken, South Carolina
Project Data Sheet is for Construction

1. Significant Changes

The most recent Department of Energy (DOE) Order 413.3A approved Critical Decision (CD) is CD-3, Start of Construction, and was approved on December 10, 2008 with a Total Project Cost (TPC) of $344,455,000 and CD-4 of FY 2013.

A Federal Project Director (FPD), certified at the appropriate level has been assigned to this project.

This Project Data Sheet (PDS) is an update of the FY 2010 PDS. Significant changes include:

The first phase of construction for site preparation was completed in FY 2009. The scope of this work included: excavation; installation of waste transfer lines; installation of the process sewer, sanitary sewer, and storm sewer systems; installation of electrical and telecommunications duct banks; and construction of the facility mud mat and roadways.

The Balance of Plant (BOP) sub-contract for the second phase of construction was awarded in July 2009 for the amount of $91,500,000. Work scope for this contract includes facility construction, system testing and turnover. Construction is scheduled to be complete in 2012.

Approximately $30,000,000 of construction funds were used in FY 2009 to support long-lead equipment procurements, early site construction and mobilization of the facility construction sub-contractor. Long lead equipment includes evaporators, tanks, cementation process equipment and glove boxes. This equipment requires significant lead time to fabricate and must be available for installation early in the construction process (i.e. before steel roof supports are put in place).

- The most significant project risk involves the reduction in contingency funds due to the receipt of final bids for facility construction, greatly exceeding government estimates. Major contributors to the higher bids include difficulty of contractors to meet National Quality Assurance (NQA)-1 standards requiring additional Quality Assurance oversight and an anticipated lack of craft labor requiring additional relocation costs. Although some of the amounts were offset by under-runs in other areas, approximately $20,000,000 of available contingency was required (about one third of the total contingency). The early use of such a significant portion of contingency will affect the flexibility of the project team to address unforeseen changes for the duration of the project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0[a]	CD-1[b]	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 1999	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2000	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2001	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2002	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2003	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2004	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2005	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2006	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2007	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2008	10/31/1997	10/31/1997	3QFY2008	4QFY2008	1QFY2009	TBD	N/A	N/A
FY 2009	10/31/1997	10/31/1997	3QFY2008	4QFY2008	4QFY2008	1QFY2013	N/A	N/A
FY 2010	10/31/1997	10/31/1997	05/09/2008	12/10/2008	12/10/2008	4QFY2013	N/A	N/A
FY 2011	10/31/1997	10/31/1997	05/09/2008	12/10/2008	12/10/2008	4QFY2013	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 1999	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2000	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2001	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2002	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2003	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2004	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2005	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2006	25,700	TBD	TBD	TBD	N/A	TBD	25,700
FY 2007	29,300	160,000	189,300	36,708	N/A	36,708	226,008
FY 2008	31,183	171,013	202,196	42,908	N/A	42,908	245,104
FY 2009	36,102	159,367	195,469	82,718	N/A	82,718	278,187

[a] Approval of mission need for waste treatment activities was originally obtained in 1997 as part of the scope of the Pit Disassembly and Conversion Facility (PDCF) project and was reinforced in the Record of Decision (ROD).

[b] Preliminary design activities for the Waste Solidification Building (WSB) were initiated in February 2003, but suspended in 2004 due to uncertainties in the schedule of the overall plutonium disposition program and the counterpart Russian disposition program. These issues have been resolved and design activities were resumed in October 2006.

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	42,542	201,789	244,331	100,124	N/A	100,124	344,455
FY 2011	42,652	201,679	244,331	100,124	N/A	100,124	344,455

4. Project Description, Justification, and Scope

Waste Solidification Building (WSB):

The WSB will process radioactive liquid waste streams from the Mixed Oxide Fuel Fabrication Facility (MFFF) and pit disassembly and conversion operations into a solid form for ultimate disposal. The MFFF will produce approximately 85 percent of the waste that the WSB will process. The WSB must be operational to support mixed oxide (MOX) cold start-up testing activities scheduled in the 2013 timeframe. The radioactive liquid waste consists of one high-activity and two low-activity streams. The high-activity stream contains significant amounts of americium removed from plutonium oxide during MOX aqueous polishing operations. The low-activity streams contain stripped uranium also removed from MOX aqueous polishing operations and laboratory waste from pit disassembly and conversion operations. The WSB operating life is expected to be approximately 15 years; however the facility has a design life of 30 years and could easily be extended to accommodate disposition of additional surplus plutonium. After completing its mission, the WSB will be deactivated, decontaminated, and decommissioned over three to four years.

The scope of this sub-project consists of the following activities: design, construction, procurement, installation, testing, demonstration, and start-up testing of structures and equipment. The processing facility will be approximately 33,000 square feet and is designed as a single story structure of hardened concrete. An additional separate structure consisting of a covered concrete pad will be constructed to provide temporary storage of containerized waste following treatment prior to packaging for shipment. The major process equipment includes tanks, evaporators, and solidification equipment.

The WSB has the following Key Performance Parameters: (1) demonstrate the ability to process the anticipated waste volumes of the high activity waste stream and the two low activity waste streams, and (2) demonstrate the ability to produce waste products that are within the established limits of the Waste Acceptance Criteria and/or Documented Safety Analysis of the receiving facilities.

FY 2010 and FY 2011 Description of Activities

In FY 2010, planned activities include completion of foundation rebar placement, completion of fabrication/testing/site acceptance of cementation equipment, procurement of major equipment (including long-lead equipment), installation of "trapped" equipment, and installation of the facility roof.

In FY 2011, planned activities will focus on installation of mechanical and electrical systems inside the facility and the construction and installation of outside equipment and ancillary structures.

The WSB project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	6,195	6,195	4,610
FY 2004	2,100	2,100	3,114
FY 2005	0	0	0
FY 2006	2,354	2,354	1,003
FY 2007	15,500	15,500	11,745
FY 2008	16,393	16,393	20,072
FY 2009	110	110	2,108
Total, PED	42,652	42,652	42,652
Construction			
FY 2006	0	0	0
FY 2007	0	0	0
FY 2008	17,207	17,207	0
FY 2009	39,890	39,890	15,859
FY 2010	70,000	70,000	72,714
FY 2011	57,000	57,000	85,169
FY 2012	12,927	12,927	21,449
FY 2013	4,655	4,655	6,488
Total, Construction	201,679	201,679	201,679
TEC			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	6,195	6,195	4,610
FY 2004	2,100	2,100	3,114
FY 2005	0	0	0
FY 2006	2,354	2,354	1,003
FY 2007	15,500	15,500	11,745
FY 2008	33,600	33,600	20,072
FY 2009	40,000	40,000	17,967
FY 2010	70,000	70,000	72,714
FY 2011	57,000	57,000	85,169
FY 2012	12,927	12,927	21,449
FY 2013	4,655	4,655	6,488
Total, TEC	244,331	244,331	244,331

(dollars in thousands)

	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	4,071	4,071	2,650
FY 2004	0	0	1,041
FY 2005	(50)	(50)	208
FY 2006	1,400	1,400	79
FY 2007	5,060	5,060	2,145
FY 2008	5,000	5,000	5,415
FY 2009	7,000	7,000	4,526
FY 2010	7,000	7,000	12,574
FY 2011	21,500	21,500	18,170
FY 2012	28,000	28,000	25,329
FY 2013	21,143	21,143	27,987
Total, OPC except D&D	100,124	100,124	100,124
D&D			
FY	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	4,071	4,071	2,650
FY 2004	0	0	1,041
FY 2005	(50)	(50)	208
FY 2006	1,400	1,400	79
FY 2007	5,060	5,060	2,145
FY 2008	5,000	5,000	5,415
FY 2009	7,000	7,000	4,526
FY 2010	7,000	7,000	12,574
FY 2011	21,500	21,500	18,170
FY 2012	28,000	28,000	25,329
FY 2013	21,143	21,143	27,987
Total OPC	100,124	100,124	100,124

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	10,266	10,266	7,260
FY 2004	2,100	2,100	4,155
FY 2005	(50)	(50)	208
FY 2006	3,754	3,754	1,082
FY 2007	20,560	20,560	13,890
FY 2008	38,600	38,600	25,487
FY 2009	47,000	47,000	22,493
FY 2010	77,000	77,000	85,288
FY 2011	78,500	78,500	103,339
FY 2012	40,927	40,927	46,778
FY 2013	25,798	25,798	34,475
Total, TPC	344,455	344,455	344,455

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	42,652	41,825	N/A
Contingency	0	717	N/A
Total, PED	42,652	42,542	N/A
Construction			
Site Preparation	1,300	1,300	N/A
Equipment	42,585	42,585	N/A
Other Construction	135,443	118,025	N/A
Contingency	22,351	39,879	N/A
Total, Construction	201,679	201,789	N/A
Total, TEC	244,331	244,331	N/A
Contingency, TEC	22,351	40,596	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	2,650	2,650	N/A
Conceptual Design	27,440	27,277	N/A
Start-Up	49,500	49,500	N/A
Contingency	20,534	20,697	N/A
Total, OPC except D&D	100,124	100,124	N/A

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	100,124	100,124	N/A
Contingency, OPC	20,534	20,697	N/A
Total, TPC	344,455	344,455	N/A
Total, Contingency	42,885	61,293	N/A

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2008	TEC	0								0
	OPC	16,224	8,284	12,200	6,200					42,908
	TPC	16,224	8,284	12,200	6,200	0	0	0	0	42,908
FY 2009 Performance Baseline	TEC	99,749	54,000	38,100	3,620					195,469
	OPC	20,481	5,400	14,731	31,647	10,459				82,718
	TPC	120,230	59,400	52,831	35,267	10,459	0	0	0	278,187
FY 2010	TEC	99,749	70,000	57,000	12,927	4,655				244,331
	OPC	22,481	7,000	21,500	28,000	21,143				100,124
	TPC	122,230	77,000	78,500	40,927	25,798	0	0	0	344,455
FY 2011	TEC	99,749	70,000	57,000	12,927	4,655				244,331
	OPC	22,481	7,000	21,500	28,000	21,143				100,124
	TPC	122,230	77,000	78,500	40,927	25,798	0	0	0	344,455

8. Related Operations and Maintenance Funding Requirements

99-D-141-02 – Waste Solidification Building

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY2013
Expected Useful Life (number of years)[a]	15
Expected Future Start of D&D of this capital asset (fiscal quarter)	4QFY2028

[a] The WSB operating life is expected to be approximately 15 years; however the facility has a design life of 30 years and could easily be extended to accommodate disposition of additional surplus plutonium.

(Related Funding requirements)

99-D-141-02 – Waste Solidification Building

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	47,911	47,911	718,663	718,663
Maintenance	3,278	3,278	49,170	49,170
Total, Operations & Maintenance	51,189	51,189	767,833	767,833

9. Required D&D Information

Area	Square Feet
Area of new construction	33,000
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced:
The new construction is not replacing an existing facility.

10. Acquisition Approach

99-D-141-02 – Waste Solidification Building

The WSB design service was procured through the Savannah River Site Management and Operating (M&O) contract. Purchase orders for procurement of long-lead equipment for the WSB were issued in FY 2009. The Savannah River Site M&O will serve as the construction manager. Fixed-price construction sub-contracts for the WSB were awarded on the basis of competitive bidding. The acquisition strategy has been finalized.

99-D-141-01, Pit Disassembly and Conversion (PDC)
Savannah River Site, Aiken, South Carolina
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent Department of Energy (DOE) approved Critical Decision (CD) for the Pit Disassembly and Conversion Facility (PDCF) Line Item is CD-0/1, Approve Mission Need and Alternative Selection and Cost Range, which was approved on October 31, 1997. At that time, the project completion date was estimated to be 4Q FY 2004. The preliminary cost range to design, construct and start-up the facility is $2,400,000,000 - $3,200,000,000. These estimates will be adjusted when the project baseline is established. The PDCF design is approximately 65 percent complete.

A Federal Project Director, certified at the appropriate level has been assigned to this project.

This Project Data Sheet (PDS) is an update of the FY 2010 PDS. Significant changes include:

The Department is requesting funds for the PDCF in Defense Nuclear Nonproliferation, Fissile Materials Disposition (instead of Weapons Activities Appropriation) with the goal of aligning management and funding responsibilities for all of the interrelated surplus plutonium disposition activities under a single appropriation.

Previously, the Department of Energy (DOE) approved two major capital construction projects – the Pit Disassembly and Conversion Facility project (PDCF) and the Plutonium Preparation Project (PuP) – at Savannah River Site (SRS) involving separate plutonium processing capabilities in support of efforts to dispose of surplus, weapon-usable plutonium. The PDCF, which NNSA previously decided to construct at SRS, would disassemble nuclear weapon pits, convert the plutonium metal into an oxide form, and temporarily store the material for fabrication into mixed oxide (MOX) fuel at the MOX Fuel Fabrication Facility (currently under construction at SRS). Similarly, the PuP, a planned EM capability (in the conceptual design phase) in the K-Area at SRS, would include storage, oxidization, stabilization and packaging of non-pit plutonium metal and oxides. Those materials were previously included in the NNSA mission, prior to cancellation of the NNSA program to immobilize certain weapon-usable fissile materials. Following processing in the PuP, the non-pit metal and oxides suitable for fabrication into MOX fuel would be processed at the MOX Fuel Fabrication Facility.

A 2008 feasibility study of alternatives for siting the pit disassembly and conversion mission at SRS identified an opportunity to reduce costs and/or schedule by combining the PuP and PDCF capabilities into one project within the K-Area. A subsequent joint EM/NNSA evaluation recommended that combining the two projects would have the following Departmental benefits: 1) avoids the expenditure of resources associated with design, construction, operation, and decontamination and demolition of an additional Hazard Category 2, Secure Category 1 facility; 2) allows for greater program and funding flexibility by executing a project in a phased approach; 3) provides additional opportunities for early material storage, and 4) levels out the demand for secure transport operations. A subsequent

Independent Review Team (IRT) comprised of subject matter experts from across the DOE Complex concurred with the overall conclusion and recommended combining the two projects.

On November 22, 2009, the Department approved exploring the combination of NNSA's PDCF and EM's PuP projects into a single project to be located in K-Area Facility at the SRS and managed by the NNSA. As part of this approval, the project team was also authorized to commence development of a conceptual design report, along with NEPA and other documentation to support Critical Decision (CD) -1 (Approve Alternative Selection and Cost Range), which is required per the Department's DOE Order 413.3A, "Program and Project Management for the Acquisition of Capital Assets." The single project will be renamed the "Pit Disassembly and Conversion (PDC) Project."

The nature of the combined project is such that there are elements of the overall design and support documentation at varying stages of maturity (i.e. conceptual, preliminary and detailed). Despite the fact that a CD-1 for the combined project awaits subsequent approval, continued project engineering and design efforts will be funded by both operating and construction funds in FY 2010, consistent with the level of design maturity of those facility systems and components. This approach is consistent with the requirements contained in DOE Order 413.3A

A detailed project integration plan is currently under development. The Department plans to submit an updated funding profile and detailed work scope for FY 2011 as it becomes available. The funding profile for future years will be updated when the estimates are validated. All funding estimates shown in this PDS are unvalidated. As the project design advances in maturity, it is possible that construction funds may be needed late in FY 2011 to support activities such as long-lead procurements upon approval of the appropriate Critical Decision in accordance with DOE O 413.3A.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2000	10/31/1997	10/31/1997	07/17/1999	4QFY2001	N/A	2QFY2001	4QFY2004	N/A	N/A
FY 2001	10/31/1997	10/31/1997	07/17/1999	1QFY2002	N/A	1QFY2002	3QFY2005	N/A	N/A
FY 2002	10/31/1997	10/31/1997	07/17/1999	TBD	N/A	TBD	TBD	N/A	N/A
FY 2003	10/31/1997	10/31/1997	07/17/1999	1QFY2004	N/A	TBD	TBD	N/A	N/A
FY 2004	10/31/1997	10/31/1997	07/17/1999	2QFY2004	N/A	TBD	TBD	N/A	N/A
FY 2005	10/31/1997	10/31/1997	07/17/1999	4QFY2005	N/A	2QFY2005	TBD	N/A	N/A
FY 2006	10/31/1997	10/31/1997	07/17/1999	4QFY2005	N/A	3QFY2010	TBD	N/A	N/A
FY 2007	10/31/1997	10/31/1997	07/17/1999	4QFY2007	N/A	1QFY2011	4QFY2015	N/A	N/A
FY 2008	10/31/1997	10/31/1997	07/17/1999	4QFY2009	2QFY2007	1QFY2011	2QFY2019	N/A	N/A
FY 2009	10/31/1997	10/31/1997	07/17/1999	2QFY2011	4QFY2008	TBD	TBD	N/A	N/A
FY 2010	10/31/1997	10/31/1997	07/17/1999	4QFY2011	3QFY2009	TBD	TBD	N/A	N/A
FY 2011	10/31/1997	TBD	TBD	TBD	TBD	TBD	TBD	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2000	N/A	N/A	346,192	0	N/A	N/A	N/A
FY 2001	N/A	N/A	346,192	0	N/A	N/A	N/A
FY 2002	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2003	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2004	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2005	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2006	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2007	N/A	N/A	1,243,428	481,628	N/A	N/A	1,725,056
FY 2008	255,391	1,388,226	1,643,617	805,435	N/A	805,435	2,449,052
FY 2009	312,700	TBD	TBD	TBD	N/A	TBD	TBD
FY 2010	380,664	TBD	TBD	TBD	N/A	TBD	TBD
FY 2011	TBD	TBD	TBD	TBD	N/A	TBD	TBD

4. Project Description, Justification, and Scope

The PDC will be a first of its kind facility. The United States has never before constructed and operated a production-scale facility for disassembling nuclear weapon pits. The PDC, which will be built at the Savannah River Site, will disassemble surplus nuclear weapon pits and convert the resulting weapon-grade plutonium metal and surplus weapon-grade non-pit plutonium metal to an oxide form which then can be fabricated into mixed oxide (MOX) fuel for irradiation in U.S. commercial nuclear reactors. Once irradiated and converted into spent fuel, the plutonium can no longer be readily used for nuclear weapons. After completing its mission, the PDC project will be deactivated, decontaminated, and decommissioned over a three to four year period.

Establishing the PDC capability within the 350,000 square feet K-Area facility will utilize approximately 150,000 square feet and contain the following key areas: pit and non-pit material receiving, assay and storage; pit disassembly and metal-to-oxide conversion; and plutonium oxide packaging, assay, storage and shipment. This facility will be equipped with storage capacity for incoming pit and non-pit materials and include areas for recovery, decontamination and declassification of non-nuclear components resulting from the disassembly of the nuclear weapon pits.

Conventional/commercial support facilities and structures will also be constructed, which will not contain radioactive materials, totaling approximately 150,000 square feet (i.e., facilities to support construction/maintenance craft, technical support, warehouse space, etc.).

FY 2010 and FY 2011 Description of Activities

The FY 2010 scope includes preparing the conceptual design documentation necessary to support Critical Decision 1 (CD-1). The nature of the combined project is such that there are elements of the overall design and support documentation at varying stages of maturity (i.e., conceptual, preliminary and detailed). Despite the fact that a CD-1 for the combined project awaits subsequent approval, continued

project and design efforts will be funded by both OPC and TEC funds in FY 2010, consistent with the level of design maturity of those facility systems and components. This approach is consistent with the requirements contained in DOE Order 413.3A
Additionally, design reviews associated with plutonium processing gloveboxes and associated equipment will continue, along with essential activities associated with the Los Alamos National Laboratory's (LANL) Demonstration and Technology (D&T) PDC work scope, including the completion of design packages associated with LANL Government Furnished Equipment (GFE).

The FY 2011 scope continues to support the development of a conceptual design report along with NEPA and other documentation and activities to support CD-1, as well as initiation of preliminary design activities. The plutonium glovebox and process designs will continue, along with development of the balance-of-plant systems including civil, structural, ventilation, electrical, water, fire and security systems. LANL will continue the associated D&T scope of the PDC technology. If approved, removal of existing equipment from the lower levels of the K-Building may commence and early procurement of glovebox shell and components for the stabilization and packaging glovebox required for early MOX feed portion of the project.

A detailed project integration plan is currently under development. The Department plans to submit an updated funding profile and detailed work scope for FY 2011as it becomes available.

The PDC project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

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(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 1999	20,000	20,000	211
FY 2000	18,751	17,396	13,449
FY 2001	19,956	17,804	17,834
FY 2002	11,000	14,507	23,377
FY 2003	28,462	28,462	38,052
FY 2004	40,420	39,820	32,026
FY 2005	32,044	32,644	40,626
FY 2006	21,406	21,406	18,384
FY 2007	32,789	32,789	18,081
FY 2008	22,447	22,447	22,882
FY 2009	24,895	24,895	34,316
FY 2010	30,321	30,321	42,354
FY 2011	80,000	80,000	80,500
FY 2012	108,000	108,000	105,500
FY 2013	150,000	150,000	148,000
FY 2014	75,000	75,000	76,250

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2015	32,000	32,000	34,750
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2006	0	0	0
FY 2007	0	0	0
FY 2008	0	0	0
FY 2009	0	0	0
FY 2010	0	0	0
FY 2011	0	0	0
FY 2012	50,000	50,000	42,750
FY 2013	50,000	50,000	55,500
FY 2014	125,000	125,000	118,300
FY 2015	125,000	125,000	126,650
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 1999	20,000	20,000	211
FY 2000	18,751	17,396	13,449
FY 2001	19,956	17,804	17,834
FY 2002	11,000	14,507	23,377
FY 2003	28,462	28,462	38,052
FY 2004	40,420	39,820	32,026
FY 2005	32,044	32,644	40,626
FY 2006	21,406	21,406	18,384
FY 2007	32,789	32,789	18,081
FY 2008	22,447	22,447	22,882
FY 2009	24,895	24,895	34,316
FY 2010	30,321	30,321	42,354
FY 2011	80,000	80,000	80,500
FY 2012	158,000	158,000	148,250
FY 2013	200,000	200,000	203,500
FY 2014	200,000	200,000	194,550
FY 2015	157,000	157,000	161,400
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
Total TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 1999	18,378	18,378	17,401
FY 2000	29,369	29,369	24,488
FY 2001	27,193	27,193	29,191
FY 2002	27,699	27,699	23,649

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2003	27,884	27,884	29,970
FY 2004	33,161	32,935	30,828
FY 2005	25,658	25,658	26,727
FY 2006	47,395	47,298	33,770
FY 2007	22,000	22,273	21,930
FY 2008	4,597	4,262	16,462
FY 2009	13,472	13,472	11,810
FY 2010	58,780	58,780	33,636
FY 2011	112,999	112,999	118,800
FY 2012	30,141	30,141	38,500
FY 2013	44,992	44,992	48,850
FY 2014	41,143	41,143	45,550
FY 2015	35,441	35,441	33,450
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
FY 2019	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D	N/A	N/A	N/A
FY			
Total, D&D	N/A	N/A	N/A
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 1999	38,378	38,378	17,612
FY 2000	48,120	46,765	37,937
FY 2001	47,149	44,997	47,025
FY 2002	38,699	42,206	47,026
FY 2003	56,346	56,346	68,022
FY 2004	73,581	72,755	62,854
FY 2005	57,702	58,302	67,353
FY 2006	68,801	68,704	52,154
FY 2007	54,789	55,062	40,011
FY 2008	27,044	26,709	39,344
FY 2009	38,367	38,367	46,126
FY 2010	89,101	89,101	75,990
FY 2011	192,999	192,999	199,300
FY 2012	188,141	188,141	186,750
FY 2013	244,992	244,992	252,350
FY 2014	241,143	241,143	240,100
FY 2015	192,441	192,441	194,850
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
FY 2019	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
Site Preparation	TBD	TBD	TBD
Equipment	TBD	TBD	TBD
Other Construction	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Contingency, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	TBD	TBD
Conceptual Design	TBD	TBD	TBD
Start-Up	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	TBD	TBD	TBD
Contingency, OPC			
Total, TPC	TBD	TBD	TBD
Total, Contingency	TBD	TBD	TBD

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009	TEC	274,165	113,500	195,000	225,000	224,960	TBD	TBD	TBD	1,032,625
	OPC	298,919	37,503	49,603	36,145	39,710	TBD	TBD	TBD	461,880
	TPC	573,084	151,003	244,603	261,145	264,670	TBD	TBD	TBD	1,494,505
FY 2010	TEC	273,358	30,321	76,985	178,622	234,546	216,566	TBD	TBD	1,010,398
	OPC	333,174	70,229	69,620	48,686	56,805	71,304	TBD	TBD	649,818
	TPC	606,532	100,550	146,605	227,308	291,351	287,870	TBD	TBD	1,660,216
FY 2011	TEC	273,358	30,321	80,000	158,000	200,000	200,000	157,000	TBD	1,098,679
	OPC	333,174	58,780	112,999	30,141	44,992	41,143	35,441	TBD	656,670
	TPC	606,532	89,101	192,999	188,141	244,992	241,143	192,441	TBD	1,755,349

8. Related Operations and Maintenance Funding Requirements

Sub-Project 01 – Pit Disassembly and Conversion Facility

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

(Related Funding requirements)

Sub-Project 01 – Pit Disassembly and Conversion Facility

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD
Total, Operations & Maintenance	TBD	TBD	TBD	TBD

9. Required D&D Information

Area	Square Feet
Area of new construction	N/A
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced: N/A

10. Acquisition Approach

Pit Disassembly and Conversion (Combined Project)

A transition team will be established and will provide a plan and recommendation to the Acquisition Executive to transition from two independent projects and DOE programs to a single program/project ownership acquisition strategy. The transition plan will address the scope and timing of budget/financial

activities, program ownership, project ownership, and project scope transition opportunities. The Acquisition strategy for the combined project will be developed as part of the CD-1 process that is scheduled for approval in 2011.

Global Threat Reduction Initiative (GTRI)

Funding Profile by Subprogram [a]

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Global Threat Reduction Initiative			
Highly Enriched Uranium (HEU) Reactor Conversion	**76,706**	**102,772**	**119,000**
Nuclear and Radiological Material Removal			
Russian-Origin Nuclear Material Removal	123,083	94,167	145,191
U.S.-Origin Nuclear Material Removal	8,331	9,889	16,500
Gap Nuclear Material Removal	4,982	9,111	108,000
Emerging Threats Nuclear Material Removal	7,600	5,556	16,000
International Radiological Material Removal	21,702	8,333	45,000
Domestic Radiological Material Removal	17,063	17,778	25,000
Subtotal, Nuclear and Radiological Material Removal	**182,761**	**144,834**	**355,691**
Nuclear and Radiological Material Protection			
BN-350 Nuclear Material Protection	50,977	9,109	2,000
International Material Protection	42,909	41,463	57,000
Domestic Material Protection	41,647	35,322	25,147
Subtotal, Nuclear and Radiological Material Protection	**135,533**	**85,894**	**84,147**
Total, Global Threat Reduction Initiative (appropriation)	**395,000**	**333,500**	**558,838**
Funds from International Contributions	**9,640**	**0**	**0**
Total, Global Threat Reduction Initiative Funds Available	**404,640**	**333,500**	**558,838**

[a] FY 2009 amount includes international contributions of $3,918,000 from the Government of Canada, and $5,722,212 from the United Kingdom of Great Britain and Northern Ireland.

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Global Threat Reduction Initiative				
HEU Reactor Conversion	**176,000**	**210,000**	**245,000**	**293,000**
Nuclear and Radiological Material Removal				
Russian-Origin Nuclear Material Removal	96,000	70,000	82,000	83,000
U.S.-Origin Nuclear Material Removal	1,000	3,000	1,000	1,000
Gap Nuclear Material Removal	22,000	16,000	27,000	1,000
Emerging Threats Nuclear Material Removal	16,000	16,000	194,000	188,000
International Radiological Material Removal	44,000	39,000	10,000	10,000
Domestic Radiological Material Removal	31,000	31,000	33,000	34,000
Subtotal, Nuclear and Radiological Material Removal	**210,000**	**175,000**	**347,000**	**317,000**
Nuclear and Radiological Material Protection				
BN-350 Nuclear Material Protection	2,000	0	0	0
International Material Protection	100,000	125,000	130,000	143,000
Domestic Material Protection	111,994	149,926	265,138	303,172
Subtotal, Nuclear and Radiological Material Protection	**213,994**	**274,926**	**395,138**	**446,172**
Total, Global Threat Reduction Initiative	**599,994**	**659,926**	**987,138**	**1,056,172**

Mission

The Global Threat Reduction Initiative (GTRI) mission is to reduce and protect vulnerable nuclear and radiological materials located at civilian sites worldwide.

Benefits

GTRI directly supports the Administration's goal announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years. The Joint Statement from the Moscow Summit in July 2009 and the September 2009 UNSC Resolution 1887 provide further global commitments to the removal of nuclear materials and conversion of research reactors.

GTRI supports the U.S. Department of Energy's Nuclear Security Goal by preventing terrorists from acquiring nuclear and radiological materials that could be used in weapons of mass destruction (WMD) or other acts of terrorism by: 1) converting research reactors and isotope production facilities from the use of highly enriched uranium (HEU) to low enriched uranium (LEU); 2) removing and disposing of excess nuclear and radiological materials; and 3) protecting high-priority nuclear and radiological materials from theft and sabotage. These three key subprograms of GTRI -- Convert, Remove, and Protect -- provide a comprehensive approach to achieving its mission and denying terrorists access to nuclear and radiological materials. The GTRI subprograms that make important and unique contributions to Government Performance and Results (GPRA) Unit Program Number 44 are discussed below.

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

applications. The Convert subprogram is key to the GTRI mission because it removes the need for HEU at civilian sites. Once the need is eliminated, any remaining HEU fresh and spent fuel can be permanently disposed of by GTRI's Remove subprogram.

The **Nuclear and Radiological Material Remove** subprogram supports the removal and disposal of excess and vulnerable nuclear and radiological material from civilian sites worldwide. These efforts result in permanent threat reduction by eliminating nuclear and radiological materials that terrorists could acquire. The Remove subprogram is key to the GTRI mission because each kilogram or curie of this dangerous material that is removed reduces the risk of a terrorist bomb. This subprogram includes:

- Russian-origin nuclear material removal. This activity supports the removal and disposal of Russian-origin nuclear material from research reactors worldwide.

- U.S.-origin nuclear material removal. This activity supports the removal and disposal of U.S.-origin HEU and LEU from TRIGA and MTR research reactors. U.S.-origin fuel will be returned to the United States until 2019 as an incentive for reactor conversion.

- Gap nuclear material removal. This activity supports the removal and disposal of vulnerable, high-risk nuclear materials that are not covered under the Russian-origin and U.S.-origin nuclear removal activities. This includes U.S.-origin HEU other than TRIGA and MTR fuel; HEU of non-U.S. and non-Russian-origin; and separated plutonium.

- Emerging threats nuclear material removal. This activity develops the capability to rapidly denuclearize a country ensuring that when opportunities present themselves, such as Libya in 2004, the U.S. is able to respond quickly. This includes in-country stabilization, packaging, and removal of nuclear materials through the deployment of self-sufficient, trained rapid response teams and mobile facilities.

- International radiological material removal. This activity supports the removal and disposal of excess or abandoned radiological material in other countries. This includes Russian radioisotopic thermoelectric generators (RTGs), U.S.-origin sealed sources in other countries, and other orphaned radiological materials.

- Domestic radiological material removal. This activity supports the removal and disposal of domestic radiological materials by working in cooperation with Federal, State, and local agencies, and private industry to recover and permanently dispose of excess radiological sources in the United States.

The **Nuclear and Radiological Material Protect** subprogram supports the securing of high priority nuclear and radiological material worldwide from theft and sabotage. These efforts result in threat reduction by improving security of bomb material remaining at civilian sites. The Protect subprogram is key to the GTRI mission because it upgrades security until a permanent threat reduction solution can be implemented. This subprogram includes:

- BN-350 nuclear material protection. This activity provides safe and secure long-term storage of approximately 3,000 kilograms of weapon-grade plutonium and 10,000 kilograms of HEU in spent fuel from the shutdown BN-350 fast breeder reactor in Kazakhstan.

- International material protection. This activity works in cooperation with foreign counterparts and international agencies to install security upgrades at buildings containing high-priority, vulnerable nuclear and radiological materials located at civilian sites outside the United States.

- Domestic material protection. This activity works in cooperation with Federal, State, and local agencies, and private industry to install security upgrades at buildings containing high-priority nuclear and radiological materials located at civilian sites in the United States.

Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Goal: Security: Reduce nuclear dangers and environmental risks **GPRA Unit Program Number:** 44, Global Threat Reduction Initiatives											
Highly Enriched Uranium (HEU) Reactors Converted or Shutdown: Cumulative number of HEU reactors converted or verified as shutdown prior to conversion. (Long-term Outcome)[a]	R: 45 T: 46	R: 55 T: 53	R: 62 T: 62	R: 67 T: 68	T: 71	T: 78	T: 87	T: 96	T: 111	T: 129	By 2020, convert or verify the shutdown prior to conversion of 200 HEU reactors.
Nuclear Material Removed: Cumulative number of kilograms of vulnerable nuclear material (HEU and plutonium) removed or disposed. (Efficiency Measure)	R: 1,366 T: N/A	R: 1,791 T: 1,671	R: 1,948 T: 2,133	R: 2,317 T: 2,311	T: 2,767	T: 3,297	T: 3,693	T: 4,227	T: 4,373	T: 4,597	By 2016, remove or dispose of 4,604 kilograms of vulnerable nuclear material (HEU and plutonium) (enough for more than 175 nuclear bombs). (GTRI will continue to remove U.S.-origin fuel from foreign research reactors until 2019 as an incentive for converting research reactors from HEU to LEU fuel.)
Radiological Sources Removed: Cumulative number of excess domestic radiological sources removed or disposed. (Long-term Outcome)	R: 13,878 T: N/A	R:15,503 T: 15,455	R: 18,656 T: 17,500	R: 23,014 T: 22,000	T: 25,214	T: 28,000	T: 31,000	T: 34,000	T: 37,000	T: 40,000	Annually, remove at least 2,200 excess domestic radiological sources.
Nuclear and Radiological Buildings Protected: Cumulative number of buildings with high priority nuclear and radiological materials secured. (Long-term Outcome)[b]	R: 352 T: N/A	R: 426 T: N/A	R: 514 T:N/A	R: 705 T: 694	T: 855	T: 965	T: 1,275	T: 1,961	T: 2,957	T: 3,946	By 2019, protect an estimated 5,000 buildings with high-priority nuclear and radiological materials.

[a] The program changed the methodology for accounting for cumulative research reactors starting in FY 2007. The metric now includes converted research reactors and research reactors verified as shutdown prior to conversion. The comparable number for FY 2006 using the new methodology would be 47 reactors converted or shutdown.

[b] GTRI changed the methodology for accounting for protection of buildings with high-priority nuclear and radiological materials starting in FY 2009, consistent with the OMB-approved Management Improvement Plan. The metric now includes security upgrades completed at research and test reactors and other vulnerable buildings containing radiological materials. Previously, the number included recoveries of radioisotopic thermoelectric generators (RTGs) but did not include the research and test reactors. RTGs are now better reflected as removed and disposed, resulting in permanent threat reduction.

Major FY 2009 Accomplishments
Through the end of FY 2009, GTRI has accelerated threat reduction efforts by: 1) converting or verifying the shutdown of a cumulative 67 research reactors from use of HEU fuel to LEU fuel; 2) removing a cumulative 2,317 kilograms of HEU and plutonium, enough material to make more than 90 nuclear bombs; 3) removing a cumulative 23,014 excess and unwanted radiological sources in the United States, containing more than 750,000 curies; and 4) protecting a cumulative 705 nuclear and radiological buildings worldwide with vulnerable high-priority nuclear and radiological materials.

Major Outyear Priorities and Assumptions
The outyear projections for the GTRI program total approximately $3,303,230 (FY 2012 – FY 2015). GTRI plays a key role in support of the international effort the President announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit and the September 2009 UNSC Resolution 1887. GTRI has worked in 118 countries around the world to implement nuclear and radiological threat reduction in line with this goal. By the end of 2015, GTRI will have converted 129 (65 percent) of the 200 HEU reactors, removed 4,597 kilograms (99 percent) of the approximately 4,604 kilograms of nuclear material at civilian sites, and protected 3,946 (79 percent) of the 5,000 buildings with high-priority nuclear and radiological materials

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
HEU Reactor Convert	**76,706**	**102,772**	**119,000**

GTRI's Convert subprogram supports the conversion of domestic and international civilian research reactors and isotope production facilities from HEU to LEU. This includes working with Mo-99 producers to convert their existing operations to use LEU targets and developing new non-HEU-based Mo-99 production capabilities in the United States. These efforts result in permanent threat reduction by minimizing and, to the extent possible, eliminating use of HEU in civilian applications. The Convert subprogram is key to the GTRI mission because it removes the need for HEU at civilian sites. Once the need is eliminated, any remaining HEU fresh and spent fuel can be permanently disposed of by GTRI's Remove subprogram. These activities together support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, and further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit and the September 2009 UNSC Resolution 1887.

In FY 2011, GTRI will convert, or verify as shutdown, an additional 7 HEU research reactors, bringing the cumulative total to 78. The conversions identified for FY 2011include for example Poland and China. In addition, GTRI will continue efforts required to fabricate the new high-density LEU fuel needed to convert the 27 HEU research reactors around the world that cannot convert with existing LEU fuel. The conversion of these 27 high performance reactors will result in HEU avoidance of an additional 520 kilograms per year. GTRI will also provide technical and financial support to the U.S. private sector to accelerate the establishment of a reliable domestic production capability for the critical medical isotope Mo-99 without the use of HEU.

Nuclear and Radiological Material Remove	**182,761**	**144,834**	**355,691**

GTRI's Remove subprogram supports the removal and disposal of excess nuclear and radiological material from civilian sites worldwide. These efforts result in permanent threat reduction by eliminating nuclear and radiological materials that terrorists could acquire. The Remove subprogram is key to the GTRI mission because each kilogram or curie of this dangerous material that is removed reduces the risk of a terrorist bomb.

• **Russian-Origin Nuclear Material Remove**	**123,083**	**94,167**	**145,191**

This activity supports the removal and disposal of Russian-origin nuclear material from research reactors worldwide. These activities collectively support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit and the September 2009 UNSC Resolution 1887. In accordance with these goals, GTRI is accelerating the return of Russian-origin HEU fuel**.**

(dollars in thousands)

FY 2009	FY 2010	FY 2011

In FY 2011, GTRI will return to Russia and dispose of an additional 340 kilograms of Russian-origin HEU fuel from facilities located in the former East Germany, Serbia, Ukraine, and Belarus, resulting in a cumulative total of 1,720 kilograms of HEU removed, enough material for more than 65 nuclear bombs. Funds will also be used for preparatory activities for removals planned for 2012.

- **U.S.-Origin Nuclear Material Remove** **8,331** **9,889** **16,500**

This activity supports the removal and disposal of U.S.-origin HEU and LEU from TRIGA and MTR research reactors. U.S.-origin fuel will be returned to the United States until 2019 as an incentive for reactor conversions. These activities collectively support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit and the September 2009 UNSC Resolution 1887. In accordance with these goals, GTRI is accelerating the return of U.S.-origin HEU fuel.

In FY 2011, GTRI will return to the United States an additional 30 kilograms of U.S.-origin HEU from several countries, such as Mexico and South Africa, resulting in a cumulative total of 1,276 kilograms of HEU removed, enough material for more than 50 nuclear bombs.

- **Gap Nuclear Material Remove** **4,982** **9,111** **108,000**

This activity supports the removal and disposal of vulnerable, high-risk nuclear materials that are not covered by the Russian-origin and U.S.-origin Nuclear Material Remove activities. This includes U.S.-origin HEU other than TRIGA and MTR fuel, HEU of non-U.S.- and non-Russian-origin, and separated plutonium. These activities collectively support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit and the September 2009 UNSC Resolution 1887. In accordance with these goals, GTRI is accelerating the return of Gap material from third countries**.**

In FY 2011, GTRI will remove or facilitate disposition of an additional 161 kilograms of Gap HEU and plutonium from several countries, resulting in a cumulative total of 301 kilograms of HEU and plutonium removed, enough material for more than 10 nuclear bombs. Funds will also be used for preparatory activities for removals planned for 2012.

- **Emerging Threats Nuclear Material Remove** **7,600** **5,556** **16,000**

This activity develops the capability to rapidly denuclearize a country, ensuring that when opportunities present themselves, such as Libya in 2004, the United States is able to respond quickly. This includes in-country stabilization, packaging, and removal of nuclear materials through the deployment of self-sufficient, trained rapid response teams and mobile facilities.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

In FY 2011, GTRI will procure packaging equipment, train rapid response teams, and field test all capabilities. Additional efforts over the long term address staging of support materials, and development, testing, and analysis of deployment procedures. The program seeks to maintain a short-term readiness posture to deploy assets rapidly to assist in recovery of nuclear materials. In addition, the program provides life-cycle replacement of equipment to maintain state-of-the-art technical capability.

- **International Radiological Material Remove** **21,702** **8,333** **45,000**

This activity supports the removal and disposal of excess or abandoned radiological materials in other countries. This includes Russian radioisotopic thermoelectric generators (RTGs), U.S.-origin sealed sources in other countries, and other orphaned radiological materials.

In FY 2011, GTRI will complete the removal of an additional 90 RTGs, resulting in a cumulative total of 421 RTGs removed by GTRI through direct funding and international contributions (e.g. Canada). By the end of FY 2011, other countries (e.g. Russia, Norway, France) are expected to have funded the recovery of an additional cumulative 225 RTGs for a grand total of 646 of the 851 RTGs being completed. Funds will also be used to recover and dispose of orphaned radioactive sources in other countries, for example China and Bangladesh.

- **Domestic Radiological Material Remove** **17,063** **17,778** **25,000**

This activity supports the removal and disposal of domestic radiological materials by working in cooperation with Federal, State, and local agencies, and private industry to recover and permanently dispose of excess radiological sources in the United States.

In FY 2011, GTRI will remove at least an additional 2,200 excess and unwanted sealed sources from locations in the United States, resulting in a cumulative total of 28,000 excess sealed sources removed.

Nuclear and Radiological Material Protect **135,533** **85,894** **84,147**

GTRI's Protect subprogram supports the securing of high priority nuclear and radiological material worldwide from theft and sabotage. These efforts result in threat reduction by improving security on the bomb material remaining at civilian sites. The Protect subprogram is key to the GTRI mission because it upgrades security until a permanent threat reduction solution can be implemented.

- **BN-350 Nuclear Material Protect** **50,977** **9,109** **2,000**

This activity provides safe and secure long-term storage of approximately 3,000 kilograms of weapons-grade plutonium and 10,000 kilograms of HEU in spent fuel from the shutdown BN-350 fast breeder reactor in Kazakhstan. The BN-350 shipments will be completed in December 2010.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
• **International Material Protect**	**42,909**	**41,463**	**57,000**

This activity works in cooperation with foreign counterparts and international agencies to install security upgrades on high-priority, vulnerable nuclear and radiological materials located at civilian sites outside the United States.

In FY 2011, GTRI will complete security upgrades at an additional 50 research reactor and radiological buildings, resulting in a cumulative total of 736 international buildings secured. Base efforts also include working with the International Atomic Energy Agency (IAEA), foreign regulators, and sites to support the sustainability of previously installed security upgrades at 686 buildings in over 65 countries.

• **Domestic Material Protect**	**41,647**	**35,322**	**25,147**

This activity works in cooperation with Federal, State, and local agencies, and private industry to install security upgrades on high-priority nuclear and radiological materials located at civilian sites in the United States.

In FY 2011, GTRI will complete security upgrades at an additional 60 research reactor and radiological buildings, resulting in a cumulative total of 229 domestic buildings secured. Base efforts also include working with Federal, State, and local authorities and the sites to support the sustainability of previously installed security upgrades at 169 buildings.

Total, Global Threat Reduction Initiative Appropriation	**395,000**	**333,500**	**558,838**
Funds from International Contributions	**9,640**	**0**	**0**

Section 3113 of the John Warner National Defense Authorization Act for FY 2007 authorized the Department of Energy to receive and use financial contributions, including from foreign governments, for programs with the GTRI.

In FY 2009, GTRI received contributions of $3,918,000 from Canada to recover, replace, and remove up to ten Russian RTGs, and $5,722,212 from the United Kingdom of Great Britain and Northern Ireland to address international threat reduction efforts in Tajikistan, Kazakhstan, and Ukraine.

Total, Global Threat Reduction Initiative	**404,640**	**333,500**	**558,838**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
HEU Reactor Convert	
Reflects an increased number of reactor conversions and shutdowns from 4 in FY 2010 to a total of 7 in FY 2011, and increased support to accelerate the establishment of a reliable domestic production capability for the critical medical isotope Mo-99 without the use of HEU.	**+16,228**
Nuclear and Radiological Material Remove	
Increase reflects the acceleration of removal or disposition of high-priority, vulnerable nuclear materials in support of the international effort the President announced in Prague to secure all vulnerable nuclear material around the world within four years, and further emphasized in the July 2009 Joint Statement resulting from the Moscow Summit and the September 2009 UNSC Resolution 1887 resulting in an increase in removals from 449 kgs of HEU and 24 RTGs in FY 2010 to 530 kgs and 90 RTGs in FY 2011. Increased funding will also be used to prepare for HEU removals in FY 2012.	**+210,857**
Nuclear and Radiological Materials Protect	
Nuclear and Radiological Materials Protection decrease mainly due to completion of the BN-350 shipments in FY 2010.	**-1,747**
Total Funding Change, Global Threat Reduction Initiative	**+225,338**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0
Capital Equipment	166	170	174
Total, Capital Operating Expenses	**166**	**170**	**174**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	0	0	0	0
Capital Equipment	178	182	186	190
Total, Capital Operating Expenses	**178**	**182**	**186**	**190**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, and are no longer budgeted for separately for capital equipment and general plant projects. FY 2010 and FY 2011 funding shown reflects estimates based on actual FY 2009 obligations.

Congressionally Directed Projects

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Congressionally Directed Projects	**1,903**	**250**	**0**

Description

Starting in FY 2008, funding for Congressionally Directed projects was appropriated as a separate funding line although specific projects may relate to ongoing work in a specific programmatic area. The FY 2009 Omnibus Appropriations Act (P.L. 111-8) included one Congressionally Directed project within the Defense Nuclear Nonproliferation program. The FY 2010 Energy and Water Development and Related Agencies Appropriations Act (P.L. 111-85) includes $250,000 for one Congressionally Directed project for Global seismographic network equipment renewal. For FY 2011, no follow-on funding is requested.

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Congressionally Directed Projects			
• Nuclear Security Science and Policy Institute, Texas A&M (TX). Funding was provided to bring nuclear technology and education together with development of sound public policy for nuclear nonproliferation. Among the capabilities, the researchers are working on new methods to safeguard nuclear reactor fuel, attribution of the source of a nuclear or radiological attack, and development of more sensitive and accurate interrogation devices to detect radioactive materials at ports of entry.	1,903	0	0
• Global seismographic network equipment renewal.	0	250	0
Total, Congressionally Directed Projects	**1,903**	**250**	**0**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Congressionally Directed Projects	
Decrease results from no follow-on funding being requested for project.	-250
Total, Congressionally Directed Projects	**-250**

Naval Reactors

Naval Reactors

Naval Reactors

Proposed Appropriation Language

For Department of Energy expenses necessary for naval reactors activities to carry out the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition (by purchase, condemnation, construction, or otherwise) of real property, plant, and capital equipment, facilities, and facility expansion [945,133,000] $1,070,486,000 to remain available until expended.

Explanation of Change

Change from the language proposed in FY 2010 consists of a change to the requested funding amount.

Naval Reactors

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Naval Reactors Development			
Operations and Maintenance (O&M)	771,600	877,533	997,886
Program Direction	34,454	36,800	40,000
Construction	22,000	30,800	32,600
Total, Naval Reactors Development	**828,054**	**945,133**	**1,070,486**

Public Law Authorizations:

P.L. 83-703, "Atomic Energy Act of 1954"
"Executive Order 12344 (42 U.S.C. 7158), "Naval Nuclear Propulsion Program"
P.L. 107-107, "National Defense Authorizations Act of 2002", Title 32, "National Nuclear Security Administration"
John Warner National Defense Authorization Act for FY 2007, (P.L. 109-364)
FY 2008 Consolidated Appropriations Act (P.L. 110-161)
National Nuclear Security Administration Act, (P.L. 106-65), as amended
FY 2009 Consolidated Appropriations Act (P.L. 111-8)
FY 2010 Energy and Water and Related Agencies Appropriations Act (P.L. 111-85)

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Naval Reactors Development				
Operations and Maintenance	1,018,634	1,102,978	1,177,817	1,240,430
Program Direction	41,200	42,400	43,700	45,000
Construction	39,900	25,800	4,500	25,100
Total, Naval Reactors Development	**1,099,734**	**1,171,178**	**1,226,017**	**1,310,530**

Mission

Naval Reactors is responsible for all naval nuclear propulsion work, beginning with reactor technology development, continuing through reactor operation, and ending with reactor plant disposal. The Program ensures the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers (constituting 40 percent of the Navy's combatants), and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements.

Benefits

The National Nuclear Security Administration (NNSA) is working to provide the U.S. Navy with nuclear propulsion plants that are capable of responding to the challenges of the 21st century security environment.

Performance

The Naval Reactors program falls under the Secretarial Goal 3, ***Security: Reduce nuclear dangers and environmental risks."***

Naval Reactors performance measures fully support the programs mission to provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation. The program continues to pursue aggressive performance measures that support the Secretary's goal to promote national security and reduce environmental risks (e.g., ensure 100 percent of operations have no adverse impact on human health or the quality of the environment). Naval Reactors performance measures continue to demonstrate the Program's commitment to safe operation of reactor plants, as well as its accomplishments in meeting national defense requirements for advanced nuclear propulsion technology.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Endpoint Target
Secretarial Priority: National Security: Security: Reduce nuclear dangers and environmental risks											
GPRA Unit Program Number: 45, Naval Reactors											
Fleet Reactor Plant Operations: Cumulative miles steamed, in millions, of safe, reliable, militarily effective nuclear propulsion plant operation supporting National security requirements. (Long-term Outcome)	R: 136 T: 134	R: 138 T: 138	R: 140 T: 140	R: 142 T: 142	T: 144	T: 146	T: 148	T: 150	T: 152	T: 154	By 2015, complete safe steaming of approximately 154 million miles in nuclear-powered ships. (Interim Target)
TTC Reactor Plant: Cumulative percentage of completion on the Transformational Technology Core (TTC) reactor plant core fuel design. (Long-term Outcome)	R: 34% T: 34%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	In 2007, completed the TTC reactor plant core fuel design.
A1B Reactor Plant Design: Cumulative percentage of completion on the next-generation aircraft carrier reactor plant design. (Long-term Outcome)	R : 75% T: 75%	R: 80% T: 80%	R: 85% T: 85%	R: 88% T: 88%	T: 91%	T: 94%	T: 96%	T: 98%	T: 99%	T: 100%	By 2015, provide the reactor plant for the next-generation aircraft carrier.
Program Operations: Annual percentage of Program operations that have no adverse impact on human health or the quality of the environment. (Annual Outcome)	R: 100% T: 100%	R: 100% T: 100%	R: 100% T: 100%	R: 100% T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, ensure that 100% of Program operations have no adverse impact on human health or the quality of the environment.
Utilization of Test Reactor Plants: Annual utilization factor for operation of test reactor plants. (Efficiency)	R: 91% T: 90%	R: 95% T: 90%	R: 92% T: 90%	R: 91% T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	Annually, achieve a utilization factor of at least 90% for operation of test reactor plants.
Naval Reactors Facility Condition Index: Annual Naval Reactors complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance per replacement plant value for all program facilities and infrastructure. (Annual Output)	R: 5% T: 5%	R: 5% T: 5%	R: 4% T: 5%	R: 4% T: 4%	T: 4%	T: 4%	T: 4%	T: 4%	T: 4%	T: 4%	Annually, achieve an FCI of 4% or below.

Means and Strategies

The Naval Reactors Program will use various means and strategies to achieve its program goals, including performing collaborative activities. The Program does not believe there are major external factors that could affect our ability to achieve this goal. However, given the unique nature of the Program's responsibilities, commitments to both the Department of Energy (DOE) and the U.S. Navy must be considered at all times. Therefore, any external factor seriously affecting either organization's policies may have an impact on the Naval Reactors Program.

The Naval Reactors Program uses two Government-owned, contractor-operated laboratories, the Bettis and Knolls Atomic Power Laboratories, which are predominately involved with the design, development and operational oversight of nuclear propulsion plants for naval vessels. Through these laboratories, and through testing conducted at the Advanced Test Reactor (ATR) located at the Idaho National Laboratory (INL), the Department will complete scheduled design, analysis and testing of reactor plant components and systems, and will conduct planned development, testing, examination, and evaluation of nuclear fuel systems, materials, and manufacturing and inspection methods necessary to ensure the continued safety and reliability of reactor plants in Navy warships. The Department will also accomplish planned testing, maintenance and servicing at land-based prototype nuclear propulsion plants, and will execute planned inactivation of shutdown, land-based reactor plants in support of environmental cleanup goals. Finally, the Department will carry out the radiological, environmental and safety monitoring and ongoing cleanup of facilities necessary to protect people, minimize release of hazardous effluents to the environment, and comply with all applicable regulations.

Industry-specific business conditions, outside technological developments and Department of Navy decisions all impact the performance of naval nuclear propulsion work. Naval nuclear propulsion work is an integrated effort involving the DOE and the Navy, who are full partners in the Naval Nuclear Propulsion Program. This relationship is set forth in Executive Order 12344 and Title 42 U.S.C. 7158.

Validation and Verification

NNSA uses extensive internal and external reviews to evaluate progress against established plans. NNSA's programmatic activities are subject to continuing review by the Congress, the General Accounting Office, the Department's Inspector General, the National Security Council, the Defense Nuclear Facilities Safety Board, the Department's Office of Engineering and Construction Management, and the Department's Office of Independent Oversight and Performance Assurance.

The NNSA Administrator reviews each NNSA program as part of the NNSA's Programming, Planning, Budgeting and Evaluation (PPBE) Evaluation process. These reviews, usually conducted annually, include the NNSA Management Council and focus on both technical and financial information to identify issues, monitor program progress, and make recommendations for corporate improvement. The focus of these reviews is to verify and validate that NNSA programs are on track to meet their long-term goals and annual targets.

Naval Reactors evaluates the effectiveness, relevance, and progress towards achieving its goals, objectives, and targets by conducting various internal and external reviews and audits. Naval Reactors Headquarters provides continuous oversight and direction for all elements of Program work. Due to the nature of nuclear technology, a dedicated Government headquarters professional staff expert in nuclear technology makes all major technical decisions regarding design, procurement, operations, maintenance,

training, and logistics. Headquarters engineers set standards and specifications for all Naval Nuclear Propulsion Program work, while on-site Headquarters representatives monitor the work at the laboratories, prototypes, shipyards, and prime contractors.

Naval Reactors has a fully integrated long-range planning, budgeting, and execution system. Through this system, Naval Reactors determines general work direction and associated funding needs; balances competing work priorities against available funds; and establishes, monitors, and enforces performance measures and controls. Work and funding priorities are established in relation to core mission. The Program uses this focused, multi-year planning process to evaluate any deficiencies. The resulting review process validates 100 percent of the budget twice a year and serves as Naval Reactors' change control process.

FY 2009 Accomplishments

- Steamed over two million miles in nuclear–powered ships and submarines in a safe, reliable and militarily-effective manner, which brings the total to over 142 million miles of safe steaming.
- Completed 88 percent of the design for the next-generation reactor plant for the GERALD R. FORD aircraft carrier.
- Achieved a complex-wide aggregate Facility Condition Index of less than four percent.
- Commissioned the fifth VIRGINIA-class fast attack submarine, the USS NEW HAMPSHIRE.
- Commissioned the last NIMITZ-class aircraft carrier, the USS GEORGE H.W. BUSH.

Major Outyear Priorities and Assumptions

The outyear requirements for Naval Reactors total $4,807,459,000 (FY 2012-FY 2015). This level of funding supports Naval Reactors' continued achievement of its core objective of ensuring the safe and reliable operation of the Nation's Nuclear Fleet. This includes providing proper maintenance and safety oversight, as well as addressing emergent operational issues and technology obsolescence, for 72 submarines, 11 aircraft carriers, and four research and development and training platforms, constituting 104 reactor plants. This level of funding also supports Naval Reactor's continued achievement of ongoing new plant design projects (i.e., reactor plant for the GERALD R. FORD-class aircraft carrier and alternative lower-cost core for VIRGINIA-class submarines), as well as continued achievement of its legacy responsibilities such as ensuring proper storage of naval spent nuclear fuel, prudent recapitalization of aging facilities, and cleanup of environmental liabilities.

OHIO-Class Ballistic Missile Submarine Replacement

OHIO-class ballistic missile submarines (SSBNs) have been the backbone of the Nation's Sea-Based Strategic Deterrent (SBSD) since the early-1980s. The Navy intends to replace the OHIO-class SSBNs beginning in FY 2027 when the first of 14 is retired. In order to have a replacement available in FY 2027 and consistent with the Navy's 30-year shipbuilding plan, the Navy would need to procure this ship in FY 2019 and begin research, development, and design in FY 2010. Design of a new reactor plant is required to meet required capabilities, maximize operational availability, and reduce acquisition and life-cycle costs. This new design will leverage VIRGINIA-class technology, as well as manufacturing development and demonstration efforts to be performed as part of the Land-Based Prototype Refueling program. Central to this work is the development of a reactor plant core that operates the life of the ship without refueling. DOE reactor plant design and development work for the OHIO-class replacement began in FY 2010 and will continue in FY 2011 and beyond to ensure sufficient maturity of detailed design to support initial fabrication and procurement of long-lead nuclear

components in FY 2017 and ship construction in FY 2019. Funding has been identified within Naval Reactors Operations and Maintenance in the estimated amount of $91,000,000 to fund this effort in FY 2011.

Land-Based Prototype Refueling

The S8G Prototype (located in upstate New York), which serves as a critical operating reactor platform to demonstrate technology advancements for fleet application, will be depleted and will require refueling beginning in FY 2017. Originally built as a prototype for the OHIO-class submarine propulsion plant, this testing platform has been integral to the development of technologies including the VIRGINIA-class and SEAWOLF-class fuel systems, which have resulted in improved performance and reliability while reducing life-cycle costs. Continued operation of the land-based prototype and development of advanced core technology will enable extended core lifetimes, more efficient use of nuclear fuel, greater compactness, and cross-platform adaptability. Integral to development of a longer-life core for the OHIO-class replacement, core manufacturing and demonstration will be performed as part of this refueling effort. By constructing the replacement core for the prototype with technologies and capabilities planned for the OHIO-class replacement, technical, cost, and schedule risk to the ship construction program will be significantly mitigated. This manufacturing development and demonstration work, as well as development of new core technologies, began in FY 2010. To preserve this critical research and development asset long term and to achieve an extended-life core for the OHIO-class replacement, core development and refueling overhaul work will continue in FY 2011 and beyond. Funding has been identified within Naval Reactors Operations and Maintenance in the estimated amount of $70,600,000 to fund this effort in FY 2011.

Recapitalization of Spent Nuclear Fuel Infrastructure

All spent naval nuclear fuel from Navy shipyards is shipped to the Naval Reactors Facility (NRF), located at the Idaho National Laboratory, for examination and disposal per the 1995 agreement signed by Department of Navy, DOE, and the State of Idaho. Compliance with this agreement and Naval Reactors' resultant ability to continue work in Idaho is dependant upon a viable, efficient fuel-handling infrastructure. However, major portions of the existing infrastructure (i.e., water pools and related support facilities) and equipment (i.e., examination equipment, cranes, etc.) are 50+ years old. Consequently, the magnitude of required sustainment efforts and incremental infrastructure upgrades pose substantial risk to operations and production workflow. An interruption to refueling and defueling schedules for nuclear-powered vessels, as required by existing maintenance schedules, would adversely affect the operational availability of the nuclear Fleet. If this interruption were to extend over long periods, the ability to sustain Fleet operations would be impacted, resulting ultimately in a significant decrement to the Navy's responsiveness and agility to fulfill military missions worldwide. The National Environmental Policy Act (NEPA) and conceptual design efforts began in FY 2010. As the timing for completion of this recapitalization effort prudently balances risks and directly supports significant cost avoidance associated with scheduled aircraft carrier refueling and defueling, work will continue in FY 2011 and beyond to support construction in FY 2015 and facility completion by FY 2020.

In accordance with 50 United States Code (USC), Section 2746, which requires the Department to request funds for conceptual designs that exceed the $3,000,000 threshold, funding for conceptual design and ongoing NEPA efforts has been estimated at approximately $40,600,000 for FY 2011.

Department of Energy Working Capital Fund Support

The DOE Working Capital Fund (WCF) Board has extended the policy for using program funding to finance WCF activities. Beginning in FY 2011, NNSA programs will fund a pro rata share by Appropriation of certain DOE Working Capital Fund activities. FY 2011 projected NNSA program allocations are as follows: DOEnet ($482,000) for DOE telecommunications services; Financial Statement Audits ($4,514,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($3,076,000) for procurement management; iManage ($3,121,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,502,000). The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2011 is projected at $35,942,000.

The NNSA Naval Reactors appropriation projected allocation of the DOE Working Capital Fund for FY 2011 is $1,164,000 from program and $149,000 from program direction funds. This proportional share of program funding includes financial statement audits $397,000, DCAA $361,000, iManage $274,000 and financial control reporting assessments $132,000.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the nuclear security enterprise. The majority of the efforts directly support program activities, and programs funded in the Naval Reactors appropriation plans to fund research with the HBCU totaling up to approximately $1,000,000 in FY 2011.

Naval Reactors – Operations and Maintenance

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Actual Appropriation	FY 2010 Current Appropriation	FY 2011 Request
Operations and Maintenance (O&M)			
Plant Technology	104,000	142,000	154,200
Reactor Technology and Analysis	204,400	266,900	301,100
Materials Development and Verification	106,100	106,100	109,600
Evaluation and Servicing	264,300	261,400	325,700
ATR Operations and Test Support	60,300	61,800	63,100
Facility Operations	32,500	39,333	44,186
Total, Operations and Maintenance	**771,600**	**877,533**	**997,886**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Operations and Maintenance	1,018,634	1,102,978	1,177,817	1,240,430
Total, Operations and Maintenance	**1,018,634**	**1,102,978**	**1,177,817**	**1,240,430**

Mission

The Operations and Maintenance subprogram funds continued efforts by the Bettis Power Laboratory, Knolls Atomic Power Laboratory, Kesselring Site, and Naval Reactors Facility in support of the Program's cradle-to-grave responsibility for all naval nuclear propulsion work. These focused-mission laboratories perform complex engineering and technical work to develop highly capable reactor plants and associated equipment for naval propulsion, evaluate advanced fuel systems and materials for future application, and design and demonstrate more efficient manufacturing processes, as well as provide the necessary support to ensure safe and reliable operation and future disposition of naval nuclear power plants.

Benefits

Naval Reactors contributes to the Government Performance and Results Act Unit Program Number 45 which allows maintaining cradle-to-grave responsibility for naval nuclear propulsion work, beginning with technology development and continuing through reactor operation, and ultimately ensuring appropriate and responsible reactor plant disposal. An over-arching theme is maintaining National Security and nuclear preeminence, which Naval Reactors achieves by developing new or back fit applications which are implemented in the operating Fleet, maintaining oversight during the operational stage to ensure technologies perform as intended, and supporting the operation, installation, maintenance and inactivation/D&D work related to land-based prototypes and test facilities.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Plant Technology	**104,000**	**142,000**	**154,200**

Plant Technology work focuses on the components and systems of the ship's nuclear power plant. These components and systems transfer, convert, store and measure power to facilitate reductions in maintenance costs over the life of the plant while improving reliability, efficiency, and operational performance. Reactor plant performance, reliability, and safety are maintained via a thorough understanding of component performance and system condition throughout the life of a ship. Also, new components and systems are needed to support new reactor plants and to replace obsolete or degraded equipment and systems. Development and application of new analytical methods, predictive tests, and design tools are required to identify potential concerns before they become actual problems. This enables preemptive actions to ensure the continued safe operation of reactor plants and the minimization of maintenance costs. Plant Technology work is concentrated in the following areas: (1) Steam Generator, (2) Instrumentation and Control Technology, (3) Plant Arrangement/ Development, and (4) Plant Performance and Plant Chemistry.

Steam Generator: This work focuses on ensuring satisfactory reactor plant operation throughout life and improving steam generator operation and steam generator chemistry technologies to enhance performance and reduce maintenance costs. This work also focuses on the development of new energy conversion methods for simplicity, cost savings, and potential replacement of the steam Rankine cycle. FY 2011 work objectives include the following:

- Continue to develop improved steam generator chemistry and corrosion instrumentation through continued prototype and laboratory testing;
- Continue to evaluate alternate energy conversion technologies focused on compactness, efficiency, and cost, with an emphasis on using supercritical carbon dioxide as a heat transfer fluid;
- Continue to develop and assess the use of a steam generator liquid level probe for future steam generator applications;
- Support the qualification of an alternate steam generator tubing vendor;
- Perform transient and other testing of the supercritical carbon dioxide integrated systems test loop, and
- Provide design support for the manufacture of the improved steam generator heat exchanger in the VIRGINIA-class submarine.

Instrumentation and Control Technology: This work focuses on developing instrumentation and control (I&C) equipment to replace obsolete equipment, improve reliability and performance and reduce costs. FY 2011 work objectives include the following:

- Continue integrated system testing of advanced electric plant control systems including new technologies and architectures;
- Continue qualification of the A1B reactor plant I&C, including new technologies and architectures;
- Evaluate advanced display and control methodologies in the OHIO-class replacement program rapid prototype, and
- Design and develop network-based communications system and test architecture for Type 2 I&C systems.

Plant Arrangement/Development: This work focuses on developing and testing reactor plant components and applicable emergent energy conversion technologies for converting high temperature reactor heat to electricity. These efforts address known limitations and have as a goal improved overall reactor plant systems performance and reliability. FY 2011 work objectives include the following:

- Continue evaluation, development, and testing of new features/materials for various main coolant pump designs;
- Continue to assist plant designers in implementation of novel design methods to identify vulnerabilities in more simplified, more affordable designs;
- Continue design of the A1B reactor plant and development of the A1B reactor plant operating procedures;
- Continue design activities necessary to support VIRGINIA-class cost reduction initiatives, and
- Continue development of OHIO-class replacement propulsion plant arrangement studies and system designs to meet performance functional requirements.

Plant Performance and Primary Chemistry: This work focuses on performing reactor plant analyses to ensure safe operation and improving reactor plant chemistry controls to reduce corrosion and plant radiation levels. FY 2011 work objectives include the following:

- Continue to implement fleet-wide use of improved primary chemistry analysis techniques;
- Perform emergent radiochemical, chemical, and microchemical analyses on primary system samples and components to resolve operating plant problems;
- Evaluate chemistry control changes to improve steam generator corrosion performance and life, including improvements to shorten maintenance evolutions;
- Assess impacts of reactor plant materials substitutions on corrosion and radiation levels for new plant designs;

- Support development and modifications of the A1B Chemistry Analysis Room as necessary to support Secondary Chemistry Automated Analysis Systems and Automated Coolant Analysis Systems designs, and
- Continue to perform protection analysis as necessary to support A1B-class shipboard test program.

Reactor Technology and Analysis **204,400** **266,900** **301,100**

Reactor Technology and Analysis supports the work required to ensure the operational safety and reliability of operating reactor plants in U.S. warships, extend the operational life of Navy nuclear propulsion plants, support Navy acoustic requirements, and preserve the Program's level of excellence in radiological and environmental control. Work focuses on developing a better understanding of reactor behavior fundamentals; designing new, reduced cost reactors with improved reliability, and efficiency; improving and streamlining manufacturing and assembly processes to achieve cost savings and reduce waste; developing production techniques that incorporate new materials and processes; and continuing a record of excellence in safety. Reactor Technology and Analysis work is concentrated in the following areas: (1) Advanced Core and Reactor Technology, (2) Advanced Thermal-Hydraulic Technology, (3) Advanced Fuel and Manufacturing Technology, (4) Control Drive Mechanism and Other Reactor Equipment Technology, (5) Reactor Physics, (6) Safety Analysis and Shielding, and (7) Radiological Controls, Environmental, Safety, and Quality Efforts.

Advanced Core and Reactor Technology: This work focuses on improving the nuclear heat source (core) design and analysis methods and developing improved designs to satisfy service life requirements. FY 2011 work objectives include the following:

- Continue work on core design concepts related to future submarine initiatives;
- Continue to develop new design and analysis tools to enable improved core performance;
- Verify the physics parameters of all operating fleet cores and monitor operating data;
- Perform calculations in support of Virginia Forward Fit core final design and validation;
- Support certification of second A1B core and the manufacture of the second ship set of A1B cores;
- Continue with assembly design of the land-based prototype test cell to support core replacement;
- Develop new technology test cell concept designs to support potential future fleet applications focused on improved performance and reduced cost, and
- Develop OHIO-class replacement reactor core concepts and arrangements.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Advanced Thermal-Hydraulic Technology: This work focuses on developing and qualifying improved core and reactor component thermal and hydraulic designs. FY 2011 work objectives include the following:

- Perform tests and procedures to apply advanced thermal-hydraulic analytical tools for new naval applications;
- Maintain existing thermal-hydraulic design procedures and support infrastructure;
- Develop thermal-hydraulic technologies and methods to support future advanced pressurized water reactor (PWR) and advanced concept designs, and
- Begin procurement of test hardware to support land-based prototype test cell development.

Advanced Fuel and Manufacturing Technology: This work focuses on evaluating and testing improved core manufacturing processes and inspection techniques to support reactors. FY 2011 work objectives include the following:

- Develop new fuel and poison manufacturing technologies to enable future plant design concepts;
- Investigate new methods to improve core-manufacturing processes;
- Investigate new fuel systems for cost savings and improved manufacturability;
- Continue to fabricate model elements and core structural components essential to qualify new reactor core materials, designs, and manufacturing and inspection technologies, and
- Continue core manufacturing development and demonstration for refueling of the land-based prototype and qualify fleet production-scale manufacturing capability.

Control Drive Mechanism: This work focuses on designing and testing improved reactor equipment including advanced control drive mechanisms (CDM) which meet all design requirements, are more reliable than past designs, and are more affordable. FY 2011 work objectives include the following:

- Develop tooling and technical manuals for the A1B CDM;
- Complete testing on the A1B CDM lead unit;
- Complete final design and procure long-lead materials in support of a long-term A1B CDM test facility;
- Continue other CDM support for the A1B lead ship;
- Continue analysis of the Next Generation Reactor (NGR) CDM;
- Continue design of CDM and heavy equipment for the OHIO-class replacement reactor plant, and
- Continue design of CDM and heavy equipment for the land-based prototype reactor plant.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Reactor Physics: This work focuses on performing physics testing and analysis to confirm expected fuel system and core performance and develop improved analysis methods for predicting core performance that reduce design approximations, uncertainties, and associated conservatism. FY 2011 work objectives include the following:

- Develop and qualify design procedures and computer programs for analyzing advanced PWR cores;
- Develop technologies and methods to support future advanced PWR and advanced concept designs;
- Develop high quality nuclear reactor physics parameters that can be used in training future plant operators;
- Maintain integrated, state-of-the-art software systems for reactor core performance analysis;
- Provide analysis support for physics testing of the A1B core;
- Develop test predictions and related analysis for Next Generation Reactor new construction testing;
- Support development of core design concepts for the OHIO-class replacement, and
- Support development of core design concepts for the land-based prototype reactor plant and test cells.

Safety Analysis and Shielding: This work focuses on conducting reactor safety and shielding analysis for nuclear reactor plants to ensure containment of radiation and proper protection of personnel. FY 2011 work objectives include the following:

- Document reactor safety deliverables and support Nuclear Regulatory Commission and Advisory Committee on Reactor Safeguards reviews;
- Perform reactor safety analyses in support of new reactor plants;
- Provide shielding review of issues associated with advanced reactor plant designs;
- Provide consultation on shielding issues for advanced reactor design development, and
- Support updates and revisions to the A1B drawings.

Radiological Controls, Environmental, Safety, and Quality Efforts: This work focuses on conducting radiological control, environmental, and safety operations necessary to protect laboratory employees, minimize release of hazardous effluents to the environment, and comply with all applicable regulations. FY 2011 work objectives include the following:

- Continue to survey and document radiological conditions; train personnel for all phases of radiological work and environmental work;
- Continue to review radiological work procedures, conduct a radiological health program, and conduct emergency preparedness program;
- Continue to store, process, and ship radioactive material/waste in accordance with all regulations;
- Continue to maintain strict accountability and handling methods for nuclear fuel;

- Continue to ensure compliance with all safety and environmental regulations; train personnel to comply with latest standards and practices, and
- Continue to ensure compliance with the laboratory quality assurance program through training, consulting, facilitating, lab self-assessment and process improvement, inspection, auditing, and vendor oversight.

Materials Development and Verification **106,100** **106,100** **109,600**

To extend the lifetime of reactors, reduce costs, and achieve greater power capabilities, new materials must be developed and qualified for use in the harsh reactor environment. Existing or new materials selected for current or future advanced designs must also be economical to acquire and feasible to manufacture. Manufacturing processes must be developed to ensure the materials can be cost effectively produced to stringent specifications in appropriate quantities. Material test specimens are fabricated and rigorously tested for desired characteristics. Irradiation testing and quality control techniques are crucial to this qualification process. Materials exhibiting the desired characteristics warranting further evaluation are committed to long-term tests and verification in prototype cores and test reactors. Materials Development and Verification work is concentrated in the following areas: (1) Irradiation Testing and Evaluation, (2) Core and Reactor Materials Development, (3) Plant and Component Materials Development, and (4) Materials Evaluation, Testing and Verification.

Irradiation Testing and Evaluation: This work involves fabricating, testing and examining high integrity nuclear fuel, poison, cladding and structural materials for affordable advanced naval reactor cores. The generated data is used to develop materials capable of maintaining their structural and mechanical integrity over long periods of time in an operating reactor environment. FY 2011 work objectives include the following:

- Establish methods and hardware to irradiate and qualify new materials and manufacturing methods for PWR designs;
- Perform destructive and non-destructive testing and evaluation of irradiated fuel, poison, and cladding in support of development and improvement of core, plant and steam generator materials;
- Perform post-service evaluation of components from the fleet to improve component designs and verify performance;
- Examine PWR fuel and cladding performance incorporating results into predictive tools, and
- Deliver test assemblies for irradiation testing at the Advanced Test Reactor.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Core and Reactor Materials Development: Involves verifying acceptable performance for current cores through end of life, pursuing potential cost reductions, and improving materials and processes through long-term irradiation tests and evaluations. FY 2011 work objectives include the following:

- Utilize test data and increased fundamental understanding to improve models and revise current design bases for more capable and cost efficient PWR designs;
- Continue to develop, test, and examine high performance fuel system constituent materials for advanced applications;
- Continue to establish the processes needed to qualify new materials and manufacturing methods for safer, more capable, and more cost effective PWR designs;
- Apply core material modeling capabilities to guide testing programs, improved understanding of manufacturing processes, and better predict in-core performance;
- Incorporate design procedures and performance limits into the Fuel and Poison Design manual developed for future PWR designs, and
- Perform corrosion testing to support core design needs, model development and improved understanding of the corrosion process for particular metals and metal alloys.

Plant and Component Materials Development: This work characterizes high strength structural, corrosion resistant, pressure vessel, steam generator, and valve materials to determine the cause for degraded performance and develop improved predictive techniques. FY 2011 work objectives include the following:

- Continue testing of Stress Corrosion Cracking in 304 stainless steel;
- Complete Alloy 600 Stress Corrosion Cracking initiation and incubation testing, and
- Provide manufacturing support for S9G Steam Generators and A1B reactor heavy equipment fabrication.

Materials Evaluation, Testing and Verification: The purpose of this work is to establish and maintain capability to perform materials testing representative of shipboard service applications. FY 2011 work objectives include the following:

- Provide Analytical Chemistry, Radiochemistry, Physical Chemistry, Metallography, Micro analytical and Mechanical Testing services in support of materials development programs;
- Conduct high temperature and high-pressure autoclave testing in support of new materials development for use in the fleet, and
- Qualify and implement Focus Ion Beam capabilities.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Evaluation and Servicing	**264,300**	**261,400**	**325,700**

Evaluation and Servicing promotes the Naval Reactors Program tradition of safety, reliability, and technical excellence through the operation, maintenance, and testing of land-based test facilities. A key focus of these facilities is to enhance fleet performance through testing and examination of materials, components, and new designs under actual operating conditions. This effort includes the design of fuel servicing and component disposal equipment, evaluating and resolving design issues, plus the planning and execution of defueling, lay-up, and disassembly work. Evaluation and Servicing work is concentrated in the following areas: (1) Routine Operations and Maintenance, (2) Routine Environmental Remediation, (3) Servicing, (4) Expended Core Processing and Examination, and (5) Prototype Inactivation.

Routine Operations and Maintenance: This work involves operating the Naval Reactors prototypes in a safe and reliable manner to support testing and evaluation of new components, systems, applications, and designs. The work also supports preventive maintenance, upgrades and modifications on the prototypes. FY 2011 work objectives include the following:

- Operate the prototypes for testing and maintenance at a utilization factor of equal to or greater than 90 percent;
- Perform depletion and testing of the cores in Modifications and Additions to Reactor Facilities (MARF) and S8G prototypes;
- Conduct MARF maximum power tests at specified intervals;
- Conduct MARF and S8G materials stress tests, and
- Complete periodic MARF and S8G routine maintenance shutdowns.

Routine Environmental Remediation: This process involves decontaminating to minimize the environmental, health, and safety impact of contaminated facilities, with the benefit of making radiological facilities available for non-radiological use. FY 2011 work objectives include the following:

- Conduct remediation of obsolete facilities to reduce potential environmental liabilities;
- Maintain inactive Naval Reactors Facility (NRF) prototype plants in a safe and environmentally benign condition;
- Commence scoping study for the F-Complex demolition;
- Conduct decontamination and disposition of existing Expended Core Facility environmental legacies;
- Continue efforts to prepare L-building for demolition, and
- Continue Q-complex demolition.

(dollars in thousands)

FY 2009	FY 2010	FY 2011

Servicing: This work involves servicing prototypes to ensure continued safe and reliable operation. Servicing also provides refueling/defueling systems for both existing and new core designs. FY 2011 work objectives include the following:

- Continue casualty monitoring instrumentation and emergency safeguards system cutting equipment design;
- Replace the Ships Battery during the planned MARF prototype shutdown;
- Perform pressurizer heavy heaterwell inspection and replacement during the planned MARF prototype shutdown;
- Perform a media replacement during the planned S8G prototype shutdown, and
- Commence planning and design work to refuel and overhaul the land-based prototype.

Expended Core Processing & Examination: This work involves operating the Expended Core Facility (ECF) in Idaho including the Advanced Test Reactor (ATR) in a safe and reliable manner to support examination and disposal of spent naval fuel. FY 2011 work objectives include the following:

- Perform specific core component examinations as requested by test sponsors;
- Provide engineering support and funding to maintain five NR Program test loops at the ATR;
- Perform scheduled examinations of irradiated test specimens;
- Complete design of M-290 unloading equipment;
- Commence design of M-290 loading equipment, and
- Perform conceptual design and NEPA (i.e., Environmental Impact Statement) efforts in support of recapitalization of the Program's spent nuclear fuel infrastructure.

Prototype Inactivation: This work involves the disassembly and disposition of the Program's testing prototypes and support facilities. FY 2011 work objectives include the following:

- Continue disassembly of the D1G Primary Shield Tank; and
- Continue D1G reactor compartment disassembly.

Advanced Test Reactor Operations and Test Support	**60,300**	**61,800**	**63,100**

Naval Reactors performs irradiation testing at the Advanced Test Reactor in support of advanced reactor design development. While ATR is a facility primarily funded by the Office of Nuclear Energy and operated by their contractor, NR funds a portion of the cost of base operations of the ATR, as well as NR specific testing.

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Facility Operations	**32,500**	**39,333**	**44,186**

Facility Operations funding supports general plant projects (GPP) and capital equipment procurements.

Total, Naval Reactors Operations and Maintenance	**771,600**	**877,533**	**997,886**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Plant Technology	
• Continue design and development of the OHIO-class replacement ballistic missile submarine reactor plant including development of I&C, plant arrangements and system designs to meet performance requirements.	**+12,200**
Reactor Technology and Analysis	
• Continue design and development of the OHIO-class replacement ballistic missile submarine reactor plant core.	**+20,200**
• Manufacturing development and demonstration and development of core technologies in support of the land-based prototype refueling. Funding this activity is in support of delivery of an extended life core design for initial fabrication of the OHIO-class replacement SSBN propulsion plant as well as ongoing operation of the prototype and related R&D programs beyond 2018.	**+14,000**
Materials Development and Verification	
• Manufacturing support for S9G Steam Generators and A1B reactor heavy equipment fabrication.	**+1,800**
• Materials validation work in support of design and development efforts related to core and core technologies for the land-based prototype refueling ($0.9M) and OHIO-class replacement ($0.8M) programs.	**+1,700**
Evaluation and Servicing	
• Initiation of design for the M-290 loading equipment.	**+3,000**
• Initiation of scoping studies for the F-Complex demolition.	**+4,600**
• Transfer of funding to DOE-NE for safeguards and security services provided by the Idaho National Laboratory to the Naval Reactors Facility.	**-1,500**

	FY 2011 vs. FY 2010 ($000)
• Planning and design work necessary to refuel, overhaul, and modernize the land-based prototype. Funding this activity supports core and core technology development work for refueling of the land-based prototype, for its planned return to service by FY 2021.	**+17,600**
• Conceptual design and NEPA (i.e., Environmental Impact Statement) efforts in support of recapitalization of the Program's spent nuclear fuel infrastructure. Funding supports refueling and defueling schedules for nuclear-powered vessels.	**+40,600**
ATR Operations and Test Support	
• Inflationary increase to support continued operations and maintenance of the Advanced Test Reactor.	**+1,300**
Facility Operations	
• Increase in capital equipment procurements.	**+4,853**
Total Funding Change, Operations and Maintenance	**+120,353**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
General Plant Projects	14,000	10,083	34,300
Capital Equipment	18,500	29,250	9,886
Total, Capital Operating Expenses	**32,500**	**39,333**	**44,186**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
General Plant Projects	15,900	19,300	38,000	20,300
Capital Equipment	32,300	40,700	41,500	31,900
Total, Capital Operating Expenses	**48,200**	**60,000**	**79,500**	**52,200**

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Unappro-priated Balance
10-D-904, NRF Fire Protection, ID	TBD	0	0	700	500	12,000
10-D-903, KSO Security Upgrades	TBD	0	0	1,500	400	19,100
09-D-902, NRF Production Support Complex, ID	18,700	0	8,300	6,400	4,000	0
09-D-190, PED, Infrastructure Upgrades, KAPL	0	0	1,000	1,000	0	0
08-D-190, ECF M-290 Receiving/Discharge Station, NRF, ID	70,445	545	300	9,500	25,000	35,100
07-D-190, Materials Research and Technology Complex , BAPL[a]	29,810	3,010	12,400	11,700	2,700	0
Total, Construction			**22,000**	**30,800**	**32,600**	

[a] Includes PED funding ($3,014,000) from 07-D-190, PED, Materials Research and Technology Complex.

Outyear Construction Projects

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
15-D-XXX, NRF Warehouse	0	0	0	12,800
15-D-XXX, Materials Characterization Laboratory, KAPL	0	0	0	1,000
14-D-XXX, Plant Services Building	0	0	1,000	700
14-D-XXX, Support Services Facility	0	0	1,000	900
13-D-XXX, ECF Water Pit #1 Upgrade	0	1,100	800	9,300
10-D-904, NRF Fire Protection, ID	12,000	0	0	0
10-D-903, KSO Security Upgrades	100	19,000	0	0
08-D-190, ECF M-290 Receiving/Discharge Station , NRF, ID	27,800	5,700	1,700	400
Total, Construction	**39,900**	**25,800**	**4,500**	**25,100**

Major Items of Equipment (TEC $2 million or greater)

(dollars in thousands)

Major Item of Equipment	Other Project Costs (OPC)	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2009	FY 2010	FY 2011	Completion Date
Network Upgrade	250	4,450	4,200	0	600	1,200	1,200	FY 2012
Scalable Parallel Supercomputer	401	6,001	5,600	0	5,600	0	0	FY 2009
Bettis Network Upgrade	0	0	3,000	0	0	1,000	1,000	FY 2012
S8G Prototype I&C	1500	17,900	16,400	0	0	400	1,100	FY 2019
Emergency Safety Fill System	2,000	14,400	12,400	6,100	1,000	0	0	FY 2009
High Performance Computing System	889	9,889	9,000	0	0	0	9,000	FY 2011
High Performance Computing System	250	3,250	3,000	0	0	3,000	0	FY 2010
Total, Major Items of Equipment					**7,200**	**5,600**	**12,300**	

Outyear Major Items of Equipment

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
Bettis Network Upgrade	1,000	0	0	0
KAPL Network Upgrade	1,200	0	0	0
High Performance Technical Computing System (FY 12 Buy)	11,000	0	0	0
S8G Prototype I&C	1,300	1,600	2,600	4,000
High Performance Technical Computing System (FY 13 Buy)	0	11,000	0	0
High Performance Technical Computing System (FY 14 Buy)	0	0	11,000	0
KAPL Network	0	0	0	1,000
High Performance Technical Computing System (FY 15 Buy)	0	0	0	11,000
Total, Major Items of Equipment	**14,500**	**12,600**	**13,600**	**16,000**

Naval Reactors - Program Direction

Funding Schedule by Category

(dollars in thousands)
(Whole FTEs)

	FY 2009	FY 2010[b]	FY 2011
Headquarters			
Salary and Benefits	11,300	13,900	14,800
Travel	970	1,200	1,400
Other Related Expenses	3,034	3,400	4,600
Total, Headquarters	**15,304**	**18,500**	**20,800**
Full-Time Equivalents	**74**	**94**	**96**
Pittsburgh Naval Reactors			
Salary and Benefits	9,025	0	0
Travel	330	0	0
Other Related Expenses	1,550	0	0
Total, Pittsburgh Naval Reactors	**10,905**	**0**	**0**
Full-Time Equivalents	**71**	**0**	**0**
Schenectady Naval Reactors			
Salary and Benefits	7,215	0	0
Travel	240	0	0
Other Related Expenses	790	0	0
Total, Schenectady Naval Reactors	**8,245**	**0**	**0**
Full-Time Equivalents	**64**	**0**	**0**
Naval Reactors Laboratory Field Office[a]			
Salary and Benefits	0	15,200	15,700
Travel	0	600	800
Other Related Expenses	0	2,500	2,700
Total, Naval Reactors Laboratory Field Office	**0**	**18,300**	**19,200**
Full-Time Equivalents	**0**	**121**	**121**
Total Naval Reactors Program Direction			
Salary and Benefits	27,540	29,100	30,500
Travel	1,540	1,800	2,200
Other Related Expenses	5,374	5,900	7,300
Total, Program Direction	**34,454**	**36,800**	**40,000**
Full-Time Equivalents	**209**	**215**	**217**

[a] Beginning in FY 2010, Naval Reactors will consolidate its field offices into one entity. In addition, responsibilities were realigned between HQ and NRLFO resulting in a shift of Full-Time Equivalents (FTEs).

[b] Funding for new projects beginning in FY 2010 also created a need for increased government oversight resulting in an increase of FTEs in FY 2010.

Outyear Funding Profile by Category

(dollars in thousands/whole FTEs)

	FY 2012	FY 2013	FY 2014	FY 2015
Headquarters				
Salary and Benefits	15,300	15,800	16,300	16,800
Travel	1,450	1,500	1,550	1,600
Other Related Expenses	4,725	4,950	5,075	5,200
Total, Headquarters	**21,475**	**22,250**	**22,925**	**23,600**
Full-Time Equivalents	**96**	**96**	**96**	**96**
Naval Reactors Laboratory Field Office				
Salary and Benefits	16,100	16,500	17,000	17,500
Travel	825	850	875	900
Other Related Expenses	2,800	2,800	2,900	3,000
Total, Naval Reactors Laboratory Field Office	**19,725**	**20,150**	**20,775**	**21,400**
Full-Time Equivalents	**121**	**121**	**121**	**121**
Total Naval Reactors Program Direction				
Salary and Benefits	31,400	32,300	33,300	34,300
Travel	2,275	2,350	2,425	2,500
Other Related Expenses	7,525	7,750	7,975	8,200
Total, Program Direction	**41,200**	**42,400**	**43,700**	**45,000**
Full-Time Equivalents	**217**	**217**	**217**	**217**

Mission

Due to the critical nature of nuclear reactor work, Naval Reactors is a centrally managed organization. Federal employees oversee and set policies and procedures for developing new reactor plants, operating existing nuclear plants, facilities supporting these plants, contractors, and the Bettis and Knolls Atomic Power Laboratories. In addition, these employees interface with other DOE offices and local, state, and Federal regulatory agencies.

Detailed Justification

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Salaries and Benefits	**27,540**	**29,100**	**30,500**

Federal Staff continue to direct technical work and provide management/oversight of laboratories and facilities to ensure safe and reliable operation of Naval nuclear plants. The change is due to a projected increase in FTEs for oversight of new project funding in addition to inflationary growth between FY 2010 and FY 2011.

Travel	**1,540**	**1,800**	**2,200**

Travel includes funding for the transportation of Government employees, their per diem allowances while in authorized travel status and other expenses incidental to travel. FY 2010 funding supports travel required for the management and oversight of the Naval Reactors Program, in addition to inflationary growth between FY 2010 and FY 2011.

Other Related Expenses	**5,374**	**5,900**	**7,300**

Includes provision of funds for increases to the Working Capital Fund (WCF), based on guideline estimates provided by the Working Capital Fund Manager. Starting in FY 2011, the WCF includes full funding for the Defense Contract Auditing Agency audits. Funding also supports goods and services such as training and Automated Data Processing (ADP) maintenance, and includes labor costs for Bettis contractor services and ADP requirements for Naval Reactors Headquarters internal classified local area network.

Total, Program Direction	**34,454**	**36,800**	**40,000**

Explanation of Funding Changes

	FY 2011 vs. FY 2010 ($000)
Salaries and Benefits	
The change is due to a projected increase in FTEs for oversight of new project funding in addition to inflationary growth between FY 2010 and FY 2011.	**+1,400**
Travel	
The change is due to increased travel requirements for the management and oversight of the Naval Reactors Program, increased costs associated with travel (i.e., airfare/ fuel), and adjustments in accordance with allowable inflation.	**+400**
Other Related Expenses	
Change due to increased Working Capital Fund funding requirements which now include funding for Defense Contract Audit Agency audits. In addition, new program efforts require additional oversight; additional training and Automated Data Processing (ADP) maintenance, labor costs for Bettis contractor services and ADP requirements for Naval Reactors Headquarters internal classified local area network.	**+1,400**
Total Funding Change, Program Direction	**+3,200**

Other Related Expenses by Category

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Training	240	250	320
Working Capital Fund	674	900	1,380
Software Procurement/Maintenance Activities/Capital Acquisitions	2,325	2,500	3,000
Other	2,135	2,250	2,600
Total Budget Authority	**5,374**	**5,900**	**7,300**

10-D-904, Naval Reactors Facility (NRF) Fire Protection, Idaho
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on April 7, 2009, with a preliminary cost range of $18,000,000 to $23,000,000 and CD-4 of FY 2017.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is a continuation of a PED PDS proceeding to construction in FY 2012.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	3QFY2009	1QFY2010	1QFY2011	TBD	TBD	TBD	TBD	TBD
FY 2011	04/07/2009	2QFY2010	1QFY2012	TBD	TBD	TBD	TBD	TBD

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	1,200	TBD	TBD	443	TBD	TBD	TBD
FY 2011	1,200	TBD	TBD	TBD	TBD	TBD	TBD

4. Project Description, Justification, and Scope

The NRF Fire Protection project will replace most of the NRF site-wide fire alarm notification system. The current site-wide fire alarm system requires replacement due to a system architecture that is vulnerable to single point faults that affect or disable fire protection and evacuation signaling. The fire protection upgrades will install new signaling panels networked together to provide communications capabilities for monitoring. All buildings will comply with applicable standards by assuring manual pull stations are within code and horns and strobe lights meet the American Disability requirements.

The project is being conducted in accordance with the NR Implementation Bulletin of DOE O 413.3A and the NR Program and Project Management Manual, and appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2010	700	700	694
FY 2011	500	500	506
Total, PED	1,200	1,200	1,200
Other Project Cost (OPC)			
OPC except D&D			
FY 2008	77	77	77
FY 2009	105	105	105
Total, OPC except D&D	182	182	182

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	1,200	1,200	N/A
Contingency	0	0	N/A
Total, PED	1,200	1,200	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	25	56	N/A
Conceptual Design	157	387	N/A
Contingency	0	0	N/A
Total, OPC except D&D	182	443	N/A

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009 Performance Baseline	TEC									0
	OPC									0
	TPC	0	0	0	0	0	0	0	0	0
FY 2010	TEC		700	500						1,200
	OPC	443								443
	TPC	443	700	500	0	0	0	0	0	1,643
FY 2011	TEC		700	500						1,200
	OPC	182								182
	TPC	182	700	500	0	0	0	0	0	1,382

8. Related Operations and Maintenance Funding Requirements

Not applicable for PED.

9. Required D&D Information

Not applicable for PED.

10. Acquisition Approach

Not applicable for PED.

10-D-903, KSO Security Upgrades, Schenectady, NY
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on April 22, 2008, with a preliminary cost range of $19,000,000 to $23,000,000 and a CD-4 of FY 2016.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is a continuation of a PED PDS proceeding to construction in FY 2013.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	4/22/2008	2QFY2009	2QFY2013	TBD	TBD	TBD	TBD	TBD
FY 2011	4/22/2008	4QFY2009	4QFY2012	TBD	TBD	TBD	TBD	TBD

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D[a]	OPC, D&D	OPC, Total	TPC
FY 2010	2,000	TBD	TBD	400	TBD	TBD	TBD
FY 2011	2,000	TBD	TBD	300	TBD	TBD	TBD

4. Project Description, Justification, and Scope

The Kesselring Site Operation (KSO) Security Upgrades project will replace and upgrade security related infrastructure on the site perimeter at the Kesselring Site. The advanced age and degradation of the currently installed security systems requires upgrading to continue meeting the basic security principles to deter, detect, assess and delay, as directed by the security vulnerability assessment. The

[a] Includes conceptual planning and design.

site will acquire upgrades to the security perimeter, perimeter lighting system, alarm system, and new site entrance buildings.

The project is being conducted in accordance with the NR Implementation Bulletin of DOE O 413.3A and the NR Program and Project Management Manual, and appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2010	1,500	1,500	1,000
FY 2011	400	400	400
FY 2012	100	100	600
Total, PED	2,000	2,000	2,000
Other Project Cost (OPC)			
OPC except D&D			
FY 2008	300	300	300
Total, OPC except D&D	300	300	300

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	1,818	1,820	N/A
Contingency	182	180	N/A
Total, PED	2,000	2,000	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	300	400	N/A
Contingency	N/A	N/A	N/A
Total, OPC except D&D	300	400	N/A
Total, OPC	300	400	N/A

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009 Performance Baseline	TEC									0
	OPC									0
	TPC	0	0	0	0	0	0	0	0	0
FY 2010	TEC		1,500	500						2,000
	OPC	400								400
	TPC	400	1,500	500	0	0	0	0	0	2,400
FY 2011	TEC		1,500	400	100					2,000
	OPC	300								300
	TPC	300	1,500	400	100	0	0	0	0	2,300

8. Related Operations and Maintenance Funding Requirements

Not applicable for PED.

9. Required D&D Information

Not applicable for PED.

10. Acquisition Approach

Not applicable for PED.

09-D-902, Naval Reactors Facility (NRF) Production Support Complex,
Naval Reactors Facility, Idaho
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-3, Approve Start of Construction, which was approved on February 11, 2009, with a Total Project Cost of $19,945,000 and CD-4 of 2Q FY 2013.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is an update of the FY 2010 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete[a]	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY2009	8/30/2007	1QFY2008	N/A	1QFY2008	2QFY2009	2QFY2012	N/A	N/A
FY2010	8/30/2007	7/15/2008	N/A	7/15/2008	2/11/2009	2QFY2012	N/A	N/A
FY2011	8/30/2007	7/15/2008	N/A	7/15/2008	2/11/2009	2QFY2013	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY2009	N/A	18,700	18,700	288	N/A	288	18,988
FY2010	N/A	18,700	18,700	772	N/A	772	19,472
FY2011	1,855	16,845	18,700	1,245	N/A	1,245	19,945

[a] Construction design will be performed by the Design-Build contractor.

4. Project Description, Justification, and Scope

Description
The NRF Production Support Complex is a design-build project that will construct an office building containing a cafeteria, an emergency control center (ECC), training classrooms, and a large meeting room that can be easily modified to accommodate additional cafeteria seating or classroom space.

Justification
The NRF has experienced substantial employee population growth over the past five years to establish the production capability to process spent nuclear fuel. NRF is the sole facility in the Naval Nuclear Propulsion Program which has the facilities, equipment, and established processes for processing spent naval nuclear fuel. The processing of spent naval nuclear fuel into containers is required to support ongoing fleet defuelings to meet legal agreements with the state of Idaho. The population growth has exhausted the available office capacity to permanently house professional employees in program standard office environments. Additionally, the population growth has exceeded the existing capacity of support activities including the NRF cafeteria, large training and meeting rooms, and the NRF ECC. Additional space and capability in these areas are required to maintain professional work environments and to support the site's mission.

Scope
The NRF Production Support Complex project will construct an office building that will contain approximately 170 office spaces, a cafeteria that can serve approximately 500 persons for lunch and seat approximately 250 persons, approximately 2,400 square feet of space for an ECC, and approximately 37,900 square feet of space for training classrooms, office spaces, and a large meeting room that can be easily modified to accommodate additional cafeteria seating or classroom space.

The project is being conducted in accordance with the NR Implementation Bulletin of DOE O 413.3A and the NR Program and Project Management Manual, and appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
FY 2009	1,855	1,855	200
FY 2010	0	0	1,655
Total, Design	1,855	1,855	1,855
Construction			
FY 2009	6,445	6,445	0
FY 2010	6,400	6,400	5,390
FY 2011	4,000	4,000	10,612
FY 2012			843
Total, Construction	16,845	16,845	16,845

(dollars in thousands)

	Appropriations	Obligations	Costs
TEC			
FY 2009	8,300	8,300	200
FY 2010	6,400	6,400	7,045
FY 2011	4,000	4,000	10,612
FY 2012	0	0	843
Total, TEC	18,700	18,700	18,700
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	51	51	51
FY 2008	312	312	312
FY 2009	63	63	63
FY 2010	119	119	119
FY 2011	96	96	96
FY 2012	156	156	156
FY 2013	448	448	448
Total, OPC except D&D	1,245	1,245	1,245
D&D	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 2007	51	51	51
FY 2008	312	312	312
FY 2009	63	63	63
FY 2010	119	119	119
FY 2011	96	96	96
FY 2012	156	156	156
FY 2013	448	448	448
Total, OPC	1,245	1,245	1,245
Total Project Cost (TPC)			
FY 2007	51	51	51
FY 2008	312	312	312
FY 2009	8,363	8,363	63
FY 2010	6,519	6,519	7,364
FY 2011	4,096	4,096	10,708
FY 2012	156	156	999
FY 2013	448	448	448
Total, TPC	19,945	19,945	19,945

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	1,855	1,794	1,794
Contingency	N/A	N/A	N/A
Total, Design	1,855	1,794	1,794
Construction			
Site Preparation	556	349	349
Equipment and Furnishings	1,847	1,718	1,556
Other Construction	12,754	13,539	10,686
Contingency	1,688	1,300	4,315
Total, Construction	16,845	16,906	16,906
Total, TEC	18,700	18,700	18,700
Contingency, TEC	1,688	1,300	4,315
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	51	51	74
Conceptual Design	375	284	150
Start-Up	819	437	64
Contingency	0	0	0
Total, OPC except D&D	1,245	772	288
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	1,245	772	288
Contingency, OPC	0	0	0
Total, TPC	19,945	19,472	18,988
Total, Contingency	1,688	1,300	4,315

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009 Performance Baseline	TEC	8,300	6,400	4,000						18,700
	OPC	224			64					288
	TPC	8,524	6,400	4,000	64	0	0	0	0	18,988
FY 2010	TEC	8,300	6,400	4,000						18,700
	OPC	335			437					772
	TPC	8,635	6,400	4,000	437	0	0	0	0	19,472
FY 2011	TEC	8,300	6,400	4,000						18,700
	OPC	426	119	96	156	448				1,245
	TPC	8,726	6,519	4,096	156	448	0	0	0	19,945

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2QFY2013
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter)	2QFY2053

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations and Maintenance	374	374	14,960	14,960
Total, Operations & Maintenance	374	374	14,960	14,960

9. Required D&D Information[a]

Area	Square Feet
Area of new construction	N/A
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced: N/A

10. Acquisition Approach

The Program's prime contractor prepared the performance specification as the basis for the design-build contract. A fixed-price contract for the procurement and construction will be awarded on the basis of competitive bidding. The successful design-build contractor will perform the design and construction of the new facility.

[a] No offsetting D&D will be identified for this project. The NRF site has and will continue to expand to meet mission-critical work in support of spent fuel processing with insufficient excess facilities to support planned construction.

08-D-190, Expended Core Facility (ECF) M-290 Receiving/Discharge Station, Naval Reactors Facility, Idaho
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-2, Approve Performance Baseline, which was approved on November 30, 2009, with a Total Project Cost of $75,186,000 and a CD-4 of 3Q FY 2014.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is an update of the FY 2010 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2008	11/30/2006	4QFY2007	2QFY2010	TBD	TBD	TBD	N/A	N/A
FY 2009	11/30/2006	8/17/2007	2QFY2010	TBD	TBD	TBD	N/A	N/A
FY 2010	11/30/2006	8/17/2007	2QFY2010	3QFY2009	1QFY2010	2QFY2014	N/A	N/A
FY 2011	11/30/2006	8/17/2007	3QFY2010	1QFY2010	1QFY2011	3QFY2014	N/A	N/A

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D[a]	OPC, D&D	OPC, Total	TPC
FY 2008	850	TBD	TBD	298	N/A	TBD	TBD
FY 2009	1,045	TBD	TBD	298	N/A	TBD	TBD
FY 2010	1,045	21,500	22,545	649	N/A	TBD	23,194
FY 2011	4,081	66,864	70,945	4,241	N/A	TBD	75,186

4. Project Description, Justification, and Scope

The M-290 shipping container system will allow direct loading of carrier spent nuclear fuel without temporary storage and disassembly work at the shipyard as currently required for existing smaller

[a] Includes conceptual planning and design.

M-140 shipping containers. The direct loading method improves shipyard operations, supports aggressive refueling and inactivation (defueling) schedules and mitigates potential security risks associated with holding spent nuclear fuel at the shipyard. The full-length carrier spent nuclear fuel to be shipped in the M-290 is approximately twice as long as the fuel modules typically sent to ECF. As such, ECF currently does not have facilities capable of handling the larger, heavier, M-290 shipping container. The project will also provide the capability to ship spent nuclear fuel from ECF to a permanent repository or interim storage facility using the M-290 shipping container.

This project will accomplish the following: 1) construct a new facility to allow the receipt and handling of M-290 shipping containers, 2) incorporate an Overpack Expansion Building to store approximately 110 spent nuclear fuel overpacks (previously identified as a separate line-item construction project), and 3) construct related support facilities (e.g., briefing room, lockers, and office spaces). One key aspect of this new facility will be the capability for concurrent operations of fuel processing from INTEC and receipt and handling of M-290 shipping containers.

Funding in FY 2010 supports long-lead material procurement.

The project is being conducted in accordance with the NR Implementation Bulletin of DOE O 413.3A and the NR Program and Project Management Manual, and appropriate project management requirements have been met.

No construction funds other than for long lead equipment will be used until the project performance baseline has been validated and CD-3 has been approved.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2008	545	545	436
FY 2009	300	300	409
FY 2010	3,236	3,236	3,236
Total, PED	4,081	4,081	4,081
Construction			
FY 2010	6,264	6,264	3,296
FY 2011	25,000	25,000	18,892
FY 2012	27,800	27,800	28,102
FY 2013	5,700	5,700	10,502
FY 2014	1,700	1,700	3,672
FY 2015	400	400	2,400
Total Construction	66,864	66,864	66,864

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2008	545	545	436
FY 2009	300	300	409
FY 2010	9,500	9,500	6,532
FY 2011	25,000	25,000	18,892
FY 2012	27,800	27,800	28,102
FY 2013	5,700	5,700	10,502
FY 2014	1,700	1,700	3,672
FY 2015	400	400	2,400
Total, TEC	70,945	70,945	70,945
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	144	144	144
FY 2008	418	418	418
FY 2009	1,999	1,999	1,999
FY 2010	107	107	107
FY 2011	580	580	580
FY 2012	118	118	118
FY 2013	115	115	115
FY 2014	260	260	260
FY 2015	500	500	500
Total, OPC except D&D	4,241	4,241	4,241
D&D[a]			
Total, D&D	N/A	N/A	N/A
OPC			
FY 2007	144	144	144
FY 2008	418	418	418
FY 2009	1,999	1,999	1,999
FY 2010	107	107	107
FY 2011	580	580	580
FY 2012	118	118	118
FY 2013	115	115	115
FY 2014	260	260	260
FY 2015	500	500	500
Total, OPC	4,241	4,241	4,241

[a] No offsetting D&D will be identified for this project. The Naval Reactors Facility site will expand to meet mission-critical work in support of spent fuel processing with insufficient excess facilities to support planned construction.

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 2007	144	144	144
FY 2008	963	963	854
FY 2009	2,299	2,299	2,408
FY 2010	9,607	9,607	6,639
FY 2011	25,580	25,580	19,472
FY 2012	27,918	27,918	28,220
FY 2013	5,815	5,815	10,617
FY 2014	1,960	1,960	3,932
FY 2015	900	900	2,900
Total, TPC	75,186	75,186	75,186

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	3,770	808	0
Contingency	311	237	0
Total, Design	4,081	1,045	0
Construction			
Site Preparation	0	0	0
Equipment and Furnishings	11,765	7,950	0
Other Construction	45,659	10,924	0
Contingency	9,440	2,626	0
Total, Construction	66,864	21,500	0
Total, TEC	70,945	22,545	0
Contingency, TEC	9,751	2,863	0
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	666	100	0
Conceptual Design	1,661	298	0
Start-Up	1,914	251	0
Contingency			0
Total, OPC except D&D	4,241	649	0
D&D			
D&D	N/A	N/A	0
Contingency	N/A	N/A	0
Total, D&D	N/A	N/A	0
Total, OPC	4,241	649	0
Contingency, OPC	0	0	0
Total, TPC	75,186	23,194	0
Total, Contingency	9,751	2,863	0

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009	TEC	1,395	200							1,595
Performance	OPC	298								298
Baseline	TPC	1,693	200	0	0	0	0	0	0	1,893
	TEC	845	9,500	5,400		6,800				22,545
FY 2010	OPC	415	6	16	16	16	180			649
	TPC	1,260	9,506	5,416	16	6,816	180	0	0	23,194
	TEC	845	9,500	25,000	27,800	5,700	1,700	400		70,945
FY 2011	OPC	2,561	107	580	118	115	260	500		4,241
	TPC	3,406	9,607	25,580	27,918	5,815	1,960	900	0	75,186

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3QFY2014
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter)	3QFY2054

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total, Operations & Maintenance	N/A	N/A	N/A	N/A

9. Required D&D Information

Area	Square Feet
Area of new construction	N/A
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced: N/A

10. Acquisition Approach

The Program's A/E subcontractor will perform construction design to support development of a construction solicitation package. This contract will be designated as a fixed-price contract for procurement and construction and will be awarded on the basis of competitive bidding.

07-D-190, Materials Research and Technology Complex, Bettis Atomic Power Laboratory, Pittsburgh, PA
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-3, Start of Construction, which was approved on September 5, 2008, with a Total Project Cost of $71,690,000 and CD-4 of 4Q FY 2011.

A Federal Project Director at the appropriate level has been assigned to this project.

This PDS is an update of the FY 2010 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2007	2/12/2004	2QFY2005	3QFY2008	TBD	TBD	TBD	TBD	TBD
FY 2008	2/12/2004	2QFY2005	3QFY2008	TBD	TBD	TBD	TBD	TBD
FY 2009	2/12/2004	4/11/2007	1QFY2009	12/17/2007	1QFY2009	4QFY2011	1QFY2009	4QFY2039
FY 2010	2/12/2004	4/11/2007	1/13/2009	12/17/2007	9/5/2008	4QFY2011	5/21/2008	4QFY2039
FY 2011	2/12/2004	4/11/2007	1/13/2009	12/17/2007	9/5/2008	4QFY2011	5/21/2008	4QFY2039

CD-0 – Approve Mission Need
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
CD-3 – Approve Start of Construction
CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D[a]	OPC, D&D[b]	OPC, Total	TPC
FY 2007	3,014	TBD	TBD	930	TBD	TBD	TBD
FY 2008	3,014	TBD	TBD	930	TBD	TBD	TBD
FY 2009	3,010	26,800	29,810	4,370	36,500	40,870	70,680
FY 2010	3,010	26,800	29,810	4,760	36,500	41,260	71,070
FY 2011	3,010	26,800	29,810	4,380	37,500	41,880	71,690

[a] Prior to CD-2, OPC only included costs for conceptual planning and design.

[b] D&D is performed in accordance with the Program's 30-year D&D plan.

4. Project Description, Justification, and Scope

Description

The MRTC project will include the construction of an approximately 37,000 gross square feet (GSF) main chemistry building and the modification of the existing 16,400 GSF Cleanroom Technology Facility, as well as related support and office facilities. The main building will house general chemistry, classical wet chemistry, surface science, electron microprobe, spectroscopy, and radiochemistry laboratories, while the existing CTF building will house the analytical electron microscopy, scanning electron microscopy, and metallography laboratories. Related support and office facilities will provide sufficient space to collocate all materials research personnel. The buildings will be constructed outside of the existing perimeter fence in the southwest corner of the ball field at the Bettis Atomic Power Laboratory site in West Mifflin, Pennsylvania.

Justification

The analysis and testing laboratory facilities to be constructed as part of the MRTC project are the focal point for providing the necessary technology to support Bettis-Pittsburgh's efforts to develop, test, and qualify material and processes for supporting a variety of Naval Reactors programs, as well as the operating fleet. The existing testing laboratories currently operate within 50-year-old buildings with aging infrastructure and radiological, asbestos, and PCB legacies. The new complex is needed to replace old and inadequate system utilities; to effectively integrate environmental and radiological requirements to maximize productivity; and to consolidate currently dispersed operations to optimize technical alignment of the test laboratories' organization. Construction of the MRTC will also allow the current facilities to be vacated and turned over to the Decontamination and Decommissioning (D&D) contractor for future deconstruction.

Scope

The MRTC project will consist of several buildings for a total of 70,900 gross square feet. Of the total gross square footage approximately 25 percent is designated as office or conference facilities while the remaining 75 percent gross square feet will consist of mechanical rooms and technical laboratory space. The main building (MRTC-2) will house general chemistry, classical wet chemistry, surface science, electron microprobe, spectroscopy, and radiochemistry laboratories, while the existing Cleanroom Technology Facility building will house the analytical electron microscopy, scanning electron microscopy, and metallography laboratories (MRTC-1). Related support and office facilities will house a conference room, office spaces, restrooms and utility spaces for mechanical and electrical equipment.

The project is being conducted in accordance with the NR Implementation Bulletin of DOE O 413.3A and the NR Program and Project Management Manual, and appropriate project management requirements have been met.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2005	1,079	1,079	1,079
FY 2006	0	0	0
FY 2007	1,485	1,485	624
FY 2008	446	446	1,234
FY 2009	0	0	73
Total, PED	3,010	3,010	3,010
Construction			
FY 2009	12,400	12,400	4,100
FY 2010	11,700	11,700	15,800
FY 2011	2,700	2,700	6,400
FY 2012	0	0	500
Total, Construction	26,800	26,800	26,800
TEC			
FY 2005	1,079	1,079	1,079
FY 2006	0	0	0
FY 2007	1,485	1,485	624
FY 2008	446	446	1,234
FY 2009	12,400	12,400	4,173
FY 2010	11,700	11,700	15,800
FY 2011	2,700	2,700	6,400
FY 2012	0	0	500
Total, TEC	29,810	29,810	29,810
Other Project Cost (OPC)			
OPC except D&D			
FY 2005	567	567	567
FY 2006	363	363	363
FY 2007	0	0	0
FY 2008	25	25	25
FY 2009	425	425	425
FY 2010	1,100	1,100	1,100
FY 2011	200	200	200
FY 2012	1,700	1,700	1,700
Total, OPC except D&D	4,380	4,380	4,380
D&D			
FY 2013 – FY 2039[a]	37,500	37,500	37,500
Total, D&D	37,500	37,500	37,500

[a] D&D is performed in accordance with the Program's 30-year D&D plan.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
OPC			
FY 2005	567	567	567
FY 2006	363	363	363
FY 2007	0	0	0
FY 2008	25	25	25
FY 2009	425	425	425
FY 2010	1,100	1,100	1,100
FY 2011	200	200	200
FY 2012	1,700	1,700	1,700
FY 2014 – FY 2039	37,500	37,500	37,500
Total, OPC	41,880	41,880	41,880
Total Project Cost (TPC)			
FY 2005	1,646	1,646	1,646
FY 2006	363	363	363
FY 2007	1,485	1,485	624
FY 2008	471	471	1,259
FY 2009	12,825	12,825	4,598
FY 2010	12,800	12,800	16,900
FY 2011	2,900	2,900	6,600
FY 2012	1,700	1,700	2,200
FY 2014 – FY 2039	37,500	37,500	37,500
Total, TPC	71,690	71,690	71,690

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	3,010	3,010	3,010
Contingency	0	0	0
Total, PED	3,010	3,010	3,010
Construction			
Site Preparation	94	97	97
Equipment	1,483	0	0
Other Construction	19,893	21,373	21,373
Contingency	5,330	5,330	5,330
Total, Construction	26,800	26,800	26,800
Total, TEC	29,810	29,810	29,810
Contingency, TEC	5,330	5,330	5,330

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	175	567	567
Conceptual Design	755	363	363
Start-Up	575	440	420
Soil Removal	129	120	0
Temporary Utilities	39	35	20
Relocation	2,707	3,235	3,000
Contingency	0	0	0
Total, OPC except D&D	4,380	4,760	4,370
D&D			
D&D	37,500	36,500	36,500
Contingency	0	0	0
Total, D&D	37,500	36,500	36,500
Total, OPC	41,880	41,260	40,870
Contingency, OPC	0	0	0
Total, TPC	71,690	71,070	70,680
Total, Contingency	5,330	5,330	5,330

7. Schedule of Total Project Costs

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009 Performance Baseline	TEC	15,410	11,700	2,700						29,810
	OPC	1,065	200	1,605	1,500				36,500	40,870
	TPC	16,475	11,900	4,305	1,500	0	0	0	36,500	70,680
FY 2010	TEC	15,410	11,700	2,700						29,810
	OPC	1,355	680	725	2,000				36,500	41,260
	TPC	16,765	12,380	3,425	2,000	0	0	0	36,500	71,070
FY 2011	TEC	15,410	11,700	2,700						29,810
	OPC	1,380	1,100	200	1,700				37,500	41,880
	TPC	16,790	12,800	2,900	1,700	0	0	0	37,500	71,690

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY2012
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	1QFY2062

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	51	46	10,608	8,907
Maintenance	133	126	27,216	24,082
Total, Operations & Maintenance	184	172	37,824	32,989

9. Required D&D Information[a]

Area	Square Feet
Area of new construction	37,000
Area of existing facility(s) being replaced	31,960
Area of additional D&D space to meet the "one-for-one" requirement	5,040

Name(s) and site location(s) of existing facility(s) to be replaced: Materials Evaluation Laboratory and Chemistry Laboratories, Bettis Atomic Power Laboratory, Pittsburgh, PA.

10. Acquisition Approach

The Program's A/E subcontractor will perform construction design to support development of a construction solicitation package. MRTC (1) which includes modification of the existing Cleanroom facility will be a traditional contract placement. MRTC (2) and related support and office facilities will be accomplished as a phase-funded contract. Both contracts will be designated as a fixed-price contract for procurement and construction and will be awarded on the basis of competitive bidding.

[a] D&D is performed in accordance with the Program's 30-year D&D plan.

Site Funding Summary

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
Chicago Operations Office			
Ames Laboratory	236	435	420
Argonne National Laboratory	45,501	53,527	66,247
Brookhaven National Laboratory	39,135	28,350	40,041
Chicago Operations Office	38,962	15,404	14,236
Lawrence Berkeley National Laboratory	6,541	5,717	5,506
New Brunswick Laboratory	1,150	3,769	1,209
Idaho Operations Office			
Idaho National Laboratory	212,786	186,457	236,801
Idaho Operations Office	1,237	1,299	1,364
Kansas City Site Office			
Kansas City Plant	456,103	467,512	535,388
Kansas City Site Office	6,106	5,881	7,078
Livermore Site Office			
Lawrence Livermore National Laboratory	1,121,277	1,077,345	1,159,825
Livermore Site Office	18,564	18,914	19,759
Los Alamos Site Office			
Los Alamos National Laboratory	1,563,230	1,488,855	1,870,375
Los Alamos Site Office	19,874	19,805	20,021
NETL			
NETL	3,359	1,050	0
NNSA Service Center			
General Atomics	15,707	22,100	22,500
National Renewable Energy Laboratory	0	0	0
Naval Research Laboratory	6,027	2,104	2,060
NNSA Service Center (all other sites)	755,064	618,382	582,335
University of Rochester/LLE	55,370	59,939	62,477
Nevada Site Office			
Nevada Site Office	105,937	103,627	97,980
Nevada Test Site	288,259	263,159	335,239
Remote Sensing Laboratory	0	0	9,464

	FY 2009	FY 2010	FY 2011
Naval Reactors Laboratory Field Office	0	18,300	19,200
Oak Ridge Operations Office			
Oak Ridge Institute for Science and Engineering	13,819	15,663	18,480
Oak Ridge National Laboratory	183,016	183,901	282,591
Oak Ridge Operations Office	215	240	223
Office of Science and Technical Information	631	773	771
Pacific Northwest National Laboratory	237,219	330,140	293,019
Pantex Site Office			
Pantex Plant	526,567	534,706	532,535
Pantex Site Office	12,813	12,902	14,396
Pittsburgh Naval Reactors Office			
Bettis Atomic Power Laboratory	418,700	434,400	498,900
Pittsburgh Naval Reactors Office	10,905	0	0
Richland Operations Office			
Richland Operations Office	1,463	1,385	1,418
Sandia Site Office			
Sandia National Laboratories	1,165,794	1,124,875	1,329,228
Sandia Site Office	14,611	14,352	15,217
Savannah River Operations Office			
Savannah River Operations Office	36,346	630,694	764,846
Savannah River Site	247,367	335,782	339,214
Savannah River Site Office	31,176	7,750	7,710
Schenectady Naval Reactors Office			
Knolls Atomic Power Laboratory	302,800	391,800	434,900
Schenectady Naval Reactors Office	8,245	0	0
Washington DC Headquarters			
Headquarters	355,401	515,174	648,075
Y-12 Site Office			
Y-12 National Security Complex	866,573	907,227	885,416
Y-12 Site Office	39,647	40,084	38,291
Adjustments	-11,418	-52,420	0
Total, NNSA	9,222,315	9,887,027	11,214,755

BETTIS ATOMIC POWER LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
NNSA			
Naval Reactors	418,700	434,400	498,900
Total, NNSA	**418,700**	**434,400**	**498,900**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Naval Reactors	492,800	551,300	593,600	621,400
Total, NNSA	**492,800**	**551,300**	**593,600**	**621,400**

Congressional Items of Interest: None

Major Changes or Shifts: Core development for the land-based prototype refueling overhaul replacement core with technologies and capabilities planned for the OHIO-class replacement, and conceptual design and oversight of construction of the Expended Core Facility Recapitalization at the Naval Reactor Facility in Idaho, beginning in FY 2015.

Site Description

INTRODUCTION:

The Bettis Atomic Power Laboratory is situated on nearly 202 acres of the former Bettis Airfield in West Mifflin, Pennsylvania, about 7.5 miles southeast of Pittsburgh, Pennsylvania.

This research and development laboratory is operated by Bechtel Marine Propulsion Corporation for the Naval Nuclear Propulsion Program (Naval Reactors), in a joint effort by the Department of the Navy and the Department of Energy (DOE). The Naval Reactors Laboratory Field Office oversees Bettis operations. Bettis is primarily involved with the design, development, and operational flow of nuclear propulsion plants for naval vessels. The Program ensures the safe operation of reactor plants in nuclear-powered submarines and aircraft carriers (constituting 40 percent of the Navy's combatants), and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements. Initial efforts of the Bettis Laboratory led to the development of the power plant for the USS NAUTILUS (SSN 571), the world's first nuclear-powered submarine.

ACTIVITIES:

Naval Reactors

The broad spectrum of Bettis' activities has included work on core and component technology and design, thermal and hydraulic systems, materials, and nuclear physics. Also, Bettis has lead responsibility for the overall training program for Navy personnel in nuclear plant operations, including training at the Naval Nuclear Power Training Command, Charleston, South Carolina; the Moored Training Ships; and Fleet training. Bettis also maintains engineering field offices at numerous shipyards and core contractor facilities, and operates the Expended Core Facility at the Naval Reactors Facility near Idaho Falls, Idaho.

In FY 2011, Bettis will continue manufacturing development and demonstration work, as well as development of new core technologies, of the reactor plant to be used in the land-based prototype refueling overhaul. In addition, conceptual design of the Expended Core Facility Recapitalization at the Naval Reactors Facility in Idaho will continue.

KANSAS CITY PLANT

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	245,982	227,033	259,125
Engineering Campaign	6,984	4,450	3,550
Advanced Simulation and Computing Campaign	684	725	500
Readiness Campaign	24,251	9,069	18,765
Readiness in Technical Base and Facilities	113,312	162,146	190,889
Secure Transportation Asset	27,157	21,672	21,530
Nuclear Counterterrorism Incident Response	4,941	2,339	4,956
Facilities and Infrastructure Recapitalization Program	10,600	13,980	15,000
Site Stewardship	0	1,821	1,847
Environmental Projects and Operations Program/LTS*	2,696	0	0
Defense Nuclear Security	10,843	11,060	11,200
Cyber Security	5,349	5,087	5,587
Subtotal, Weapons Activities	**452,799**	**459,382**	**532,949**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	35	30	30
Nonproliferation and International Security	2,317	2,583	2,409
Subtotal, Defense Nuclear Nonproliferation	**2,352**	**2,613**	**2,439**
Congressionally Directed Projects	952	0	0
Total, NNSA	**456,103**	**461,995**	**535,388**

* Funding included in Site Stewardship beginning in FY 2010.

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	235,509	249,623	266,990	286,182
Engineering Campaign	3,600	3,180	3,600	3,580
Readiness in Technical Base and Facilities	142,379	100,900	91,656	94,792
Secure Transportation Asset	21,972	21,441	21,897	22,715
Nuclear Counterterrorism Incident Response	2,549	2,708	5,238	5,265
Facilities and Infrastructure Recapitalization Program	15,000	15,000	0	0
Site Stewardship	1,889	2,218	2,269	2,293
Defense Nuclear Security	11,300	11,400	11,500	11,600
Cyber Security	6,733	6,733	6,733	6,733
Subtotal Weapons Activities	**440,931**	**413,203**	**409,883**	**433,160**
Defense Nuclear Nonproliferation				
Nonproliferation and International Security	2,488	2,553	2,624	2,807
Subtotal Defense Nuclear Nonproliferation	**2,488**	**2,553**	**2,624**	**2,807**
Total, NNSA	**443,419**	**415,756**	**412,507**	**435,967**

Congressional Items of Interest: Transformation implementation plans for downsizing, and support of W76 Life Extension Program (LEP).

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Kansas City Plant (KCP) is situated on approximately 122 acres of the 300-acre Bannister Federal Complex located within city limits, 12 miles south of downtown Kansas City, Missouri.

The KCP is the primary nonnuclear production plant responsible for development and maintenance of a broad technology base that delivers advanced, integrated, and secure solutions for the Department of Energy/National Nuclear Security Administration (DOE/NNSA).

The site is aligned with transformation activities for the nuclear security enterprise. The site has an approved critical decision to proceed with planning for a new facility under a General Services Administration (GSA) lease. Elements of this transformation include: (1) reducing the floor space required for non-nuclear production activities by nearly two-thirds through outsourcing and reducing capacity, (2) establishing a supply chain management center for reduced procurement costs across the nuclear security enterprise, (3) down-sizing the inventory of stored parts for legacy weapons, and (4) adopting a new oversight model for NNSA sites that increases the use of best industrial practices.

ACTIVITIES:

Directed Stockpile Work (DSW)
The Kansas City Plant (KCP) activities include production engineering, tooling, material procurement, and production labor associated with continuing production and Retrofit Evaluation System Test (REST) surveillance program of non-nuclear components with emphasis on the Life Extension Programs (LEP) for the W76-1. Production continues for the B61 Alt 356. Enduring Stockpile System production activities will include Joint Test Assembly (JTA) support, Firing Set, Environmental Sensing Devices, Mechanical Safe and Arm Detonators, and Lightning Arrestor Connector surveillance rebuilds in addition to laboratory and flight test sampling. Partnering with the Air Force, a major design change to the W87 JTA4 will continue. Major reservoir production continues for the B61, W76, W78, W80, B83, and W88 enduring Stockpile Systems. KCP continues to produce materials/parts through NNSA's Supply Chain Management Center, which is responsible for implementing tools, processes, and accountability to support enterprise-wide NNSA strategic sourcing. Weapon component build-aheads and requalification activities continue to support the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS).

Engineering Campaign
The KCP supports the Engineering Campaign through the Enhanced Surveillance subprogram by evaluating non-nuclear components and materials for age-related characteristics, which are then used to assist in lifetime assessments and age-aware models at the laboratories. The KCP supports future system deployment including on-board/embedded components, materials and system sensors, as well as on-board telemetry and communication linkage. Also, KCP supports the Enhanced Surety subprogram of the Engineering Campaign.

Readiness Campaign
The KCP supports the following Readiness Campaign subprograms.

- Advanced Design and Production Technologies (ADAPT) examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost-effective lean processes; shortened cycle times, built-in quality and acceptance, closer integration of activities across the nuclear security enterprise; a more productive workforce, and agile processes that enhance responsiveness to future national security needs..

- Nonnuclear Readiness provides the electrical, electronic and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon, command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers..

Readiness in Technical Base and Facilities (RTBF)
The RTBF is the primary NNSA direct infrastructure funding source to enable DSW and Campaigns supporting responsiveness, sustaining Environment, Safety and Health, providing rearrangements for production efficiency, and delivering reliable facility, utility, and equipment uptime in support of Stockpile Stewardship production missions. The RTBF provides continual support of fundamental

infrastructure services including facilities management and site planning, maintenance, utilities, capital equipment, general plant projects, expense funded projects; facility startup and project support; Environment, Safety and Health and Program Readiness. Specific efforts will be focused on completion of the Supply Chain Management Center and the Kansas City Responsive Infrastructure Manufacturing and Sourcing transformation plan.

Nuclear Counterterrorism Incident Response
The NCTIR activities at KCP involve assistance in providing operations and capabilities to Federal, state and local government agencies for responding to radiological accidents and incidents. This effort includes special purpose equipment for the program including the Stabilization Operations program.

Secure Transportation Asset (STA)
Honeywell Federal Manufacturing and Technologies is the engineering assembly agency and technical systems integrator for the STA program. It provides engineering support for integrated mobile communications systems for vehicles and convoy operations; manages and supports relay station operations, maintenance and upgrades; operates vehicle production facilities in Kansas City and Albuquerque, conducts quality assurance studies, vehicle and communication upgrades and repairs to the fleet; provides document management and control of the Federal Agent Standard Operating Procedure, maintains the STA secure website, and maintains the Electronic Systems Depot. It provides technical training support, operates a Vehicle Maintenance Facility (VMF), and maintains a Mobile Electronic Maintenance Facility (MEMF) to support the STA training fleet at Fort Chaffee, AR.

Facilities and Infrastructure Recapitalization Program (FIRP)
The KCRIMS has allowed redirection of FIRP resources to other critical priorities. The Kansas City Site Office will continue to manage the NNSA's Roof Asset Management Program (RAMP), a best business practice employed throughout the national security enterprise. Under the RAMP, KCP contracts for an integration manager to oversee an economical roof repair program for seven of the eight nuclear weapons sites. In 2008, the RAMP was the winning entry for the General Services Administration's 12th Annual Achievement Award for Real Property Innovation.

Site Stewardship
In FY 2011, Site Stewardship efforts will be directed toward Environmental Project and Operations Long Term Stewardship (LTS) activities required for ensuring environmental regulatory compliance.

The LTS program at the Kansas City Plant consists of activities necessary to maintain compliance with the restoration of 43 release sites. The LTS activities include but are not limited to, administration of implemented cleanup actions at NNSA sites, operations and maintenance of treatment and monitoring systems required under KCP's RCRA Post Closure Permit issued by the Missouri Department of Natural Resources, regulatory reporting, and program management.

Defense Nuclear Security
The Defense Nuclear Security program at KCP provides all aspects of physical security protection for the plant consistent with applicable DOE Orders and requirements documented in its approved facility Master Security Plan. In FY 2011, KCP will focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades to reduce the need for protective force posts and patrols. The KCRIMS is central to this goal.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.

In FY 2011, the cyber security program at KCP will continue improvement efforts for the risk-based assessment model. The KCP will develop and deploy intrusion detection technology, which will provide timely notification of potential intrusions. Also, KCP will implement standards for maintaining a consistent site computing infrastructure.

Nonproliferation and International Security
The KCP provides International Regimes and Agreements with reviews of export controlled equipment, materials, software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, including weapons of mass destruction (WMD) training to the Department of Homeland Security and other enforcement agencies. Also, for the Office of Global Security Engagement and Cooperation (GSEC), KCP provides instructors, curriculum development and other support to export control outreach. In addition, KCP engages former WMD scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific and business communities.

KNOLLS ATOMIC POWER LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Naval Reactors	302,800	391,800	434,900
Total, NNSA	**302,800**	**391,800**	**434,900**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Naval Reactors	457,300	500,700	514,900	548,800
Total, NNSA	**457,300**	**500,700**	**514,900**	**548,800**

Congressional Items of Interest: None

Major Changes or Shifts: DOE reactor plant design and development work for the OHIO-class replacement ballistic missile submarine replacement. This program began in FY 2010 and continues in FY 2011 and beyond to ensure sufficient maturity of detailed design to support initial fabrication and procurement of long-lead nuclear components in FY 2017 and ship construction in FY 2019.

Site Description

INTRODUCTION:

The Knolls Site in Niskayuna is situated on approximately 180 acres of land, while the Kesselring Site in West Milton, New York is situated on approximately 3,905 acres. The KAPL field personnel also work at shipyards in New Hampshire, Connecticut, Virginia, Hawaii, Washington, and the Naval Reactors Facility Site in Idaho.

The Knolls Atomic Power Laboratory (KAPL) is a research and development laboratory operated by Bechtel Marine Propulsion Corporation for the Naval Nuclear Propulsion Program (Naval Reactors), a joint effort by the Department of the Navy and the Department of Energy. The Naval Reactors Laboratory Field Office oversees KAPL operations. The KAPL's primary function is to support the U.S. Naval Nuclear Propulsion Program through the development of advanced reactor plant designs, while providing design agency support to the operating fleet and training nuclear propulsion plant operators. The Program ensures the safe operation of reactor plants in nuclear-powered submarines and aircraft carriers (which constitute 40 percent of the Navy's combatants), and fulfills the Navy's current and future national defense requirements for new nuclear propulsion plants.

ACTIVITIES:

Naval Reactors

The KAPL's efforts focus on designing the world's most technologically advanced nuclear reactor plants for U.S. Navy submarines. Fundamental research is conducted to develop improved materials, chemistry control systems, and components for naval nuclear propulsion technology. The KAPL uses its theoretical knowledge, sophisticated testing capabilities, and computational power to design new reactor and propulsion systems and components that will be used on existing and future Navy surface ships and submarines. In addition, KAPL operates two prototype plants located at the Kesselring Site in West Milton, New York. The MARF and S8G prototypes are used primarily for naval nuclear propulsion training. These plants are also used to test reactors, reactor plant systems, and reactor steam and electric plant components. Also located at Kesselring, the S3G and D1G prototypes are undergoing inactivation. Upon completion of their missions in the 1990s, the S3G and D1G plants were shut down and inactivation was started as part of Naval Reactors' continuing commitment to ensure proper dismantlement and environmental remediation of formerly used facilities.

In FY 2011, KAPL will continue reactor plant design and development work for the OHIO-class ballistic missile submarine replacement to ensure sufficient maturity of detailed design to support initial fabrication and procurement of long-lead nuclear components in FY 2017 and ship construction in FY 2019. In FY 2011, this will also include payment in lieu of taxes to the Town of Niskayuna.

LAWRENCE LIVERMORE NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	100,340	92,484	110,889
Science Campaign	92,408	92,696	107,552
Engineering Campaign	23,403	24,013	22,900
Inertial Confinement Fusion Ignition and High Yield Campaign	284,215	291,461	296,247
Advanced Simulation and Computing Campaign	220,630	199,511	213,140
Readiness Campaign	8,423	3,494	4,881
Readiness in Technical Base and Facilities	88,634	90,303	80,269
Nuclear Counterterrorism Incident Response	40,381	40,236	45,555
Facilities and Infrastructure Recapitalization Program	15,915	10,770	9,381
Environmental Projects and Operations Program/LTS *	21,446	0	0
Site Stewardship	0	34,112	38,475
Defense Nuclear Security	91,031	95,477	94,000
Cyber Security	17,756	18,356	19,856
Science, Technology and Engineering Capability	10,500	0	7,925
Congressionally Directed Projects	3,806	0	0
Subtotal Weapons Activities	**1,018,888**	**992,913**	**1,051,070**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	43,530	38,160	36,828
Nonproliferation and International Security	23,761	28,653	24,700
International Nuclear Materials Protection and Cooperation	17,497	13,724	31,287
Global Threat Reduction Initiative	17,601	3,895	15,940
Subtotal Defense Nuclear Nonproliferation	**102,389**	**84,432**	**108,755**
Total, NNSA	**1,121,277**	**1,077,345**	**1,159,825**

* Funding included in Site Stewardship beginning in FY 2010.

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	109,353	106,123	101,822	104,625
Science Campaign	116,745	123,184	122,421	115,909
Engineering Campaign	23,200	21,057	23,366	23,323
Inertial Confinement Fusion Ignition and High Yield Campaign	296,142	285,363	285,000	285,000
Advanced Simulation and Computing Campaign	176,387	175,580	174,777	173,978
Readiness in Technical Base and Facilities	42,467	43,160	22,271	23,034
Nuclear Counterterrorism Incident Response	41,290	38,797	40,954	41,020
Facilities and Infrastructure Recapitalization Program	9,381	9,381	0	0
Site Stewardship	33,532	28,704	36,161	40,678
Defense Nuclear Security	94,100	73,400	74,400	75,300
Cyber Security	17,619	18,619	19,119	19,119
Subtotal Weapons Activities	**960,216**	**923,368**	**900,291**	**901,986**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	43,304	43,169	44,540	47,379
Nonproliferation and International Security	25,517	26,181	26,907	28,789
International Nuclear Materials Protection and Cooperation	26,172	6,665	6,665	7,416
Global Threat Reduction Initiative	17,189	16,468	8,072	8,617
Subtotal Defense Nuclear Nonproliferation	**112,182**	**92,483**	**86,184**	**92,201**
Total, NNSA	**1,072,398**	**1,015,851**	**986,475**	**994,187**

Congressional Items of Interest: None.

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Lawrence Livermore National Laboratory (LLNL) is located on a one-square-mile site in Livermore, California, with a larger (10-square mile) remote explosives testing site (Site 300) situated 18 miles east of the main Livermore site.

The LLNL has a primary role in the Department of Energy/National Nuclear Security Administration (DOE/NNSA) mission special capabilities, required for stockpile stewardship and nonproliferation activities as well as homeland security, to meet enduring national needs in conventional defense, energy, environment, biosciences, and basic science, as well as enhancing the competencies needed for the national security mission. The site is aligned with the nuclear security enterprise transformation activities, which includes eliminating quantities of special nuclear materials from the Laboratory, and

establishing shared user facilities to more efficiently maintain experimental capabilities such as the National Ignition Facility (NIF).

ACTIVITIES:

Directed Stockpile Work (DSW)
The Lawrence Livermore National Laboratory (LLNL) is responsible for four enduring weapons systems: the W62, W80, B83, and W87; and the Life Extension Programs (LEP), as well as weapon system assessments, and certification and stockpile support. The LEP and enduring systems directly support weapons systems, while the Stockpile Services contains activities that support multiple weapons systems, including, plutonium, High Energy Density/Above Ground Experiment (HED/AGEX) experiments, Nuclear Safety Research & Development (R&D), surveillance management and subject matter experts, container design, assessment and certification, and weapons response support to the plants.

The LLNL is tasked with supporting continuing efforts to examine how the B61 Phase 6.2/6.2A study can address issues of safety, security and long-term reliability of the nation's nuclear deterrent. The study will provide options to address aging, reliability, surety improvements, and the consolidation of numerous modifications.

Science Campaign
The Science Campaign develops the tools and methodology to assess and certify the safety, reliability, and performance of the stockpile systems. These tools and methodology also support ongoing activities in LEPs, Significant Finding Investigations (SFI), and Laboratory-to-Laboratory Peer Reviews. The Science subprogram activities are:

- Advanced Certification: Initiated in FY 2008, Advanced Certification will continue to review, evaluate and implement key recommendations from the JASON review of RRW regarding approaches to establishing an accredited warhead certification plan, without nuclear testing, in an era where changes to nuclear components will occur due to aging or design concerns;

- Primary Assessment Technologies: As the Quantification of Margins and Uncertainty (QMU) tools and methodology are validated, they will be used in assessment work required to support DSW activities. Primary assessment also designs the experimental program that supports primary assessment and certification, and validates the Advanced Simulation and Computing (ASC) codes and the physics-based models that support QMU development and application. Using the QMU methodology, the laboratories will continue to identify and quantify technical areas with the largest uncertainties and impact to stockpile performance, and focus future efforts to reduce these uncertainties and quantify margins. Two major LLNL-specific products of these efforts are program plans for the LLNL Hydrotest Program and Plutonium Experiments program. These plans are coordinated with Los Alamos National Laboratory (LANL) in the National Hydrotest Plan and the National Primary Assessment Plan. Another major LLNL activity is the development of the project for application to equation of state characterization at very high pressures. This project will conduct a series of isentropic compression experiments (ICEs) that are driven by a High Explosive Pulsed

Power (HEPP) system. Also, LLNL will continue efforts on the National Ignition Facility (NIF) experiments;

- Dynamic Materials Properties: The LLNL work in this subprogram extends key experimental capabilities, data analysis, and materials models (used by both the Primary Assessment Technologies and Secondary Assessment Technologies subprograms). The focus is the experimental activities required to support the development of accurate, predictive, physics-based models of materials properties and behavior under relevant conditions. The development of such models and subsequent code insertion is supported through the closely coordinated ASC Physics and Engineering Models subprogram. This activity supports experiments and data analysis at U1A and the Joint Actinide Shock Physics Experimental Research (JASPER) Facility, and uses a wide range of other experimental tools to create conditions of static and dynamic high pressure and temperature and enables investigations of the dynamic response of materials under ultra-high-pressure conditions of shock loading;

- Advanced Radiography: The scope of this subprogram activity is to improve the capability to experimentally infer the integral performance of the mock primaries. This supports evaluation of the margins and uncertainties for the continuing certification of reliability and safety of the stockpile. Radiographic hydrotest data are critical to weapon programs, including the current LEPs, and the development of modern baselines for all weapon systems; and

- Secondary Assessment Technologies: The Secondary Assessment Technologies subprogram develops the tools and capabilities needed to understand the factors that control secondary yield and then applies these tools to reduce uncertainties in secondary performance. These activities support assessments of the safety, reliability, and performance of stockpile weapons, including ongoing activities in LEPs and Significant Finding Investigations (SFIs). As these tools and methodology are validated, they, along with simulation and computing capabilities, will be delivered to the DSW Program for assessments required to support directed stockpile activities at LLNL. In FY 2011, LLNL will continue to develop high energy density physics platforms of ICF facilities in order to focus on increasing our understanding of secondary performance and developing a more complete understanding of stockpile weapons. Using QMU methodology, LLNL will continue to identify and quantify technical areas with the largest uncertainties and impact to stockpile performance, and focus future efforts on reducing uncertainties and quantifying margins.

Engineering Campaign

The Engineering Campaign activity provides the nuclear security enterprise with modern tools and capabilities in engineering sciences and technologies to ensure the safety, security, reliability, and performance of the current and future U.S. nuclear weapons stockpile, and a sustained basis for stockpile certification. The LLNL portion of the Engineering Campaign supports all four subprograms: Enhanced Surety, Weapon Systems Engineering Assessment Technology, Nuclear Survivability and Enhanced Surveillance.

Readiness Campaign
The LLNL supports the following Readiness Campaign subprograms:

- Advanced Design and Production Technologies (ADAPT) examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost-effective lean processes; shortened cycle times; built-in quality and acceptance; closer integration of activities across the nuclear security enterprise; a more productive workforce; and agile processes that enhance responsiveness to future national security needs.

- High explosives and Weapons Operations (HEWO) develops and deploys technology-based solutions that resolve capability, infrastructure, workforce, and facility issues and achieve and maintain production readiness for Directed Stockpile Work programs. The HEWO is the vehicle to implement technologies demonstrated by other programs. It provides the equipment, infrastructure, and workforce required, and provides operational support for capital facility projects needed to accommodate new capabilities. In addition, LLNL supports the development of capabilities primarily deployed at the Pantex Plant.

- Nonnuclear Readiness provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers. In addition, LLNL primarily supports the development of technologies and capabilities that are deployed at the KCP and SNL.

Advanced Simulation and Computing (ASC) Campaign
In FY 2011, LLNL ASC activities will focus on three major areas:

- maintaining a world-class, national supercomputing user facility that enables reliable and responsive computer simulations throughout the laboratory complex;

- development and application of simulation tools for annual assessment, LEPs, SFIs and the mission priorities of the Stockpile Stewardship Program (SSP), and

- apply ASC capabilities to national nuclear security mission needs including the NEST, warhead dismantlement, nuclear attribution, effects and emerging threats.

Also, LLNL will continue its leadership in the deployment of Tri-laboratory Productivity On-Demand (TriPoD) capabilities on all newly procured capacity clusters enabling a seamless ASC user environment for capacity computing. The ASC Campaign at LLNL will pursue forward looking investments in Sequoia, a computing platform that will perform the large number of demanding simulations needed for quantification of simulation uncertainties, to be delivered in FY 2011. Also in FY 2011, LLNL will continue to develop, implement, and apply a suite of physics-based models and high-fidelity databases to enable predictive simulation of the initial conditions for primary performance.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
With the completion of NIF construction and successful demonstration of over 1MJ of laser energy in an ignition pulse, the ICF activity at LLNL is focused on the commissioning of the NIF as a laboratory experimental facility and its use for ignition and other high energy density physics experiments in support of the SSP. The LLNL is responsible for both the experimental commissioning and operation of the NIF and for oversight of the National Ignition Campaign (NIC), the integrated national effort to demonstrate ignition at NIF. Also, LLNL coordinates construction and installation of diagnostics and other experimental equipment required for the NIF weapons mission and for use by the broader user community.

The experimental efforts to support ignition, other weapons science, and broader scientific goals began in the 3rd quarter of 2009. A multi-site milestone led by LLNL stipulates execution of the first NIF ignition experiments by the end of FY 2010. The NIF ignition experiments will provide a means to investigate thermonuclear burn related issues central to assessment of the legacy and evolving nuclear stockpile. Ignition and other experiments in areas such as radiation flow, hydrodynamics, and material properties support ongoing stockpile assessment via the quantification of margins and uncertainties methodology. Approximately 15 percent of NIF experiments will be made available to the basic science community and other users external to the NNSA. The LLNL effort also executes high energy density physics experiments in support of the SSP at the University of Rochester Laboratory for Laser Energetics (OMEGA), the Z Machine at Sandia National Laboratories and other facilities, and develops many of the advanced targets required to support these experiments.

Readiness in Technical Base and Facilities (RTBF)
The Stockpile Stewardship Program at LLNL relies heavily on a wide variety of experimental, computational, fabrication, and special materials-handling facilities, and related support facilities and infrastructure to accomplish the objectives and milestones described in the Campaign and DSW program and implementation plans. Of these "Stockpile Stewardship Mission-Essential Facilities," the subset of direct, programmatic facilities and technical base (i.e., "capabilities"), that are in part or fully direct-funded through the RTBF program include the Nuclear Materials Technology Program (NMTP) facilities (Superblock), the light gas guns (B341), the High Explosive Applications Facility (HEAF), the open air firing sites and Contained Firing Facility (CFF) at Site 300, and the Engineering test facilities at Site 300.

Nuclear Counterterrorism Incident Response
The NCTIR activities at LLNL include assisting in operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents. The LLNL deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. The LLNL is an active participant in the NNSA Nuclear Emergency Support Team (NEST), which can respond to any type of emergency involving radioactive or nuclear materials in the U.S. or abroad. Moreover, LLNL supports the National Technical Nuclear Forensics (NTNF) and Stabilization Operations programs, which will continue through the planning period. In addition, LLNL provides research and support to the Office of Emergency Operations with unique expertise in supporting the Office of Nuclear Counterterrorism as well as operation of the National Atmospheric Release Advisory Center, (NARAC). This facility provides tools

and services for atmospheric plume predictions to the federal government, that map the probable spread of hazardous material accidentally or intentionally released into the atmosphere.

Facilities and Infrastructure Recapitalization Program (FIRP)
In FY 2011, FIRP provides for the recapitalization of aging facilities and infrastructure at the LLNL to assure that the quality of the infrastructure keeps pace with the Laboratory's scientific mission requirements. The FIRP funds have stabilized LLNL's deferred maintenance to a level consistent with industry standards.

In FY 2011, the recapitalization component of FIRP will continue to fund high-priority projects that restore and rehabilitate mission critical facilities and infrastructure, through the reduction of deferred maintenance, which will support transformation of the nuclear security enterprise. Projects in FY 2011 will continue to rehabilitate or replace aged and deteriorated equipment and roofs. Specific focus will be on the replacement and upgrades of Heating, Ventilation and Air Conditioning (HVAC) systems, and low voltage electrical components. Mission critical buildings will be rehabilitated for adaptive reuse through the replacement of lighting, paint, carpet and tiles, in addition to the HVAC and electrical upgrades. High-voltage electrical distribution cables and components will be replaced and reconfigured to support changing demands in the East and Central portion of the laboratory. In addition to the execution of Recapitalization projects, the FY 2011 President's Budget Request includes planning for the FY 2012 Recapitalization projects and general replacement/upgrades such as motor control centers, transformers, sectionalizing switches, panel boards, heat pumps, fans and generators in mission critical facilities. The Laboratory will continue its participation in the Enterprise's Roof Asset Management Program (RAMP).

Site Stewardship
In FY 2011, Site Stewardship efforts will be directed toward Environmental Projects and Operations Long Term Stewardship (LTS) activities required for ensuring environmental regulatory compliance; reducing and consolidating Special Nuclear Material (SNM) inventories; and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The LTS activities at LLNL are post-remediation activities to assure regulatory compliance and continued protection of public health and the environment. The LTS activities began at LLNL-Main Site in FY 2007 and in FY 2009 at LLNL-Site 300 after the completion of legacy environmental cleanup activities. In FY 2011, LTS activities include, but are not limited to program management, operation and maintenance of contaminated ground water treatment systems; inspection and maintenance of landfill caps (Site 300 only); soil vapor and groundwater monitoring, well field operations and maintenance and modeling; and access controls.

Nuclear Materials Integration (NMI)
The NMI Program will continue efforts to remove all security category I/II materials from LLNL by the end of FY 2012. By the end of FY 2011, more than 90 percent of the material will have been processed, packaged and shipped off site.

Energy Modernization and Investment Program (EMIP)
The FY 2011 EMIP supports priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's

energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The LLNL Defense Nuclear Security program provides protection measures consistent with the requirements documented in its Site Safeguards and Security Plan (SSSP). In FY 2011, the Program will continue to focus on preparation of movement of category I/II SNM from the SuperBlock to other NNSA/DOE sites. To meet the 2012 de-inventory goal set by Defense Programs, LLNL will also continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets as appropriate; (b) is predicated on Executive Orders; national standards; laws and regulations; and Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; and ensures alignment of the program with strategic plans and relevant plans of the CIO.

In FY 2011, the LLNL cyber security program will continue implementation of a comprehensive self-assessment program, effective risk management program and identify cyber security vulnerabilities and threats on the unclassified computing infrastructure. Additionally, in FY 2011, the program will implement networking and system standards complex-wide.

Nonproliferation and Verification Research and Development
The Nonproliferation and Verification Research and Development program develops technology to improve national capabilities for detecting nuclear proliferation. At LLNL the program focuses on improvements to geographic models to locate and identify regional seismic events to support nuclear detonation detection assessments, remote sensing techniques for standoff detection and identification of nuclear activities, radiation sensor technology, and various other exploratory technologies. The program is the inter-laboratory coordinator on testing optical remote sensing techniques for WMD proliferation detection/characterization; and is a recognized national leader in developing hyperspectral instrumentation for standoff detection of gases and other materials over denied areas.

International Nuclear Materials Protection and Cooperation (INMP&C)
The INMP&C program provides operational experience in civilian and defense nuclear material protection, control, and accounting (MPC&A) in combination with institutional expertise in nuclear energy, international and domestic safeguards, and the assessment of the proliferation impacts on U.S. national security of foreign nuclear energy programs. The LLNL provides security and engineering expertise in support of international MPC&A activities at several Russian Navy, Civilian, and Rosatom Weapons Complex sites. In FY 2011, MPC&A will continue to support sustainability and infrastructure projects for Ministry of Defense, Rosatom, Rostekhnadzor, Federal Inspectonate for Nuclear and Radiation Safety, Ministry of Transportation, and the Russian Shipbuilding Agency with efforts in regulatory development and implementation and a national accounting system.

Nonproliferation and International Security (NIS)
The NIS program provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, Highly Enriched Uranium (HEU) Purchase Agreement Transparency Program policy implementation and development, Plutonium Production Reactor Agreement implementation, and the development of nuclear transparency measures. Also, NIS supports USG efforts to plan/prepare for denuclearization and verification activities in the Democratic People's Republic of Korea (DPRK) and other proliferating states. In addition, NIS assists technical analysis and technology development, and assists regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. The NIS program provides reviews of export controlled equipment, materials and software, and foreign customers, and analytical tools and technical references for use in developing recommendations on U.S. export licensing applications, interdictions, international safeguards, physical protection, technology assessments, policy support and nonproliferation assessments, multilateral outreach through support efforts for policymaking and negotiations regarding various nonproliferation control regimes, and international cooperation, primarily in the Former Soviet Union but increasingly in transit states as well. The NIS program supports development of safeguards, tools and methodologies such as IAEA environmental sampling and spent fuel monitoring techniques, as well as training to foreign nationals as needed. The program also provides technical support on nuclear safeguards, safety, and security to developing countries interested in nuclear power under the nuclear infrastructure development efforts. The program provides instructors, curriculum development and other support for export control outreach as well as analytical services in support of border security capacity building outreach efforts and technical assistance support for nuclear forensics engagement program. The NIS program further participates in projects that engage former WMD scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific business communities.

Global Threat Reduction Initiative (GTRI)
The LLNL provides significant technical, scientific, and management expertise to two of the three key subprograms of GTRI–Remove and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

LOS ALAMOS NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	344,931	295,175	428,069
Science Campaign	117,366	115,437	125,050
Engineering Campaign	26,211	24,690	24,200
Inertial Confinement Fusion Ignition and High Yield Campaign	12,559	15,000	17,000
Advanced Simulation and Computing Campaign	186,916	202,356	184,639
Readiness Campaign	7,807	2,150	8,530
Readiness in Technical Base and Facilities	456,975	460,483	587,734
Nuclear Counterterrorism Incident Response	36,985	38,835	43,670
Facilities and Infrastructure Recapitalization Program	26,613	15,616	15,114
Site Stewardship	0	3,000	19,230
Defense Nuclear Security	149,823	108,000	157,000
Cyber Security	17,727	18,427	19,927
Science , Technology and Engineering Capability	9,750	0	6,675
Subtotal Weapons Activities	**1,393,663**	**1,299,169**	**1,636,838**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	88,577	77,125	74,431
Nonproliferation and International Security	25,330	33,068	26,331
International Nuclear Materials Protection and Cooperation	33,410	53,554	49,783
Fissile Materials Disposition	0	0	42,000
Global Threat Reduction Initiative	22,250	25,124	40,992
Subtotal Defense Nuclear Nonproliferation	**169,567**	**188,871**	**233,537**
Total, NNSA	**1,563,230**	**1,488,040**	**1,870,375**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	390,913	397,367	406,398	413,848
Science Campaign	134,683	140,910	139,960	134,039
Engineering Campaign	24,600	22,572	25,350	25,601
Inertial Confinement Fusion Ignition and High Yield Campaign	20,000	20,000	24,000	25,000
Advanced Simulation and Computing Campaign	169,332	168,600	169,872	169,148
Readiness in Technical Base and Facilities	694,533	668,879	698,255	699,654
Nuclear Counterterrorism Incident Response	40,494	43,008	46,897	47,364
Facilities and Infrastructure Recapitalization Program	15,114	15,114	0	0
Site Stewardship	7,944	9,616	22,897	29,225
Defense Nuclear Security	136,752	105,200	105,300	105,400
Cyber Security	17,927	18,927	19,427	19,427
Subtotal Weapons Activities	**1,652,292**	**1,610,193**	**1,658,356**	**1,668,706**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	100,790	100,784	103,523	109,660
Nonproliferation and International Security	27,202	27,909	28,684	30,690
International Nuclear Materials Protection and Cooperation	51,756	63,142	63,079	69,852
Fissile Materials Disposition	38,000	45,000	45,000	45,000
Global Threat Reduction Initiative	51,220	53,345	51,783	56,670
Subtotal Defense Nuclear Nonproliferation	**268,968**	**290,180**	**292,069**	**311,872**
Total, NNSA	**1,921,260**	**1,900,373**	**1,950,425**	**1,980,578**

Congressional Items of Interest: The design and installation of equipment activities continue at CMRR along with the design of the Nuclear Facility.

Major Changes or Shifts: The increase at Los Alamos National Laboratory (LANL) is associated with support for the nuclear weapons stockpile, and major construction activity for plutonium capabilities and security upgrades.

Site Description

INTRODUCTION:

The LANL is located on approximately 25,000 acres, adjacent to the town of Los Alamos, New Mexico.

The LANL is a multi-program laboratory, supporting research and a limited production mission predominantly in national security. The laboratory also supports environmental restoration, waste management, general science programs, homeland security, and work for others.

The site is aligned with nuclear security enterprise transformation activities which include: (1) reducing facility square footage required for weapons activities, (2) establishing shared user facilities to more cost-effectively manage expensive experimental computational and production capabilities (3) ensuring laboratory plutonium space efficiently supports interim pit manufacturing and Enterprise-wide special nuclear materials consolidation, and (4) construction of the Chemistry and Metallurgy Research Replacement Nuclear Facility Project (CMRR-NR), and (5) demonstrating organizational leadership required to achieve a more integrated, interdependent nuclear security enterprise.

ACTIVITIES:

Directed Stockpile Work (DSW)
The LANL is responsible for four enduring weapons systems: the B61, W76, W78, and W88; and supports the Life Extension Program (LEP), weapon system assessments, and certification and stockpile support. In addition, LANL activities include the design, qualification, production support for hardware manufacturing, surveillance and assessment of safety, reliability and performance of the bombs and warheads, and the Production Agency for manufacturing mission assigned components for all weapon systems. A portion of the LANL activities support the W76-1 Life Extension Programs (LEP). Also, LANL is tasked with supporting the B61 Phase 6.2/6.2A study, technical maturation for future LEP, and experimental capabilities (hydrotests).

Science Campaign
In its historic role as a nuclear weapons design laboratory, Los Alamos continues to have a robust science effort supporting science-based stockpile stewardship. A large portion of that effort is reflected in the work supported by the Science Campaign. The Science Campaign subprogram activities are:

- Advanced Certification - will continue efforts begun in FY 2008 to review, evaluate, and implement key recommendations from the JASON review of RRW regarding approaches to establishing an accredited warhead certification plan, without nuclear testing, in an era where changes to nuclear components will occur due to aging or design concerns;

- Primary Assessment Technologies - activities support the science (including theory, experiment, simulation, and analysis) necessary to develop and improve a validated capability for predicting and certifying primary performance, safety, and Quantification of Margins and Uncertainties (QMU) without additional nuclear tests. Approximately half of the effort for this subprogram is directed towards boost physics;

- Dynamic Materials Properties - develops physics-based, experimentally validated data and models of all stockpile materials, at a level of accuracy required by the Primary and Secondary Assessment Technologies and Engineering Campaign. The Dynamic Materials Properties is focused on the behavior of high explosives, plutonium, uranium, and other metals. Work with DoD under the DoD-DOE joint munitions program is conducted principally under Dynamic Materials Properties;

- Advanced Radiography - supports development of technologies for three-dimensional imagery of imploding mock primaries, with sufficient time and space resolution to help resolve uncertainties in primary performance. With the completion of the Dual Axis Radiographic Hydrodynamic Test

(DARHT) 2nd axis refurbishment, the focus has turned to optimization of radiographic tools and development of new technologies; and

- Secondary Assessment Technologies - develops the tools and capabilities required to understand the factors that control secondary yield and to use these tools to reduce uncertainties in secondary performance. These activities support assessments of the safety, reliability, and performance of the LANL stockpile weapons, including ongoing activities in LEPs, and Significant Findings Investigation (SFIs). Along with advanced simulation and computing capabilities, as these tools and methodology are validated, they will be delivered to the DSW program for usage in assessment work required to support directed stockpile activities at LANL. In FY 2011, LANL will develop high energy density physics platforms of Inertial Confinement Fusion (ICF) facilities to focus on increased understanding of stockpile weapons. Using Quantification in Margins and Uncertainties (QMU) methodology, LANL will identify and quantify technical areas with largest uncertainties and impact to stockpile performance and focus efforts to reduce uncertainties and quantify margins.

Engineering Campaign
As the design agency for the stockpile, Los Alamos is focused on engineering-based development in support of the enduring stockpile. Also LANL provides the nuclear security enterprise with modern tools and capabilities in engineering sciences and technologies to ensure the safety, security, reliability, and performance of the current and future U.S. nuclear weapons stockpile and a sustained basis for stockpile certification. Moreover, LANL supports all four of the Engineering Campaign subprogram activities: Enhanced Surety, Weapon System Engineering Assessment Technology, Nuclear Survivability and Enhanced Surveillance.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
The ICF Campaign provides quantitative experimental data (in the High Energy Density (HED) regime) and the physical underpinning needed for validation of advanced modeling required in nuclear weapons certification. It participates in the pursuit of laboratory ignition through utilizing unique Los Alamos scientific and technological capabilities. Also, LANL is a key contributor to the design, construction, and implementation of diagnostics for the NIF.

Los Alamos' major emphasis is to support the National Ignition Campaign developing theoretical target designs and advanced ignition diagnostics for the experiments at the NIF, Z and other HED facilities across the weapons enterprise.

Advanced Simulation and Computing (ASC) Campaign
In FY 2011, the national ASC Campaign at LANL will focus on three major areas:

- Integrated Codes – including maintaining legacy codes, research and development of replacement components;

- Computational Systems and Software Environment (CSSE) to protect the investment in science-based simulation capabilities; and

- Facility Operations and user support - to move toward a more standard user environment; and provide system management of the ASC Campaign computers and networks.

As part of operations at the Metropolis Center, the ASC Campaign at LANL will continue maintenance of Roadrunner, operate computing scalable units in support of weapons certification and assessment, and deploy a new capability-class computing platform.

An area of development is integrated code development where LANL will continue to move computational science capabilities onto the Roadrunner platform. This process allows the weapons program to take advantage of the advanced hybrid architecture by applying this leading edge technology to issues of national security.

Readiness Campaign
The Readiness Campaign examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost-effective lean processes; shortened cycle times; built-in quality and acceptance; closer integration of activities across the nuclear security enterprise; a more productive workforce; and agile processes that enhance responsiveness to future national security needs.

Readiness in Technical Base and Facilities (RTBF)
The RTBF program supports a broad base of activities and facilities that enable the laboratory to meet its mission obligations to the NNSA and the nation. The LANL RTBF mission is to ensure that the site is implementing the technologies and methods necessary to make construction, operation, and maintenance of Defense Program (DP) facilities safe, secure, compliant, and cost effective. The objective is to ensure that DP facilities and infrastructure are available to conduct the scientific, computational, engineering, and manufacturing activities of the Stockpile Stewardship Program. The LANL RTBF program will maintain facilities and technologies in an appropriate condition, such that they are not limiting factors in the accomplishment of the DP mission. The LANL Operations of Facilities activity includes the DP share of the cost to operate and maintain DP-owned programmatic facilities in mission capable mode, a state of readiness in which each facility is prepared to execute programmatic tasks identified in the subprograms. At LANL, DP direct-funded facilities include facilities supporting weapons engineering, tritium, weapons physics (DARHT, etc.), accelerator work at Los Alamos Neutron Science Center (LANSCE), waste management, nuclear materials research and manufacturing (Plutonium Facility (TA-55) and Chemistry and Metallurgical Research (CMR)) beryllium technology, and machining and fabrication shops. Mission capable work scope includes conventional facility management, infrastructure support, operation and maintenance of real property and special equipment, and compliance with security, environmental, safety and health requirements. Appropriate support for the long term viability of LANL's plutonium facilities (TA-55 and CMR) and waste processing activities requires incremental funding from users, both DP and non-DP users. In addition, LANL will continue to implement and administer cost recovery models in these areas in FY 2011, and begin development of a full cost recovery model to support upcoming RLUOB operations.

The RTBF activity also includes infrastructure support: specific project activities to support consolidation and footprint reduction and out-year risk and/or cost redirection strategies, Line Item Other Project Costs (OPCs), general plant projects construction, seismic studies, authorization basis, beryllium rule, and program management. Also, the RTBF activity includes landlord costs associated with the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo.

Program activities in support of nuclear materials recycle and recovery operations are also contained within RTBF. The LANL support within this program activity is central to the material consolidation activities across the Enterprise.

RTBF Construction
There are a number of line item projects in RTBF at LANL, which are based on a key element of long-range planning, specifically, the Integrated Nuclear Planning (INP). The INP project is a high-level effort to plan the future nuclear facilities within TA-55. The INP presently includes the integration of the Chemistry and Metallurgy Research Replacement (CMRR) project; infrastructure upgrades at TA-55, proposed safeguards and security upgrades; and two new waste management facilities for treatment of radiological liquid waste and processing of transuranic solid waste. These new and refurbished facilities provide a long-term, flexible infrastructure to support current and future plutonium missions.

Facilities and Infrastructure Recapitalization Program (FIRP)
Recapitalization projects provide improvements to mission facilities and infrastructure that support transformation of the enterprise. These improvements are accomplished by reducing legacy deferred maintenance resulting in both improved worker safety and facility reliability. Mission facilities and infrastructure improvements directly support Defense Programs (DP) activities and priorities within Directed Stockpile Work and Stockpile Stewardship Campaigns.

In FY 2011, LANL plans upgrades to system reliability through correction of CMR and TA-55 electrical and mechanical system deficiencies and Rad Liquid Waste Collection Vault repairs. Additional efforts will include, but not be limited to, upgrades to electrical and mechanical systems within TA-16 and TA-53. Further, LANL will also continue to participate in the Enterprise's Roof Asset Management Program (RAMP), achieving both improved operating cost efficiencies and life extension of LANL's roofing assets.

Site Stewardship
In FY 2011, Site Stewardship efforts will be directed toward reducing/consolidating Special Nuclear Material (SNM) inventories and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The FY 2011 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidance/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution. In FY 2011, the Sanitary Effluent Reclamation Facility (SERF) expansion at LANL will upgrade 15 permitted waste water discharge points to meet new EPA limits and reduce total site water usage by over 114 million gallons per year.

Nuclear Counterterrorism Incident Response
In FY 2011, NCTIR activities at LANL will continue to assist in operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents. LANL deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments

to effectively address current and projected threats. The LANL is an active participant in the NNSA Nuclear Emergency Support Team (NEST), which can respond to any type of emergency involving radioactive or nuclear materials in the U.S. or abroad.

Support for the National Technical Nuclear Forensics (NTNF) and Stabilization Operations program will continue through the planning period. In addition, LANL will continue to provide research and support to the Office of Emergency Operations with unique expertise in supporting the Office of Nuclear Counterterrorism.

Defense Nuclear Security
The LANL Defense Nuclear Security program provides laboratory protection measures consistent with requirements documented in its Site Safeguards and Security Plan (SSSP). During FY 2011, the laboratory will continue the Nuclear Materials Safeguards and Security Upgrade Project (NMSSUP) Phase II to upgrade access control systems begun in FY 2005. Furthermore, LANL will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives, and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.

In FY 2011, LANL will continue to evaluate the unique risk management process for authorizing foreign national access to unclassified computers and networks, and any sensitive information. The LANL will also continue to manage wireless computer technology site-wide. Also, LANL will focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Nonproliferation and Verification Research and Development
The Nonproliferation and Verification Research and Development program at LANL develops technology to improve national capabilities for detecting nuclear proliferation. The program designs, builds, tests, and conducts full-lifecycle performance assessment of a suite of satellite payloads for nuclear detonation detection. This program conducts R&D to improve analytic tools and sensors to discriminate earthquakes and industrial activities from nuclear detonations. The program develops new and innovative remote sensing technologies, radiation detection technologies, and other detection and analysis capabilities supporting nuclear fuel cycle monitoring missions, nuclear forensics missions, and other proliferation detection technology. The program is a recognized national leader in developing hyperspectral analytical models for standoff detection of gases and other materials over denied areas.

Global Threat Reduction Initiative (GTRI)
In FY 2011, LANL will continue to provide significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

International Nuclear Materials Protection and Cooperation (INMP&C)
The Materials Protection Cooperation and Accounting (MPC&A) program provides a wealth of expertise through material accounting methodologies, specialized material verification techniques, project and construction management for storage facilities, and language specialization. This program has designed and developed computerized accounting systems that are currently operating at several Russian enterprises. The NNSA is working with LANL in the use of material controls, particularly with the active-nonviolent insider threats when completing MPC&A upgrades at all Russian enterprises. Furthermore, program laboratory experts provide technical solutions to Second Line of Defense (SLD) Core and Megaports programs including scientific analysis and testing of radiation detection systems. In addition, the program supports installation of radiation detection equipment at border crossings and airports/seaports within both Russia and the Former Soviet Union States under the SLD Core Program and at major container shipping terminals within the global maritime cargo transportation system under the SLD's Megaports Initiative.

Nonproliferation and International Security (NIS)
The NIS program provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program and development of nuclear transparency measures. The NIS supports operation of the Blend Down Monitoring System in the HEU Transparency Program. The NIS supports USG efforts to prepare for denuclearization and verification efforts in North Korea and other proliferating countries, as well as safeguards technology development activities through the Next Generation Safeguards Initiative and the U.S. Support Program to IAEA Safeguards. The Program supports export control work with operation of the Proliferation Information Network System (PINS), reviews of export controlled equipment, materials and software, and analytical tools and technical references to use in developing recommendations on U.S. export license applications, policy support in the development of nuclear transparency measures, fuel cycle analysis and international safeguards technology assessments, and policy support and nonproliferation assessments in the areas of international regimes and regional security. The NIS program provides instructors curriculum development and other support for export control outreach and supports international safeguards efforts, especially development of safeguards technologies and methodologies for advanced fuel cycle facilities such as those in Japan, the Republic of Korea, Brazil and France. In addition, the NIS program helps create business opportunities for displaced weapons workers and engages former WMD scientists and

engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific and business communities.

Fissile Materials Disposition

The LANL is the lead for the development of U.S. weapons pit disassembly and conversion technology. The Advanced Recovery and Integrated Extraction System (ARIES) located at LANL serves as the prototype demonstration project for the production-scale pit disassembly and conversion capability. Furthermore, ARIES will be used to convert 2 metric tons of pit plutonium metal to oxide for use in the initial phase of operations of the Mixed Oxide Fuel Fabrication Facility.

NEVADA TEST SITE

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	44,117	48,443	37,901
Science Campaign	31,325	23,841	28,547
Inertial Confinement Fusion Ignition and High Yield Campaign	3,095	3,000	0
Advanced Simulation and Computing Campaign	50	75	0
Readiness Campaign	492	500	0
Readiness in Technical Base and Facilities	132,034	109,341	102,892
Secure Transportation Asset	177	6,279	5,917
Nuclear Counterterrorism Incident Response	44,007	45,208	46,195
Facilities and Infrastructure Recapitalization Program	13,675	6,354	6,582
Site Stewardship	0	0	535
Science, Technology and Engineering Capability	0	0	100
Congressionally Directed Projects	475	0	0
Subtotal Weapons Activities	**269,447**	**243,041**	**228,669**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	10,538	19,093	63,426
International Nuclear Materials Protection and Cooperation	100	0	0
Fissile Materials Disposition	600	0	0
Global Threat Reduction Initiative	7,574	3,025	43,144
Subtotal Defense Nuclear Nonproliferation	**18,812**	**22,118**	**106,570**
Total, NNSA	**288,259**	**265,159**	**335,239**

NOTE: Funding for Defense Nuclear Security and Cyber Security is provided through the Nevada Site Office.

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	21,719	25,029	25,208	26,967
Science Campaign	31,899	34,126	33,948	31,546
Readiness in Technical Base and Facilities	89,027	89,031	94,585	105,942
Secure Transportation Asset	5,863	5,788	5,719	5,933
Nuclear Counterterrorism Incident Response	46,395	45,914	46,246	47,000
Facilities and Infrastructure Recapitalization Program	6,582	6,582	0	0
Site Stewardship	1,978	2,247	7,559	10,090
Subtotal Weapons Activities	**203,463**	**208,717**	**213,265**	**227,478**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	7,971	8,151	8,956	9,762
Global Threat Reduction Initiative	48,809	55,827	66,514	72,706
Subtotal Defense Nuclear Nonproliferation	**56,780**	**63,978**	**75,470**	**82,468**
Total, NNSA	**260,243**	**272,695**	**288,735**	**309,946**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Nevada Test Site (NTS) is located 65 miles northwest of Las Vegas and is approximately 1,375 square miles. The NTS is surrounded by the Department of Defense Nevada Test and Training Ranges and unpopulated land controlled by the U.S. Bureau of Land Management. In addition to the NTS, the National Nuclear Security Administration (NNSA) Nevada Site Office assets include facilities in North Las Vegas; Nellis Air Force Base (AFB), NV; Andrews AFB, MD; Livermore, CA; Los Alamos, NM; and Santa Barbara, CA.

The NTS is aligned with complex transformation activities for the nuclear security enterprise. The NTS supports the consolidation of Category I/II quantities of special nuclear materials from other sites and long-term consolidation of hydrodynamic testing and other high-hazard experiments. The current Environmental Impact Statement and the associated Record of Decision allow for the execution of a variety of complex and unique projects and experiments, while ensuring the protection of workers, the public and the environment. The existing assets of the NTS represent a unique and indispensable extension of the National Weapons Laboratories experimental capabilities, and are essential to the NNSA Office of Defense Programs and the nation's ability to return to underground nuclear testing, should the President direct it.

ACTIVITIES:

Directed Stockpile Work (DSW)

The NTS scope falls within the DSW Stockpile Services activities, which support multiple weapons systems, studies, and other Research and Development (R&D) activities to support future stockpile requirements. The NTS primarily supports DSW by developing and executing Equation of State (EOS) experiments and other highly diagnosed dynamic experiments. The work scope includes support for dynamic plutonium experiments and high explosive pulse power experiments, test bed construction development and design, and procurement and operation of diagnostics systems. Also included are diagnostic development activities required to support future experiments, including research and development, control systems, data acquisition, and data analysis.

The NTS will continue to support the Lawrence Livermore National Laboratory (LLNL) in defining and executing a series of High Explosive Pulse Power (HEPP) experiments; Los Alamos National Laboratory (LANL) in fielding the large bore powder gun experiments at U1A and the "Barolo" series of dynamic plutonium experiments. The NTS will provide the Sandia National Laboratories (SNL) technical input, analysis and interpretation of time-resolved experiments fielded at NTS as part of the National Hydrotest Plan.

Science Campaign

The NTS participates in the following Science Campaign activities:

- Primary Assessment Technologies - conducts scientific experiments, which support the experimental study and improvement of material models with emphasis on plutonium. NTS will continue to assist LLNL in defining and executing a series of High Explosive Pulse Power (HEPP) experiments as part of the Phoenix project. NTS provides support in the area of testbed engineering and construction, diagnostics fielding, controls, and data reduction for the DPEs. In FY 2011, NTS will continue to support both LLNL and LANL reanalysis of underground test (UGT) data using modern statistical analysis.

- Dynamic Materials Properties - NTS supports the laboratory subprograms by developing diagnostics and fielding experiments. In FY 2011, NTS will support dynamic materials experiments data collection at the Special Technologies Laboratory (STL) Boombox. Special Nuclear Material (SNM) experiment series and diagnostic advancements at the Joint Actinide Shock Physics Experimental Research (JASPER) Facility are planned and executed with LLNL. Also, NTS will support dynamic experiments and diagnostic development leveraging gas guns at LANL and large bore powder gun capabilities at U1A. Additionally, NTS will provide support to SNL in experiments (e.g., ICE - EOS experiments on weapon materials), pulsed power source development, and diagnostic advancements (e.g., VISAR, Pyrometry, and X-ray diffraction).

- Advanced Radiography - NTS supports the LANL Dual Axis Radiographic Hydrodynamics Test (DARHT), the proton radiography experiments at the Los Alamos Neutron Science Center (LANSCE), and Brookhaven National Laboratory. In FY 2011, NTS will continue to provide accelerator diagnostics for DARHT II activities, focusing on LANL experiments. The Proton Radiography (pRad) group will support experiments at LANSCE Line C by providing diagnostics

equipment, machined hardware, and personnel for troubleshooting and support during the experiments, conducting image analyses, and providing reports to LANL.

- Secondary Assessment Technology - NTS provides diagnostic development, calibration, fielding, and experiment data collection related to radiation flow studies performed by LLNL and SNL, including advances in optical, x-ray, and neutron detector development. In addition, NTS provides National Institute of Standards and Technology-traceable calibration facilities for radiation-flow diagnostics needed for High Energy Density (HED) physics experiments, the laser at the University of Rochester Laboratory for Laser Energetics (OMEGA) and LLNL lasers in support of LLNL. NTS will also continue to support SNL in core diagnostic support and advanced diagnostics development and characterization on experiments, including x-ray, optical, neutron, other diagnostic-related capabilities, and sources and processes for improving their absolute calibration.

Readiness in Technical Base and Facilities (RTBF)

The NTS RTBF program provides the Stockpile Stewardship Program with the essential physical and operational infrastructure required to conduct the engineering, scientific, and technical activities of the Stockpile Stewardship Program. The objective of the NTS RTBF program is to ensure the correct program-related facilities and activities are maintained in a mission capable state to allow experimental operations to occur in a safe, secure, reliable, and cost effective manner. At the NTS, facilities and activities that are direct-funded are contained in two subprogram elements: Operations of Facilities and Program Readiness. The Operation of Facilities element includes the operation and maintenance of the following NNSA-owned programmatic facilities: Device Assembly Facility (DAF), U1A Complex, JASPER, Control Point Complex, High Explosive Facility, and the North Las Vegas Complex. The Atlas Pulse Power Facility will continue to be maintained in a cold-standby condition. Activities supported under Program Readiness include logistical support to the National Laboratories; support to Other Federal Agencies; Environmental Compliance and Restoration with respect to Defense legacy issues, which includes the Borehole Management Program; and Equipment Revitalization. In FY 2011, Program Readiness also supports the Test Readiness scope of work.

Nuclear Counterterrorism Incident Response

The NCTIR activities at NTS include assisting in the operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents as well as support assistance for any DOE or National emergency. Also, NTS deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. Support for the National Technical Nuclear Forensics (NTNF) program will continue through the planning period.

Facilities and Infrastructure Recapitalization Program (FIRP)

In FY 2011, FIRP activities will emphasize mission facility and infrastructure projects to meet federal and state requirements. Specific to this year's program are upgrading power distribution systems in Area 23 from 4.16kV to 12.47kV. These improvements will provide more reliable power to mission critical facilities. The Nevada Site Office will also continue to participate in the complex-wide Roof Asset Management Program (RAMP), achieving improved cost efficiencies and life extension of NTS's roofing assets.

Site Stewardship
In FY 2011, Site Stewardship efforts will focus on the Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The 2011 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security's physical security program at the Nevada Test Site is administered by the Nevada Site Office. The Defense Nuclear Security program provides site security consistent with requirements documented in its Site Safeguards and Security Plan. In FY 2011, NTS will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The Cyber Security program at the Nevada Test Site is administered through the Nevada Site Office. The Cyber Security program will focus on implementation of the Department of Energy's revitalization plan, which will enable NNSA to respond to its highest priorities and to address current and future risks; unclassified system certification and accreditation for proper documentation of risks and justification of associated operations for systems at all sites; and education and awareness that provides training for federal and contractor personnel to meet expanding skill requirements of cyber security and information environments.

The NTS will continue to maintain effective feedback and improvement mechanisms to identify cyber security vulnerabilities, eradicate them from site networks, and prevent recurrence. The NTS will also focus on improving the efficiency of the program to provide feedback and result-driven risk-based methodologies site-wide. The NTS will implement processes, procedures and technologies to enhance the security infrastructure complex-wide.

Secure Transportation Asset
The NSTec provides management, quality assurance, personnel training, and preventative and corrective maintenance services in support of the Maryland Relay Station (RS). This facility is a vital part of the communications system dedicated to the tracking and safeguarding of STA shipments. Also, NSTec provides utilities, range support, training area support, and grounds and facilities maintenance to meet STA's training needs at the NTS.

Nonproliferation and Verification Research and Development
In FY 2011, focus will on continuing the new testing and evaluation program, which began in FY 2010 at the Nevada Test Site (NTS) to address emerging technical challenges associated with the Administration's nonproliferation objectives. The new capability at NTS will ultimately support U.S. capabilities to monitor international treaties and cooperative agreements, such as the Nuclear Non-Proliferation Treaty (NPT) and the Fissile Material Cutoff Treaty (FMCT).

Global Threat Reduction Initiative (GTRI)

The Nevada Test Site provides significant technical, scientific, and management expertise to two of three key subprograms of GTRI–Remove and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

PANTEX PLANT

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	178,144	177,382	188,981
Engineering Campaign	2,589	3,350	3,300
Advanced Simulation and Computing Campaign	100	165	0
Readiness Campaign	5,133	4,158	2,994
Readiness in Technical Base and Facilities	176,395	179,793	167,601
Secure Transportation Asset	5,276	5,622	5,502
Nuclear Counterterrorism Incident Response	935	982	1,031
Facilities and Infrastructure Recapitalization Program	17,827	12,017	10,482
Site Stewardship	0	8,328	12,345
Environmental Projects and Operations Program/LTS*	7,473	0	0
Defense Nuclear Security	125,397	135,595	133,000
Cyber Security	7,081	7,081	7,081
Subtotal Weapons Activities	**526,350**	**534,473**	**532,317**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	35	30	29
Nonproliferation and International Security	182	203	189
Subtotal Defense Nuclear Nonproliferation	**217**	**233**	**218**
Total, NNSA	**526,567**	**534,706**	**532,535**

* Funding included in Site Stewardship beginning in FY 2010.

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	192,497	182,984	187,637	201,995
Engineering Campaign	3,300	2,904	3,300	3,234
Readiness in Technical Base and Facilities	162,406	133,933	133,181	137,737
Secure Transportation Asset	5,571	5,453	5,519	5,726
Nuclear Counterterrorism Incident Response	1,083	1,137	1,150	1,162
Facilities and Infrastructure Recapitalization Program	10,482	10,482	0	0
Site Stewardship	15,638	16,031	26,693	31,530
Defense Nuclear Security	134,330	135,100	136,500	137,600
Cyber Security	6,927	6,927	6,927	6,927
Subtotal Weapons Activities	**532,234**	**494,951**	**500,907**	**525,911**
Defense Nuclear Nonproliferation				
Nonproliferation and International Security	195	201	206	221
Subtotal Defense Nuclear Nonproliferation	**195**	**201**	**206**	**221**
Total, NNSA	**532,429**	**495,152**	**501,113**	**526,132**

Congressional Items of Interest: Continuing to support dismantlement goals and W76 Full-Production Rates.

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Pantex Plant (Pantex) is situated on 16,000 acres in the Texas Panhandle, approximately 17 miles northeast of Amarillo. Pantex has five primary operational missions: (1) Weapons Assembly, (2) Weapons Disassembly, (3) Weapons Evaluation, (4) High Explosive Research and Development, and (5) Interim Plutonium Pit Storage. The site is also aligned with Complex Transformation activities, which include actions to improve throughput capacity, accelerate dismantlements, and support consolidation of special nuclear materials.

ACTIVITIES:

Directed Stockpile Work (DSW)

The Pantex Plant activities include the assembly/disassembly for nuclear weapons. Pantex supports the Life Extension Program (LEP) disassembly for conversion, production, and Retrofit Evaluation System Test (REST) surveillance schedules, Seamless Safety for the 21st Century (SS-21) projects; stockpile weapon system surveillance (assembly/disassembly), sustained retired systems dismantlement and required production support.

The Pantex Plant stores surplus pits pending shipment to the Los Alamos National Laboratory in support of the Pit Disassembly and Conversion Facility (PDCF). The Pantex Plant also packages and stores surplus pits for future shipment to the Savannah River Site for conversion in the PDC prior to fabrication into mixed-oxide fuel.

Engineering Campaign
Pantex supports the Engineering Campaign through the Enhanced Surveillance subprogram by performing aging studies on explosives and non-nuclear materials and components. These results are then provided to the Design Agencies for incorporation into the aging models. Work is also performed with the Design Agencies to develop and deploy new diagnostics tools for implementation into DSW.

Readiness Campaign
Pantex supports the following Readiness Campaign subprograms.

- Advanced Design and Production Technologies (ADAPT) examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost effective lean processes; shortened cycle times; built-in quality and acceptance; closer integration of activities across the nuclear security enterprise; a more productive workforce; and agile processes that enhance responsiveness to future national security needs.

- High Explosives and Weapons Operations (HEWO) develops and deploys technology-based solutions that resolve capability, infrastructure, workforce, and facility issues and achieve and maintain production readiness for Directed Stockpile Work programs. The HEWO is the vehicle to implement technologies demonstrated by other programs. It provides the equipment, infrastructure, and workforce required, and provides operational support for capital facility projects needed to accommodate new capabilities.

Readiness in Technical Base and Facilities (RTBF)
The RTBF Program provides the physical infrastructure and operational capabilities required to conduct the DSW and Campaign activities. This includes ensuring that facilities are operational, safe, secure, and compliant, and that a defined level of readiness is sustained to perform the current and future Pantex mission. In addition to the RTBF program elements, the companion programs and construction work cooperatively with the RTBF elements and the Facilities and Infrastructure Recapitalization Program.

Secure Transportation Asset (STA)
The B&W Pantex provides facilities and support for the federal agents force at Agent Operations Central Command. The plant operates a Vehicle Maintenance Facility and a Mobile Electronic Maintenance Facility to support convoy operations, including specialized and secure maintenance/repair of the vehicle fleet and communications equipment. The plant also maintains facilities for Federal Agent training and mission operations.

Facilities and Infrastructure Recapitalization Program (FIRP)
Pantex will prioritize projects for execution that align with the NNSA initiative to enhance reliability of mission essential infrastructure. The FIRP Program at Pantex will continue to execute deferred maintenance reduction projects in mission critical and mission dependent facilities. This strategy will

improve facility system reliability, minimize the risk of unscheduled facility outages and improve safety. Over the past three years, this strategy has contributed to the increased throughput on NNSA mission objectives for Stockpile Stewardship, Life Extension Program and Retired Weapons Systems. In FY 2011, projects include Fire Protection Lead-ins to Cells and Bays, refurbishment of mission critical facilities housing a gas laboratory and support personnel, and steam pipe refurbishments. Also, the FY 2011 President's Budget Request includes planning for FY 2012 recapitalization projects, and continued support of roof repairs executed through the complex-wide Roof Asset Management Program (RAMP), achieving improved cost efficiencies and life extension of Pantex's roofing assets.

Site Stewardship
In FY 2011, Site Stewardship efforts will be directed toward Environmental Projects and Operations Long Term Stewardship (LTS) activities required for ensuring environmental regulatory compliance; and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The environmental restoration project was completed by the Office of Environmental Management at the end of FY 2008 and in FY 2009; LTS then became the responsibility of the NNSA. The NNSA LTS activities include long-term surveillance and maintenance, monitoring, and reporting and will continue to assure protection of public health and the environment.

Energy Modernization and Investment Program (EMIP)
The 2011 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security program at Pantex provides protection measures consistent with requirements documented in the Site Safeguards and Security Plan (SSSP). During FY 2011, the site will sustain the 2003 Design Basis Threat upgrades. The program will also focus strongly on life cycle replacement of aging intrusion detection and assessment systems and other protection systems with emphasis on utilization of new technologies.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all the components of a comprehensive cyber security program; ensures alignment of the program with NNSA and Departmental strategic plans and relevant plans of the Office of the CIO.

In FY 2011, Pantex will maintain the cyber security training program for personnel who have system administrator responsibilities. Pantex will also establish an effective program to manage the implementation of wireless computer technologies site-wide. Also, the site will implement cyber security life-cycle management processes, to include upgrading cyber security components.

Nonproliferation and International Security (NIS)
The NIS program provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program and development of nuclear transparency measures. The NIS program conducts a Pit-Out Review during disassembly to classify weapon parts and components for U.S. national security and export controls for nonproliferation concerns, and maintains a computer data base jointly funded with Defense Programs.

Fissile Materials Disposition
The Pantex Plant stores surplus pits pending shipment to the Los Alamos National Laboratory in support of the Pit Disassembly and Conversion (PDC) technology demonstration. The Pantex Plant also packages and stores surplus pits for future shipment to the Savannah River Site for conversion in the PDC prior to fabrication into mixed-oxide fuel.

SANDIA NATIONAL LABORATORIES

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	373,402	373,338	545,262
Science Campaign	42,450	35,529	43,296
Engineering Campaign	80,405	82,026	76,700
Inertial Confinement Fusion Ignition and High Yield Campaign	50,405	51,500	48,000
Advanced Simulation and Computing Campaign	120,198	128,642	127,685
Readiness Campaign	15,220	7,937	8,431
Readiness in Technical Base and Facilities	159,138	126,890	136,390
Secure Transportation Asset	16,147	15,636	15,436
Nuclear Counterterrorism Incident Response	26,166	28,629	32,093
Site Stewardship	0	7,027	9,255
Facilities and Infrastructure Recapitalization Program	18,548	11,386	8,747
Environmental Projects and Operations Program/LTS*	6,981	0	0
Defense Nuclear Security	68,244	66,700	66,000
Cyber Security	19,558	17,858	19,358
Science , Technology and Engineering Capability	9,750	0	5,300
Congressionally Directed Projects	1,427	0	0
Subtotal Weapons Activities	**1,008,039**	**953,098**	**1,141,953**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	73,344	63,887	61,655
Nonproliferation and International Security	16,337	18,211	16,983
International Nuclear Materials Protection and Cooperation	44,983	72,641	93,363
Global Threat Reduction Initiative	23,091	17,038	15,274
Subtotal Defense Nuclear Nonproliferation	**157,755**	**171,777**	**187,275**
Total, NNSA	**1,165,794**	**1,124,875**	**1,329,228**

* Funding included in Site Stewardship beginning in FY 2010.

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	564,178	590,778	603,839	616,259
Science Campaign	48,059	50,100	49,748	47,878
Engineering Campaign	81,317	75,445	77,650	78,803
Inertial Confinement Fusion Ignition and High Yield Campaign	48,000	48,000	48,000	48,000
Advanced Simulation and Computing Campaign	126,112	125,541	127,973	127,408
Readiness Campaign	195	0	0	0
Readiness in Technical Base and Facilities	125,388	126,197	134,303	128,555
Secure Transportation Asset	15,698	15,340	15,607	16,190
Nuclear Counterterrorism Incident Response	28,972	30,256	33,258	34,649
Facilities and Infrastructure Recapitalization Program	8,747	8,747	0	0
Site Stewardship	10,372	11,237	21,387	26,292
Defense Nuclear Security	66,100	66,200	66,300	66,400
Cyber Security	17,281	18,281	18,781	18,781
Subtotal Weapons Activities	**1,140,419**	**1,166,122**	**1,196,846**	**1,209,215**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	75,493	75,427	75,506	78,002
Nonproliferation and International Security	17,544	18,001	18,500	19,794
International Nuclear Materials Protection and Cooperation	97,094	78,836	77,106	88,053
Global Threat Reduction Initiative	42,646	54,981	84,773	96,139
Subtotal Defense Nuclear Nonproliferation	**232,777**	**227,245**	**255,885**	**281,988**
Total, NNSA	**1,373,196**	**1,393,367**	**1,452,731**	**1,491,203**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

Sandia National Laboratories/New Mexico (SNL/NM) is located on 75,520-acre Kirtland Air Force Base in Albuquerque, New Mexico. It occupies nearly 9,000 acres of the Kirtland reservation and has additional facilities in Livermore, California (400 acres); Kauai, Hawaii (120 acres); and Tonopah, Nevada (600 square miles). The SNL is aligned with the nuclear security enterprise transformation activities and the Record of Decision. Sandia also conducts operations at California and the Tonopah Test Range (TTR). NNSA operations at TTR will reduce footprint, upgrade equipment with mobile capability, and conduct NNSA flight tests in a campaign mode. No Category I/II SNM will be used in future flight tests.

The SNL's Science, Technology, and Engineering program conducts a large variety of research and development programs that support five key areas: (1) Nuclear Weapons, (2) Nonproliferation and Assessments, (3) Military Technologies and Applications, (4) Energy and Infrastructure Assurance, and (5) Homeland Security.

ACTIVITIES:

Directed Stockpile Work (DSW)

The SNL activities ensure the reliability, safety, and security of the current and future nuclear weapons stockpile. The SNL supports the W76-1 Life Extension Program (LEP) design, qualification, production, and surveillance activities, as well as Retired Systems activities, including required characterization of stockpile weapon components. Other SNL activities include: surety assessments, the Annual Assessment Report, the semi-annual weapon reliability reports, support to the Nuclear Explosive Safety Studies (NESS), laboratory and flight surveillance, neutron generator design and development, cross-cutting subjects in Significant Finding Investigations (SFIs), aircraft compatibility, and military liaison with the Department of Defense (DoD). Sandia has design and production mission assignments for Neutron Generators; arming, fusing and firing system; and a dozen other technologies that require extensive engineering oversight to produce. In FY 2009, SNL was assigned gas transfer system design responsibility for NNSA.

Also, SNL supports continuing efforts to examine how the B61 Phase 6.2/6.2A study can address issues of safety, security and long-term reliability of the nation's nuclear deterrent.

Science Campaign

In FY 2011, SNL will continue to leverage its unique capabilities and tools in the pulsed power sciences and the materials and process sciences to support the mission of the Science Campaign for stockpile stewardship. The Science Campaign subprogram activities are as follows:

- Advanced Certification - SNL will continue efforts to review, evaluate, and implement key recommendations from the JASON review of the Reliable Replacement Warhead regarding approaches to establish an accredited warhead certification plan, without nuclear testing, in an era in which changes to nuclear components will occur due to aging or design concerns. Sandia will obtain actinide, gas, and other material equation of state data.

- Primary Assessment Technologies - SNL will begin executing a plan for theoretical and experimental activities for boost that are consistent with the National Boost Initiative strategy.

- Dynamic Materials Properties - the Z pulsed-power facility has a unique capability to isentropically (i.e., shocklessly) compress materials and to accelerate flyer plates to shock compress materials to high pressures, thus providing equation-of-state and constitutive property data to the SNL, LANL, and LLNL material communities for inclusion in models and for the quantification of margins and uncertainty (QMU) process. In particular, SNL will continue to conduct experiments to obtain fundamental and integrated data on special nuclear materials (i.e., plutonium) to quantify initial conditions for boost processes and to develop new techniques for measuring dynamic strength on Z. In addition, SNL provides the science basis for developing new non-nuclear materials,

improving fabrication processes, and characterizing the performance of materials based on composition, processing, and microstructure to advance the state of the art.

- Advanced Radiography - In pulsed power at SNL, the advanced radiography capabilities include the design, development, and deployment of state-of-the-art, compact, reliable, and high-intensity flash x-ray radiographic sources for experiments conducted at the Nevada Test Site (NTS) and for above ground dynamic experiments for LANL and the Atomic Weapons Establishment (AWE) in support of improved physics models. Moreover, SNL will demonstrate new technologies such as the linear transformer driver for advanced applications to both radiography and dynamic materials and conduct radiographic source coupling tests.

- Secondary Assessment Technologies - At the Z pulsed power facility, SNL also develops intense energetic radiation sources, sophisticated x-ray diagnostics, and an enhanced radiographic capability for the Z Beamlet laser and supports the utilization of these sources and diagnostics by LANL for applications to Secondary Assessment Technologies in radiation transport, hydrodynamics, and integrated implosions. In addition, SNL develops plasma radiation source for impulse testing and technical safety requirements (TSR) to support radiation effects to customers.

Engineering Campaign
The Engineering Campaign is a key element to realize the transformation goals for the nuclear security enterprise with a sustainable stockpile. The SNL Engineering Campaign develops the modern engineering tools, capabilities, and technologies needed to ensure the safety, security, survivability, reliability, and performance of the existing and future stockpile, and to provide a sustained engineering science basis, through the use of quantified margins and uncertainties, for stockpile assessment and certification. The SNL portion of the Engineering Campaign supports all four subprograms: Enhanced Surety, Weapon System Engineering Assessment Technology, Nuclear Survivability, and Enhanced Surveillance.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
The SNL ICF activities support the High Energy Density Physics (HEDP) program primarily through experiments at the SNL Z pulsed power facility. Z will conduct stockpile stewardship experiments in (Dynamic Materials Properties, Secondary Assessment Technologies, and Nuclear Survivability subprograms and Directed Stockpile Work), pulsed-power-ICF and x-ray-source-development experiments, as its primary mission. A small part of the Z agenda will also be devoted to a combination of basic science, z-pinch physics, power flow, and inertial fusion energy experiments.

This ICF Campaign develops, maintains, and operates all of the x-ray particle, and laser-based diagnostics required for a full experimental capability at Z. Diagnostic activity also includes development, maintenance, and operation of diagnostics associated with the Z-Beamlet back lighter facility (that is coupled to the Z pulsed-power facility). The SNL ICF program also develops, maintains, and operates multi-dimensional simulation codes and supports the staff who design, perform, and analyze the experiments (including load and target hardware). Research on Z and Z-Beamlet is performed in cooperation and collaboration with other national laboratories including the Defense Threat Reduction Agency laboratories, universities, and the Atomic Weapons Establishment.

Advanced Simulation and Computing (ASC) Campaign
In FY 2011, SNL ASC activities will focus on the following:

- simulation tools that support annual assessments, LEPs, Significant Finding Investigations (SFIs),

- mission priorities of the Stockpile Stewardship Program (SSP), including the continuing improvement of predictivity and certification methodologies (e.g., Quantification of Margins and Uncertainties, or QMU), and

- opportunities to leverage ASC technology in support of other national nuclear security mission needs including secure transportation and emerging threats.

Foundational elements of the SNL ASC program include development of the toolset needed to quantify the uncertainty in the predictions of the NNSA weapons codes – including the effective use of supercomputing and forward looking cost-effective architectures, and application of new methodologies for demonstrating credibility of simulation results.

Readiness Campaign
The SNL supports the following Readiness Campaign subprograms.

- Advance Design and Production Technologies (ADAPT) examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost-effective lean processes; shortened cycle times, built-in quality and acceptance, closer integration of activities across the nuclear security enterprise; a more productive workforce; and agile processes that enhance responsiveness to future national security needs.

- Nonnuclear Readiness provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers.

- Tritium Readiness continues to model the design of the Tritium Producing Burnable Absorber Rods (TPBARs) for comparison against experimental data gathered during the initial irradiation cycles in order to understand the permeation performance of the TPBARs.

Readiness in Technical Base and Facilities (RTBF)
The RTBF Program supports a broad base of activities that enable the laboratory to meet its mission and obligations to the NNSA and the nation. The activities are derived from the staffing and operation of a number of critical Nuclear Weapons Program capabilities and facilities, operation of test capabilities and test ranges, supporting development work and studies in weapons materials, waste management, education, and high energy density physics readiness. The SNL RTBF projects range from the staffing and operation of complex experimental capabilities (e.g., Tech Area V reactors, Tonopah Test Range, and Environmental Test Facilities) to production and support capabilities (e.g. Microelectronics Development Laboratory, Neutron Generator equipment maintenance, and the Primary Standards

Laboratory). Sandia provides the primary standards capabilities for the nuclear security enterprise. Also critical within the RTBF program are efforts to develop programs to maintain key nuclear weapons critical skills and develop the critical capabilities for the next generation of program needs.

Secure Transportation Asset (STA)
The SNL provides the research, design and engineering development, and operational support for new technology, mobile communications, and vehicle production. In addition, SNL conducts safety and security studies and analyzes risks involving nuclear weapons transportation. Sandia maintains the STA safety and security authorization basis, and designs, analyzes, tests, and documents all nuclear weapon and material cargo tie-down systems for STA ground and air transportation, engineering production, configuration management, and field support for the Safeguards Transporter, Safe Secure Trailer, Armored Tractors, and Escort Vehicles, and maintains a "24/7" emergency response capability for convoy missions. The SNL plant operates a Vehicle Maintenance Facility and a Mobile Electronics Maintenance Facility (MEMF) to support convoy operations, including specialized and secure maintenance/repair of the vehicle fleet and communications equipment.

Defense Nuclear Security
The SNL Defense Nuclear Security program provides laboratory protection measures consistent with requirements documented in its Site Safeguards and Security Plan (SSSP). In FY 2011, SNL will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets as appropriate; (b) is predicated on Executive Orders; national standards; laws and regulations; and Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates the components of a comprehensive cyber security program; ensures alignment of the program with NNSA and Departmental strategic plans and relevant plans of the CIO.

In FY 2011, SNL will continue improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades. The SNL will also establish a comprehensive self-assessment program for cyber security. In FY 2011, SNL will lead the effort to deploy a virtual collaboration computing incident response capability complex-wide.

Nuclear Counterterrorism Incident Response
SNL assists NCTIR in operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents. The SNL deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. The SNL is an active participant in the NNSA Nuclear Emergency Support Team (NEST), which can respond to any type of emergency involving radioactive or nuclear materials in the U.S. or abroad. The SNL also supports the National Technical Nuclear Forensics (NTNF) and

Stabilization Operations programs, which will continue through the planning period. Other SNL activities include the conduct of operations and technical integration in support of the Joint Technical Operations Team (JTOT), Accident Response Group (ARG), and Home Team (HT) in the form of technical support, research and development, intelligence support, field operations, and training and exercises. In addition, SNL provides research and support to the Office of Emergency Operations with unique expertise in supporting the Office of Nuclear Counterterrorism.

Facilities and Infrastructure Recapitalization Program (FIRP)
The SNL uses FIRP funding for projects that support refurbishment of building systems and utilities for mission-critical Defense Programs facilities and infrastructure. Recapitalization projects planned for FY 2011 include chiller replacements supporting Sandia's scientific and classified computing resources, exhaust fan and air handling unit replacements in facilities involved with critical R&D, production, machining activities, and additional road repairs.

Site Stewardship
Long Term Stewardship (LTS) activities at SNL continue to support remedial actions completed at 263 of 265 release sites. In FY 2011, NNSA LTS activities include program management, maintenance of remedies at a number of environmental restoration sites at SNL/New Mexico, and groundwater monitoring at SNL /California. . Energy Modernization and Investment Program activities are aimed at achieving Departmental energy efficiency goals. The 2011 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Nonproliferation and Verification Research and Development
The SNL Nonproliferation and Verification R&D program will develop, demonstrate, and validate improvements to data processing and analysis tools in support of ground-based nuclear detonation detection. The program will design, develop, and produce new optical detectors for the next generation of U.S. satellite-based monitoring nuclear/radiation detection nuclear detonation detection program. The SNL serves as the national center for research on Synthetic Aperture Radar systems and analysis methods for national security applications. The program develops new and innovative remote sensing technologies, radiation detection technologies, and other detection and analysis capabilities supporting nuclear fuel cycle monitoring missions, nuclear forensics missions, and other proliferation detection technology thrusts.

International Nuclear Materials Protection and Cooperation (INMP&C)
The INMP&C program at SNL provides experience with the design and installation of physical protection systems and has specific technical expertise in access delay systems; intrusion detection and assessment systems and associated display systems; access control systems; and vulnerability analysis procedures, processes and associated computer codes. The program at SNL also provides technical expertise to advise Russian institutes, enterprises, and government agencies as they develop and implement physical protection systems, regulations, and sustainability and training programs and to support the Second Line of Defense program. Additionally, the program at SNL supports installation of radiation detection equipment at border crossings and airports/seaports within both Russia and the Former Soviet Union States under the Second Line of Defense Core Program and at major container

shipping terminals within the global maritime cargo transportation system under the Second Line of Defense Program's Megaport Initiative.

Nonproliferation and International Security (NIS)
The NIS program at SNL conducts technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, develops nuclear transparency measures, including through technical analysis and technology development, and supports policymaking and negotiations regarding various arms control and nonproliferation regimes. The program also supports HEU Transparency Program implementation and development. The program provides support for licensing operations through reviews of export controlled equipment, materials and software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, international safeguards technology assessment, policy support and nonproliferation assessment, multilateral outreach through support efforts for policymaking and negotiations regarding various nonproliferation control regimes, and international cooperation, primarily in the Former Soviet Union but increasingly in transit states as well. The program supports regional security efforts and export control activities and NNSA regional security objectives, particularly with the Cooperative Monitoring Center. In addition, the program supports safeguards and international physical protection cooperation, provides vulnerability assessment support for foreign sites of interest, training to foreign nationals as needed, support to IAEA and USG meetings abroad to strengthen physical protection measures globally, additional Protocol outreach and training, and safeguards agreement implementation. The program helps create business opportunities for displaced weapons workers and engages former weapons of mass destruction scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes, and integrating them into the larger international scientific and business communities.

Global Threat Reduction Initiative (GTRI)
The SNL provides significant technical, scientific, and management expertise to two of the three key subprograms of GTRI–Remove and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

SAVANNAH RIVER SITE

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	74,805	40,511	43,164
Engineering Campaign	750	360	236
Advanced Simulation and Computing Campaign	50	75	0
Readiness Campaign	28,512	30,160	30,753
Readiness in Technical Base and Facilities	104,569	138,098	99,496
Nuclear Counterterrorism Incident Response	2,332	2,449	2,571
Site Stewardship	0	0	1,130
Defense Nuclear Security	12,420	12,668	8,500
Cyber Security	3,835	5,335	5,835
Subtotal Weapons Activities	**227,273**	**229,656**	**191,685**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	17,414	15,026	14,501
Fissile Materials Disposition	850	87,500	109,289
Global Threat Reduction Initiative	1,830	3,600	23,739
Subtotal Defense Nuclear Nonproliferation	**20,094**	**106,126**	**147,529**
Total, NNSA	**247,367**	**335,782**	**339,214**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	46,074	45,250	49,532	64,550
Engineering Campaign	100	100	200	250
Readiness Campaign	29,599	30,156	34,670	35,855
Readiness in Technical Base and Facilities	104,026	104,411	105,800	109,419
Nuclear Counterterrorism Incident Response	2,700	2,835	2,800	2,896
Site Stewardship	1,494	1,562	2,890	3,523
Defense Nuclear Security	8,600	8,700	8,800	8,900
Cyber Security	5,630	5,630	5,630	5,630
Subtotal Weapons Activities	**198,223**	**198,644**	**210,322**	**231,023**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	510	510	525	539
Fissile Materials Disposition	76,370	78,152	63,838	86,150
Global Threat Reduction Initiative	4,492	3,598	5,479	343
Subtotal Defense Nuclear Nonproliferation	**81,372**	**82,260**	**69,842**	**87,032**
Total, NNSA	**279,595**	**280,904**	**280,164**	**318,055**

Congressional Items of Interest: Construction of the Mixed-Oxide Fuel Fabrication Facility and the related facilities in support of U.S. plutonium disposition activities.

Major Changes or Shifts: The FY 2011 President's Budget Request has consolidated all of the funding requests for the Fissile Materials Disposition activities within the Defense Nuclear Nonproliferation appropriation.

Site Description

INTRODUCTION:

The Savannah River Site (SRS) spans approximately 310 square miles bordering the Savannah River in western South Carolina. The Department of Energy Office of Environmental Management is the site landlord. The Savannah River Site is designated as a National Environmental Research Park and covers a small portion of Aiken, Barnwell, and Allendale counties.

The SRS Tritium Facilities, which occupy a portion of the total site, are supporting the National Nuclear Security Administration (NNSA) Stockpile Stewardship and Stockpile Evaluation programs, and are executing a plan to meet the challenges of the future through the following core missions:

- Provide tritium and non-tritium loaded reservoirs to meet Nuclear Weapons Stockpile Plan requirements;

- Conduct the Stockpile Evaluation Program; and Extract tritium produced at TVA reactors.

The SRS Tritium Facilities are aligned with nuclear security enterprise transformation activities. The SRS will remain the site for tritium supply management and provide R&D support to production operations and gas transfer system development. In addition, the plans are reducing its facility square footage by greater than 25 percent.

ACTIVITIES:

Directed Stockpile Work (DSW)
The SRS activities include processing tritium and inert reservoirs and associated components in support of the Life Extension Program (LEP) and enduring weapon systems. The LEP activities include production Retrofit Evaluation System Test (REST) surveillance, and production sampling evaluation associated with the refurbishment of the W76-1. Stockpile Systems categories include Limited Life Component Exchange (LLCE), Gas Transfer System (GTS) Surveillance, Stockpile Laboratory Tests (SLTs), and Life Storage Program (LSP) activities. Reservoirs and associated parts will be processed as necessary to support LLCE schedules per production directive requirements for the enduring stockpile. Retired Systems include reservoirs returned from retired weapons that will be unloaded, welded closed for disposal, or managed per NNSA requirements.

Engineering Campaign
The SRS supports the Enhanced Surveillance subprogram of the Engineering Campaign by developing the tools, techniques, and procedures to advance the capabilities of the nuclear security enterprise to measure, analyze, calculate, and predict the effects of aging on certain weapons materials, components, and systems to determine if and/or when these effects will impact weapon reliability, safety, or performance. Specifically, the SRS role in this campaign is to develop methods for surveillance of tritium reservoirs and other Gas Transfer System components as well as provide power management technology support.

Readiness Campaign
The SRS supports the following Readiness Campaign subprograms:

- Advanced Design and Production Technologies (ADAPT) examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost-effective lean processes; shortened cycle times, built-in quality and acceptance; closer integration of activities across the nuclear security enterprise; a more productive workforce; and agile processes that enhance responsiveness to future national security needs.

- Stockpile Readiness examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where modern technology would lead to cost-effective lean processes, shortened cycle times, built-in quality and

acceptance, closer integration of activities across the national security enterprise, a more production workforce, and agile processes that enhance responsiveness to future national security needs.

- Tritium Readiness manages the TEF extraction operations to extract tritium safely, efficiently, and economically from commercially irradiated TPBARs, provide related technical liaison with the TPBAR development, irradiation and transportation activities, and provide technical and program support to the Tritium Readiness manager in accordance with annual or specific tasking guidance. The SRS primarily supports the TEF operations.

Readiness in Technical Base and Facilities (RTBF)
The RTBF program at SRS maintains the facilities and infrastructure in a readiness state in support of the DSW missions, including LEPs, Stockpile Services, and Production Support. Operations of Facilities include facilities management and support activities for mission operations. Preventive, predictive, and corrective maintenance of process and infrastructure equipment/facilities are performed. Environmental, safety, and health activities are conducted to ensure the well being of SRS workers, the public, and the environment, as well as developing and providing updates to the Authorization Bases. Contracted costs of providing utilities to the SRS Tritium Facilities are included. Capital equipment and general plant projects that meet base maintenance and infrastructure needs are planned and executed to maintain the safety, utility, and capability of the process facilities. Material Recycle and Recovery involves recovery and purification of tritium, deuterium, and helium-3 gases from reservoir recycle gas, hydride storage vessels, and facility effluent-cleanup systems. The SRS performs physical maintenance of various shipping containers, and provides operational, regulatory, and technical support of Pressure Vessels. The SRS also designs and tests replacement shipping containers for use within the DOE Complex.

Defense Nuclear Security
The SRS Defense Nuclear Security program provides security for the Tritium Facility consistent with requirements documented in its approved facility Master Security Plan. In FY 2011, the security program will also focus on ensuring NNSA's role in MOX and PDCF security are fully supported.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.

In FY 2010, SRS will implement an effective risk management program for cyber security to ensure protection of NNSA information and information assets. For FY 2011, SRS will implement effective mechanisms to identify cyber security vulnerabilities and threats to the computing infrastructure.

Facilities and Infrastructure Recapitalization Program (FIRP)
The FIRP has allowed the SRS to achieve a reduction of the baseline deferred maintenance to facilities and infrastructure, including roof replacements, renovations to end-of-life electrical distribution systems and fire protection systems, and replacement of HVAC systems. In FY 2011, FIRP funds will continue to support high-priority projects that restore and rehabilitate mission critical facilities and infrastructure. Specific projects include electrical and plumbing repairs, supply fan refurbishments, and replacement of an Uninterruptable Power System (UPS).

Site Stewardship
In FY 2011, Site Stewardship efforts will be directed toward Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The 2011 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Fissile Materials Disposition (FMD)
The FMD program at the Savannah River Site (SRS) supports disposition of U.S. plutonium and has the overall lead for the Mixed-Oxide (MOX) Fuel Fabrication Facility (MFFF), the Waste Solidification Building (WSB) and the Pit Disassembly and Conversion (PDC) Project. The SRS will provide project and contract management support for the U.S. plutonium disposition program, which includes MFFF, PDC and the WSB. A DOE prime contractor, Shaw AREVA MOX Services, is responsible for the design and construction of the MOX FFF, and the site M&O is responsible for construction and operation of the WSB. In addition, during the construction phase, the site M&O contractor is responsible for the site infrastructure, electric power, water and sewer, roads, communications, waste management, fire protection, security and related services for the MFFF project, and integration, design authority, and operation of the PDC Project. Finally, the FMD program provides support for qualification, irradiation, transportation, and procurement and characterization of feed materials for MOX fuel.

Nonproliferation and Verification Research and Development
The Nonproliferation and Verification R&D program at SRS provides nuclear materials analysis efforts (advance mass spectrometry developments, ultra-sensitive separation, and detection techniques) and characterization of nuclear materials. The program also provides state-of-the-art scientific research to define improved effluent collection systems and develops new and innovative proliferation detection technologies and analysis capabilities supporting nuclear fuel cycle monitoring missions, nuclear forensics missions, and other proliferation detection technology thrusts.

Nonproliferation and International Security (NIS)
The NIS program at SRS provides safeguards and export control support, specifically in the area of vulnerability assessment support for foreign sites of interest, necessary training to foreign nationals, Additional Protocol outreach and training, and safeguards agreement implementation. The NIS program supports implementation of the U.S.-Russia Plutonium Production Reactor Agreement and denuclearization efforts in North Korea. The program supports licensing operations through reviews of export controlled equipment, materials and software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications and interdictions, including

managing and providing WMD training to Department of Homeland Security and other enforcement agencies, and technical reach-back on enforcement investigations along with ANL, KCP, LANL, LLNL, ORNL, PNNL and SNL. The NIS program supports domestic and foreign training and other engagement on strategic trade and export controls.

Global Threat Reduction Initiative (GTRI)
Savannah River Site provides significant technical, scientific, and management expertise to one of the three key subprograms of GTRI–Remove—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide.

Y-12 NATIONAL SECURITY COMPLEX

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	173,411	212,140	223,298
Engineering Campaign	3,986	3,347	3,500
Advanced Simulation and Computing Campaign	350	725	500
Readiness Campaign	20,809	5,019	11,781
Readiness in Technical Base and Facilities	421,564	403,029	403,988
Secure Transportation Asset	3,171	3,350	3,278
Nuclear Counterterrorism Incident Response	1,217	1,278	1,342
Facilities and Infrastructure Recapitalization Program	42,905	20,722	21,069
Site Stewardship	0	7,000	8,000
Defense Nuclear Security	162,980	211,000	148,000
Cyber Security	7,587	7,587	7,587
Subtotal Weapons Activities	**837,980**	**875,197**	**832,343**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	2,446	1,921	1,854
Nonproliferation and International Security	1,338	1,491	1,391
International Nuclear Materials Protection and Cooperation	2,762	2,572	1,702
Fissile Materials Disposition	14,951	13,191	9,420
Global Threat Reduction Initiative	7,096	12,855	38,706
Subtotal Defense Nuclear Nonproliferation	**28,593**	**32,030**	**53,073**
Total, NNSA	**866,573**	**907,227**	**885,416**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Directed Stockpile Work	242,118	248,189	252,446	270,039
Engineering Campaign	3,500	3,080	3,500	3,430
Readiness in Technical Base and Facilities	424,797	494,632	559,234	614,117
Secure Transportation Asset	3,318	3,248	3,288	3,411
Nuclear Counterterrorism Incident Response	1,409	1,479	1,496	1,511
Facilities and Infrastructure Recapitalization Program	21,069	21,069	0	0
Site Stewardship	10,708	11,212	21,173	25,919
Defense Nuclear Security	149,000	151,200	152,800	154,100
Cyber Security	7,264	7,264	7,264	7,264
Subtotal Weapons Activities	**863,183**	**941,373**	**1,001,201**	**1,079,791**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	9,037	9,246	9,482	9,719
Nonproliferation and International Security	1,437	1,474	1,515	1,621
International Nuclear Materials Protection and Cooperation	1,757	1,170	1,170	1,309
Fissile Materials Disposition	9,425	7,225	7,225	7,338
Global Threat Reduction Initiative	28,390	32,647	59,167	58,488
Subtotal Defense Nuclear Nonproliferation	**50,046**	**51,762**	**78,559**	**78,475**
Total, NNSA	**913,229**	**993,135**	**1,079,760**	**1,158,266**

Congressional Items of Interest: Completed construction of the Highly Enriched Uranium Materials Facility and continue support for the Uranium Processing Facility.

Major Changes or Shifts: This site is undergoing a major transformation that is closely aligned with the NNSA nuclear security enterprise planning.

Site Description

INTRODUCTION:

The Y-12 National Security Complex is located in the Bear Creek Valley of East Tennessee, adjacent to Oak Ridge, and approximately 15 miles from Knoxville, Tennessee. The facility is located on 811 acres, spanning 2.5 miles, with some 500 buildings that house some 7 million square feet of laboratory, machining, dismantlement, and research and development areas.

The Y-12 role includes the following activities:

- Manufacturing and assessing nuclear-weapon secondaries, cases, and other weapons components;
- Dismantling weapons secondaries returned from the stockpile;

- Providing safe and secure storage and management of special nuclear material;
- Supplying special nuclear material for use in naval reactors;
- Promoting international nuclear safety and nonproliferation;
- Reducing global dangers from weapons of mass destruction; and
- Supporting U.S. leadership in science and technology.

The transformation for Y-12 reflects consolidation of storage and manufacturing operations of special nuclear material (SNM), footprint reduction, and revitalization and construction of the Highly Enriched Uranium Materials Facility (HEUMF) and construction of the Uranium Processing Facility (UPF). In addition, the Protected Area Reduction Project (PARP) will complete the high security area perimeter and a future proposal, the Consolidated Manufacturing Complex (CMC) will consolidate all non-enriched uranium manufacturing operations. The completion of both near-term and long-term actions will enable:

- Reducing the site "footprint" by nearly 90 percent, thereby shrinking the requirement for high levels of security for special nuclear materials;
- Consolidating, manufacturing and processing operations to reduce the number of facilities square footage required, improve workflow efficiencies, and facilitate reduction of high-security perimeter;
- Consolidating material storage operations to reduce the number of buildings, square footage, and long-term maintenance operating cost;
- Consolidating administrative and technical operations into permanent and new facilities based on functional, security, and workflow requirements; and
- Consolidating plant support operations into permanent new facilities to improve workflow efficiency and reduce long-term maintenance, operation and security costs.

ACTIVITIES:

Directed Stockpile Work (DSW)
The DSW Y-12 activities include weapon secondary manufacturing, quality evaluation, disposition, and case manufacturing. The Y-12 supports increased emphasis on conducting surveillance of the existing stockpile, predicting its life, performing refurbishments for the Life Extension Program (LEP), dismantling weapons, and providing safe, secure management, and storage of the nation's inventory of highly enriched uranium (HEU) and other weapons materials. Significant tasks include the steady-state rate production of the W76-1 LEP. Stockpile Systems quality evaluations will also continue, as will dismantlement of selected retired weapon systems.

Engineering Campaign
The Engineering Campaign at Y-12 supports the Enhanced Surveillance subprogram activity by providing improved surveillance tools, diagnostics and methods, including non-destructive techniques for canned sub-assemblies, cases, and nonnuclear components to the DSW program for transforming surveillance to be more predictive in finding defects in weapons. Lifetime-prediction efforts include work to improve knowledge of weapon materials, materials interactions, and aging phenomena.

Readiness Campaign
The Readiness Campaign at Y-12 maintains supports the following subprograms.

- Advanced Design and Production Technologies (ADAPT) examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where the modern technology would lead to cost-effective, lean processes, shortened cycle times, built-in quality and acceptance, closer integration of activities across the nuclear Security Enterprise, a more productive workforce, and agile processes that enhance responsiveness to future national security needs..

- Nonnuclear Readiness provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers.

- Stockpile Readiness examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases where modern technology would lead to cost-effective lean processes, shortened cycle times, built-in quality and acceptance, closer integration of activities across the national security enterprise, a more productive workforce, and agile processes that enhance responsiveness to the future national security needs.

Readiness in Technical Base and Facilities (RTBF)
The RTBF program ensures the readiness of the facilities, infrastructure, materials, and personnel to support Defense Programs mission objectives at Y-12.

The elements of the Y-12 RTBF Program include the following:
- Maintaining base operations support for the entire site infrastructure of approximately 350 Y-12 buildings, as well as base operations including maintenance, utilities, and compliance;

- Providing construction line item management, including all pre-conceptual planning and other project costs (OPC) for all RTBF-funded line items;

- Developing and updating the master site plan and Ten Year Site Plans (TYSP);

- Providing inter- and intra-site containers for the transportation of SNM and waste;

- Providing for the management and storage of HEU and other SNM;

- Managing legacy material disposition to promote footprint reduction and compliance with security requirements;

- Providing for the recycle and recovery of HEU and Lithium;

- Managing responsibilities associated with the Chronic Beryllium Disease Prevention Program (CBDPP); and

- Consolidating excess uranium and other nuclear materials from the Y-12 Plant.

Construction of the Highly Enriched Uranium Materials Facility (HEUMF) has been completed, and the Uranium Processing Facility (UPF) design is underway. These facilities will provide modern, consolidated enriched uranium storage and production and to enable the 90 percent reduction of the high security area.

Facilities and Infrastructure Recapitalization Program (FIRP)
The facility conditions of Y-12 are noticeably improved due in large measure to the aggressive execution of the Facilities and Infrastructure Recapitalization Program. The FIRP at Y-12 has established a deferred maintenance reduction program focused on mission facilities and infrastructure projects that directly support Directed Stockpile Work (DSW), Campaigns, and transformation of the Enterprise. In FY 2011, recapitalization projects will address deficiencies for electrical, mechanical, utility, specialty and structural systems across the site. One major disposition project will facilitate the construction of a new fence that will effectively reduce the protected area by 50 percent. The FIRP at Y-12 will also continue to participate in the Enterprise's Roof Asset Management Program (RAMP) to correct priority deficiencies and extend the life of the site's roofing assets.

Site Stewardship
In FY 2011, Site Stewardship efforts will be directed toward reducing/consolidating SNM inventories and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The 2011 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Secure Transportation Asset (STA)
The B&W Y-12 provides facilities and support for the Federal Agent force at Agent Operations Eastern Command. The Y-12 plant operates a Vehicle Maintenance Facility and a Mobile Electronic Maintenance Facility to support convoy operations, including specialized and secure maintenance/repair of the vehicle fleet and communications equipment. The plant also maintains facilities for Federal Agent training and mission operations.

Defense Nuclear Security
The Defense Nuclear Security's physical security program at the Y-12 National Security Complex is administered by the Y-12 Site Office. The Defense Nuclear Security program provides protection measures consistent with protection requirements documented in the facility Site Safeguards and

Security Plan (SSSP). In FY 2011, activities will focus on development of the 2008 Graded Security Protection (GSP) policy implementation plan, including consolidation of SNM, adding protective force posts and redeploying protective force personnel, implement new vehicle delay measures, and other interim barrier features. The Y-12 Defense Nuclear Security Program will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security

The Cyber Security program at the Y-12 National Security Complex is administered by the Y-12 Site Office. The Cyber Security program implements a flexible, comprehensive, and risk-based program that (a) protects the NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives, and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.

In FY 2011, the Y-12 cyber security program will ensure preventive maintenance measures for cyber security within the Y-12 computing infrastructure. Also, Y-12 will establish a risk program to address the implementation of wireless technologies site-wide. In FY 2011, Y-12 will implement cyber protection measures consistent with national protection requirements.

Fissile Materials Disposition (FMD)

The Y-12 FMD program supports disposition activities through the HEU Disposition Program Office. The program also provides form conversions and packaging of surplus HEU for shipment to down-blending contractors.

The FMD program provides for planning and implementation of HEU disposition activities, which include blending and transfer of off-specification materials to the Tennessee Valley Authority, transfer of materials to Nuclear Fuel Services for down-blending associated with the Reliable Fuel Supply initiative, and the MOX LEU Backup Inventory Project, tracking and evaluation of surplus HEU inventories, and planning for disposition of unallocated surplus HEU material. The FMD program supports planning and implementing the disposition program in areas of strategic and tactical planning, oversight, technical analyses, regulatory coordination, business development and marketing, and coordination of interfaces among key participants and stakeholders. The program also manages the design, certification, and procurement of shipping containers for surplus HEU and plutonium.

Nonproliferation and Verification Research and Development

The Y-12 program supports the Nonproliferation R&D Simulation, Algorithm, and Modeling team effort with assessment support. Additionally, the Y-12 program supports advanced materials analysis and enrichment studies.

Global Threat Reduction Initiative (GTRI)

The Y-12 National Security Complex provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the

comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

ARGONNE NATIONAL LABORATORY

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Advanced Simulation and Computing Campaign	0	1,000	0
Readiness in Technical Base and Facilities	937	380	0
Nuclear Counterterrorism Incident Response	2,188	2,297	2,412
Subtotal Weapons Activities	**3,125**	**3,677**	**2,412**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	3,275	2,826	2,727
Nonproliferation and International Security	5,977	6,662	6,213
International Nuclear Materials Protection and Cooperation	2,509	2,237	766
Global Threat Reduction Initiative	30,615	38,125	54,129
Subtotal Defense Nuclear Nonproliferation	**42,376**	**49,850**	**63,835**
Total, NNSA	**45,501**	**53,527**	**66,247**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	2,480	2,280	2,305	2,200
Subtotal Weapons Activities	**2,480**	**2,280**	**2,305**	**2,200**
Defense Nuclear Nonproliferation				
Nonproliferation and International Security	6,419	6,586	6,768	7,242
International Nuclear Materials Protection and Cooperation	788	423	427	434
Global Threat Reduction Initiative	60,402	65,750	78,267	90,290
Subtotal Defense Nuclear Nonproliferation	**67,609**	**72,759**	**85,462**	**97,966**
Total, NNSA	**70,089**	**75,039**	**87,767**	**100,166**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Argonne National Laboratory (ANL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Nuclear Counterterrorism Incident Response
The Nuclear Counterterrorism Incident Response Radiological Assistance Program (RAP) at Argonne is the second largest Regional Response Coordinator. In FY 2011, the program will continue to provide emergency response training assistance to federal, state, tribal and local governments through the WMD First Responder Training program and technical integration.

Nonproliferation and Verification Research and Development
The Argonne program supports the Nonproliferation R&D Simulation, Algorithm, and Modeling team effort with assessment support. Additionally, the program looks at advanced methods in modeling validation.

Global Threat Reduction Initiative (GTRI)
The Argonne National Laboratory (ANL) provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

Nonproliferation and International Security (NIS)
In FY 2011, the NIS program will continue to provide safeguards and export control support, specifically in the area of vulnerability assessment support for foreign sites of interest, training to foreign nationals as needed, Additional Protocol outreach and training, and safeguards agreement implementation. The NIS program supports implementation of the HEU Transparency Program implementation and supports denuclearization efforts in North Korea. The NIS program supports licensing operations through reviews of export controlled equipment, materials and software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications and interdictions, including managing and providing WMD training to Department of Homeland Security and other enforcement agencies, and technical reach back on enforcement investigations with ANL, KCP, LANL, LLNL, ORNL, PNNL, and SNL. The NIS program supports domestic and foreign training and other engagement on strategic trade and export controls.

BROOKHAVEN NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Readiness in Technical Base and Facilities	235	150	0
Nuclear Counterterrorism Incident Response	1,702	1,787	1,876
Subtotal Weapons Activities	**1,937**	**1,937**	**1,876**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	2,221	1,916	1,849
Nonproliferation and International Security	3,919	5,868	4,074
International Nuclear Materials Protection and Cooperation	30,601	18,169	31,699
Global Threat Reduction Initiative	457	460	543
Subtotal Defense Nuclear Nonproliferation	**37,198**	**26,413**	**38,165**
Total, NNSA	**39,135**	**28,350**	**40,041**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	1,970	2,019	2,042	2,060
Subtotal Weapons Activities	**1,970**	**2,019**	**2,042**	**2,060**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	1,734	1,774	1,820	1,866
Nonproliferation and International Security	4,209	4,318	4,438	4,748
International Nuclear Materials Protection and Cooperation	27,581	18,112	18,112	18,989
Global Threat Reduction Initiative	790	938	1094	1307
Subtotal Defense Nuclear Nonproliferation	**34,314**	**25,142**	**25,464**	**26,910**
Total, NNSA	**36,284**	**27,161**	**27,506**	**28,970**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Brookhaven National Laboratory (BNL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Nuclear Counterterrorism Incident Response

The Nuclear Counterterrorism Incident Response Radiological Assistance Program (RAP) at Brookhaven is the largest Regional Response Coordinator for first response radiological assistance to protect the health and safety of the public and the environment. In FY 2011, the RAP will focus on emergency response training, joint participation drills, exercises and support.

Nonproliferation and Verification Research and Development

The BNL Nonproliferation and Verification R&D program develops radiation detection, scientific foundations, and instrumentation to improve the technical foundations of radiation detection through demonstrations of advanced concepts and systems to detect and track fissile materials.

Nonproliferation and International Security (NIS)

The BNL NIS program supports international safeguards technology assessment, policy support and nonproliferation assessment. The BNL NIS program supports international cooperation efforts, including scientist engagement and redirection efforts in the former Soviet Union. Additionally, the BNL NIS program provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program and development of nuclear transparency measures as well as denuclearization work in N. Korea and the U.S. Support Program to IAEA Safeguards.

International Nuclear Materials Protection and Cooperation (MPC&A)

The INMP&C program at BNL provides experience in the design and implementation of MPC&A upgrades on Russian facilities by virtue of their actual work at such facilities and by their involvement with developing MPC&A approaches for such facilities. The BNL provides experience in contracting with various Russian vendors, including government-run institutes, and contracts all of the down blending activities for material conversion and consolidation. Also, the BNL provides support in the development and delivery of MPC&A training courses, as well as support for the Material Control and Accountability Measurements Project. The BNL is the lead laboratory that provides support for the MPC&A Operations Monitoring Project, the Technical Survey Team Project, the Insider Threat Review Project, and for the Project Planning and Effectiveness Project.

CHICAGO OPERATIONS OFFICE

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Inertial Confinement FusionIgnition and High Yield Campaign	0	5	0
Advanced Simulation and Computing Campaign	5,530	5,699	4,800
Readiness Campaign	33,432	9,700	9,436
Subtotal Weapons Activities	**38,962**	**15,404**	**14,236**
Total, NNSA	**38,962**	**15,404**	**14,236**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Readiness Campaign	46,969	35,943	30,983	32,385
Subtotal Weapons Activities	**46,969**	**35,943**	**30,983**	**32,385**
Total, NNSA	**46,969**	**35,943**	**30,983**	**32,385**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Chicago Operations Office (CHO) is not a National Nuclear Security Administration (NNSA) managed site operation within the Department of Energy. However, significant NNSA work is conducted through CHO using the office's technical and administrative expertise, and funding and contracting arrangements.

ACTIVITIES:

Readiness Campaign
The Readiness Campaign CHO program supports the Tritium Readiness activity that re-established and operates the tritium production capability to sustain the nuclear weapons stockpile. The activity is being implemented at the Tennessee Valley Authority's Watts Bar reactor.

IDAHO NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	194	0	0
Readiness Campaign	2,193	2,595	3,419
Readiness in Technical Base and Facilities	3,840	4,745	0
Nuclear Counterterrorism Incident Response	586	615	646
Site Stewardship	0	0	5,880
Congressionally Directed Projects	952	0	0
Subtotal Weapons Activities	**7,765**	**7,955**	**9,945**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	4,595	2,630	2,538
Nonproliferation and International Security	7,265	8,098	7,552
International Nuclear Materials Protection and Cooperation	1,518	2,525	524
Global Threat Reduction Initiative	122,743	86,049	122,842
Subtotal Defense Nuclear Nonproliferation	**136,121**	**99,302**	**133,456**
Naval Reactors	**68,900**	**79,200**	**93,400**
Total, NNSA	**212,786**	**186,457**	**236,801**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	678	712	720	727
Site Stewardship	4,305	4,620	5,250	5,250
Subtotal Weapons Activities	**4,983**	**5,332**	**5,970**	**5,977**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	4,867	4,980	5,107	5,234
Nonproliferation and International Security	7,802	8,005	8,227	8,802
International Nuclear Materials Protection and Cooperation	478	195	195	218
Global Threat Reduction Initiative	108,220	101,217	118,806	132,485
Subtotal Defense Nuclear Nonproliferation	**121,367**	**114,397**	**132,335**	**146,739**
Naval Reactors	**105,000**	**73,300**	**70,300**	**91,600**
Total, NNSA	**231,350**	**193,029**	**208,605**	**244,316**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Idaho National Laboratory (INL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Nuclear Energy is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Readiness Campaign

The Readiness Campaign INL program supports the Tritium Readiness that re-established and operates the tritium production capability to sustain the nuclear weapons stockpile

Site Stewardship

The Site Stewardship program will initiate the treatment and permanent disposition of certain NNSA materials currently stored at the INL.

Global Threat Reduction Initiative (GTRI)

The Idaho National Laboratory provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

Nonproliferation and Verification Research and Development

The Nonproliferation and Verification R&D program at INL provides research to assess alternative fissile material production methods and advanced nuclear fuel cycle development and improvements to advanced detector materials.

Nonproliferation and International Security (NIS)

The INL NIS program provides support for conducting technical exchanges and development of nuclear transparency measures under the Warhead Dismantlement of Fissile Material Transparency program. The NIS program at INL includes Safeguards by Design (SBD) and NGSI Human Capital Development. Activities for SBD include preparation of SBD Guidance documents and Industry engagement. The SBD Guidance documents are intended to provide the designer of a new nuclear facility a description of requirements, best practices, and advanced concepts for safeguards. Engagement with industry provides

an opportunity to further develop SBD concepts and share Guidance documents. The NGSI Human Capital Development program utilized several venues, (1) the post-doctoral fellowship program, (2) VTC safeguards lectures, and (3) summer safeguards internships. In addition, the program supports international safeguards cooperation and implementation.

Naval Reactors (NR)

The NR Advance Test Reactor (ATR) is designed to evaluate the effects of intense radiation on material samples, especially nuclear fuels. The principal customer for the ATR over most of its lifetime has been the NR program. The ATR produces very high neutron flux, which allows the effects of many years of operation in other reactor environments to be simulated in as short as one-tenth the time. Subsequent evaluations of test specimens in the NR Expended Core Facility and the Knolls Atomic Power Laboratory Radioactive Materials Laboratory facilities are the main source of data on the performance of reactor fuel, poison, and structural materials under irradiated conditions. Naval Reactors continues to develop enhanced systems for high temperature irradiation testing with precise temperature control and environmental monitoring in the ATR.

OAK RIDGE NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Directed Stockpile Work	0	15	0
Science Campaign	368	0	0
Advanced Simulation and Computing Campaign	469	482	552
Readiness in Technical Base and Facilities	3,806	2,774	0
Nuclear Counterterrorism Incident Response	1,199	1,259	1,322
Site Stewardship	0	0	4,000
Subtotal Weapons Activities	**5,842**	**4,530**	**5,874**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	25,862	22,315	21,536
Nonproliferation and International Security	20,476	25,324	21,285
International Nuclear Materials Protection and Cooperation	110,378	120,387	111,279
Fissile Materials Disposition	0	0	105,000
Global Threat Reduction Initiative	20,458	11,345	17,617
Subtotal Defense Nuclear Nonproliferation	**177,174**	**179,371**	**276,717**
Total, NNSA	**183,016**	**183,901**	**282,591**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	1,388	1,457	1,474	1,489
Site Stewardship	4,200	4,800	4,800	5,200
Subtotal Weapons Activities	**5,588**	**6,257**	**6,274**	**6,689**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	11,628	11,884	12,183	12,482
Nonproliferation and International Security	21,989	22,561	23,187	24,809
International Nuclear Materials Protection and Cooperation	82,655	35,763	35,064	41,473
Global Threat Reduction Initiative	17,590	16,796	55,320	55,700
Subtotal Defense Nuclear Nonproliferation	**133,862**	**87,004**	**125,754**	**134,464**
Total, NNSA	**139,450**	**93,261**	**132,028**	**141,153**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Oak Ridge National Laboratory (ORNL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

International Nuclear Materials Protection and Cooperation (INMP&C)
The INMP&C program at ORNL is where subject matter experts have unique working experience in the development of vulnerability assessments; personnel reliability program development for insider protection; the design and application of physical security and material control and accounting systems; performance assurance; sustainability; and life cycle management; transportation security and packaging; storage; and response force training for Ministry of Defense, Rosatom, and civilian Russian sites. The INMP&C ORNL program's experience in defense conversion, and the handling, processing and safeguard of extremely large and varied inventories of enriched uranium and related materials, provides unique experience to the Material Conversion and Consolidation efforts. In addition, ORNL provides expertise in the areas of transportation security, acceptance testing, performance assurance, maintenance, and procedures to the national programs. The ORNL has critical expertise necessary to test and evaluate the radiation detection equipment; and analyze the data retrieved from radiation portal monitors deployed by the Second Line of Defense (SLD) program. The ORNL maintains the repository for all of the data retrieved by systems installed by the SLD program. The ORNL has an integral role in the development of training and implementation of sustainability with the SLD program. The ORNL serves as the lead laboratory in developing independent cost estimates that support the SLD Program's acquisition planning strategy and cost-effective implementation of its CORE and MEGAPORTS projects. The ORNL also serves as the laboratory intermediary for complementary DOE and Defense Threat Reduction Agency project areas related to sustainability.

Nonproliferation and International Security (NIS)
In FY 2011, the NIS program at ORNL will continue to support safeguards technology and concept development; licensing activities, and export control cooperation with international partners. The ORNL supports the development of nuclear transparency measures. The facility also provides expertise on various arms control and nonproliferation agreements and treaties. The ORNL further provides technical support to the Subcommittee on Technical Programs and Cooperation and the U.S.-Russia-IAEA Working Group on the Trilateral Initiative (TI). Also, ORNL provides technical support related to safeguards and verification measures and uranium enrichment processing facilities. In addition, ORNL supports licensing operations through reviews of export controlled equipment, materials and software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, including WMD training to Department of Homeland Security and other enforcement agencies, specialized expertise in the control of nuclear reactor-related technology, prepares analyses to revise U.S. and international nuclear export control lists, studies of export control implications of the development of advanced fuel cycle technologies, and tracks global machine tool supply trends. The ORNL supports nonproliferation assessment activities, and the IAEA with technology development and assessment and environmental monitoring development as well as operation of the Blend Down Monitoring System (BDMS) in the HEU Transparency Program including

equipment maintenance, personnel training, and provision of personnel for monitoring visits. Other ORNL support includes efforts to strengthen international safeguards at all levels of nuclear development. Further, ORNL provides analytical and technological systems services in support of international border security capacity building outreach, as well as export control outreach efforts.

Nonproliferation Verification Research and Development
The ORNL program conducts research to address the threat from nuclear weapons and radiological dispersal devices. Also, ORNL provides leading-edge research into candidate materials, which could replace existing nuclear detectors used for gamma spectroscopy and neutron detection. The program also provides nuclear material analysis efforts; leads research efforts to better understand and detect uranium enrichment operations and contributes to understanding associated effluents associated with those processes.

Global Threat Reduction Initiative (GTRI)
The ORNL provides significant technical, scientific, and management expertise to two of the three key subprograms of GTRI–Remove and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

Fissile Materials Disposition
The ORNL conducts R&D associated with the irradiation of MOX fuel in domestic and commercial reactors to include post irradiation examination of MOX fuel, advise on reactor licensing, and fuel qualification R&D. In support of the Russian program, ORNL will provide technical assistance and expertise associated with NNSA management of the U.S. $400 million ($100M requested in FY 2011) contribution to the Russian plutonium disposition program. Specifically, ORNL will assist NNSA in drafting and negotiating a DOE/Rosatom Implementing Agreement under the Plutonium Management and Disposition Agreement, and the development of appropriate milestones and verification of the completion of those milestones.

PACIFIC NORTHWEST NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
NNSA			
Weapons Activities			
Readiness Campaign	10,578	14,892	8,695
Nuclear Counterterrorism Incident Response	3,628	2,990	3,139
Subtotal Weapons Activities	**14,206**	**17,882**	**11,834**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	61,068	37,169	35,871
Nonproliferation and International Security	17,421	25,919	18,110
International Nuclear Materials Protection and Cooperation	91,241	197,446	132,321
Elimination of Weapons-Grade Plutonium Production	275	0	0
Global Threat Reduction Initiative	53,008	51,724	94,883
Subtotal Defense Nuclear Nonproliferation	**223,013**	**312,258**	**281,185**
Total, NNSA	**237,219**	**330,140**	**293,019**

OUT-YEAR FUNDING:

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015
NNSA				
Weapons Activities				
Readiness Campaign	3,221	3,026	2,732	2,825
Nuclear Counterterrorism Incident Response	3,196	3,100	3,200	3,400
Subtotal Weapons Activities	**6,417**	**6,126**	**5,932**	**6,225**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	33,490	33,646	37,908	46,144
Nonproliferation and International Security	18,708	19,195	19,728	21,107
International Nuclear Materials Protection and Cooperation	99,160	93,023	93,496	102,741
Global Threat Reduction Initiative	135,014	166,255	264,327	281,864
Subtotal Defense Nuclear Nonproliferation	**286,372**	**312,119**	**415,459**	**451,856**
Total, NNSA	**292,789**	**318,245**	**421,391**	**458,081**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Pacific Northwest National Laboratory (PNNL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Readiness Campaign

The Readiness Campaign PNNL program supports the Tritium Readiness activity that re-established and operates the tritium production capability to sustain the nuclear weapons stockpile.

Nonproliferation and Verification Research and Development

The PNNL R&D program provides tools for radionuclide detection and statistical expertise (seismic discrimination) in ground-based nuclear detonation detection. The PNNL program provides tools for nuclear forensics sample collection efforts in post-detonation environments. The PNNL program plays a key role in the identification of detection signatures and observables, nonproliferation data exploitation, leading edge research, and in the development of a "spectral signatures library" to aid in proliferation signatures detection. Also, PNNL is providing radiation detection R&D for HEU detection, long-range SNM detection, and new room-temperature, high-resolution materials. The PNNL provides significant research in the development of methods and tools for enhanced detection of uranium enrichment and plutonium reprocessing facilities using both ground-based effluent collectors and remote sensing systems.

Construction: PNNL provides capabilities replacement efforts for the 300 Area and in the Horn Rapids Triangle area. The acceleration of DOE's Environment Management clean-up activities forces the evacuation of most of the 300 Area facilities by 2011. This project supports a joint effort with the DOE Office of Science and the Department of Homeland Security to construct the Physical Sciences Facility Capabilities Replacement Laboratory and upgrade critical facilities in the 300 Area to be completed by 2011. NNSA completed its commitment to support the construction funding in FY 2009; no additional funds are requested in FY 2011 or the outyears.

Nonproliferation and International Security (NIS)

The NIS program at PNNL provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, Plutonium Production Reactor Agreement implementation, development of nuclear transparency measures, technical analysis, planning for denuclearization and verification efforts in North Korea and other countries of proliferation concern, and technology development, and regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. The PNNL provides support for licensing operations through reviews of export controlled equipment, materials and software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, including Chemical/Biological Weapons related training to Department of Homeland Security, multilateral outreach through support efforts for policymaking and negotiations of various nonproliferation control regimes, international safeguards and physical protection technology

assessments, policy support and nonproliferation assessments, and international cooperation, primarily in the Former Soviet Union but increasingly in transit states as well. The NIS program supports the development of safeguards tools and methodologies, as well as training to foreign nationals as needed. The program also provides technical support on nuclear safeguards, safety and security to developing countries interested in nuclear power for nuclear infrastructure development efforts. The NIS program supports domestic and foreign training and other engagement on strategic trade and export controls and program management services in support of international border security capacity building outreach. The program participates in projects which engage former WMD scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific and business communities.

International Nuclear Materials Protection and Cooperation (INMP&C)
The NNSA's INMP&C program at PNNL provides technical, contracting, and management expertise. In particular, this includes the efforts of experts in physical security, material control and accounting, and protective forces, as well as experienced project managers. The PNNL also manages several projects related to materials protection cooperation and accounting (MPC&A) infrastructure in Russia, including physical protection, material, control and accounting, and protective forces training, regulatory development, and inspections/oversight. In addition, PNNL management and technical experts provide project management support, sustainability assistance and training expertise to the Second Line of Defense program.

Global Threat Reduction Initiative (GTRI)
The PNNL provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

GENERAL PROVISIONS

[SEC. 301. None of the funds appropriated by this Act may be used to prepare or initiate Requests For Proposals (RFPs) for a program if the program has not been funded by Congress.**]**

[SEC. 302. None of the funds appropriated by this Act may be used—

(1) to augment the funds made available for obligation by this Act for severance payments and other benefits and community assistance grants under section 4604 of the Atomic Energy Defense Act (50 U.S.C. 2704) unless the Department of Energy submits a reprogramming request to the appropriate congressional committees; or

(2) to provide enhanced severance payments or other benefits for employees of the Department of Energy under such section; or

(3) develop or implement a workforce restructuring plan that covers employees of the Department of Energy.**]**

SEC. **[**303**]***301*. The unexpended balances of prior appropriations provided for activities in this Act may be available to the same appropriation accounts for such activities established pursuant to this title. Available balances may be merged with funds in the applicable established accounts and thereafter may be accounted for as one fund for the same time period as originally enacted.

SEC. **[**304**]***302*. None of the funds in this or any other Act for the Administrator of the Bonneville Power Administration may be used to enter into any agreement to perform energy efficiency services outside the legally defined Bonneville service territory, with the exception of services provided internationally, including services provided on a reimbursable basis, unless the Administrator certifies in advance that such services are not available from private sector businesses.

SEC. **[**305**]***303*. When the Department of Energy makes a user facility available to universities or other potential users, or seeks input from universities or other potential users regarding significant characteristics or equipment in a user facility or a proposed user facility, the Department shall ensure broad public notice of such availability or such need for input to universities and other potential users. When the Department of Energy considers the participation of a university or other potential user as a formal partner in the establishment or operation of a user facility, the Department shall employ full and open competition in selecting such a partner. For purposes of this section, the term "user facility" includes, but is not limited to:

(1) a user facility as described in section 2203(a)(2) of the Energy Policy Act of 1992 (42 U.S.C. 13503(a)(2));

(2) a National Nuclear Security Administration Defense Programs Technology Deployment Center/User Facility; and

(3) any other Departmental facility designated by the Department as a user facility.

SEC. **[**306**]***304*. Funds appropriated by this or any other Act, or made available by the transfer of funds in this Act, for intelligence activities are deemed to be specifically authorized by the Congress for purposes of section 504 of the National Security Act of 1947 (50 U.S.C. 414) during fiscal year **[**2010**]** *2011* until the enactment of the Intelligence Authorization Act for fiscal year **[**2010**]** *2011*.

SEC. **[**307**]***305*. Of the funds made available by the Department of Energy for activities at Government-owned, contractor-operated laboratories funded in this Act or subsequent Energy and

Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory directed research and development: *Provided*, That the Secretary may also authorize a specific amount not to exceed 4 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site directed research and development.

SEC. **[**308**]***306*. (a) In any fiscal year in which the Secretary of Energy determines that additional funds are needed to reimburse the costs of defined benefit pension plans for contractor employees, the Secretary may transfer not more than 1 percent from each appropriation made available in this and subsequent Energy and Water Development Appropriation Acts to any other appropriation available to the Secretary in the same Act for such reimbursements.

[(b) Where the Secretary recovers the costs of defined benefit pension plans for contractor employees through charges for the indirect costs of research and activities at facilities of the Department of Energy, if the indirect costs attributable to defined benefit pension plan costs in a fiscal year are more than charges in fiscal year 2008, the Secretary shall carry out a transfer of funds under this section.**]**

(**[**c**]***b*) In carrying out a transfer under this section, the Secretary shall use each appropriation made available to the Department in that fiscal year as a source or the transfer, and shall reduce each appropriation by an equal percentage, except that appropriations for which the Secretary determines there exists a need for additional funds for pension plan costs in that fiscal year, as well as appropriations made available for the Power Marketing Administrations, the title XVII loan guarantee program, and the Federal Energy Regulatory Commission, shall not be subject to this requirement.

(**[**d**]***c*) Each January, the Secretary shall report to the Committees on Appropriations of the House of Representatives and the Senate on the state of defined benefit pension plan liabilities in the Department for the preceding year.

(**[**e**]***d*) This transfer authority does not apply to supplemental appropriations, and is in addition to any other transfer authority provided in this or any other Act. The authority provided under this section shall expire on September 30, 2015.

(**[**f**]***e*) The Secretary shall notify the Committees on Appropriations of the House of Representatives and the Senate in writing not less than 30 days in advance of each transfer authorized by this section.

[SEC. 309. (a) Subject to subsection (b), no funds appropriated or otherwise made available by this Act or any other Act may be used to record transactions relating to the increase in borrowing authority or bonds outstanding at any time under the Federal Columbia River Transmission System Act (16 U.S.C. 838 et seq.) referred to in section 401 of division A of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5; 123 Stat. 140) under a funding account, subaccount, or fund symbol other than the Bonneville Power Administration Fund Treasury account fund symbol.

(b) Funds appropriated or otherwise made available by this Act or any other Act may be used to ensure, for purposes of meeting any applicable reporting provisions of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5; 123 Stat. 115), that the Bonneville Power Administration uses a fund symbol other than the Bonneville Power Administration Fund Treasury account fund symbol solely to report accrued expenditures of projects attributed by the Administrator of the Bonneville Power Administration to the increased borrowing authority.

(c) This section is effective for fiscal year 2010 and subsequent fiscal years.**]**

[SEC. 310. Section 1702 of the Energy Policy Act of 2005 (42 U.S.C. 16512) is amended by adding at the end the following new subsection:

"(k) WAGE RATE REQUIREMENTS.—All laborers and mechanics employed by contractors and subcontractors in the performance of construction work financed in whole or in part by a loan guaranteed under this title shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. With respect to the labor standards in this subsection, the Secretary of Labor shall have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C. App.) and section 3145 of title 40, United States Code.".**]**

[SEC. 311. None of the funds made available by this Act may be used to make a grant allocation, discretionary grant award, discretionary contract award, Other Transaction Agreement, or to issue a letter of intent totaling in excess of $1,000,000, or to announce publicly the intention to make such an award, including a contract covered by the Federal Acquisition Regulation, unless the Secretary of Energy notifies the Committees on Appropriations of the Senate and the House of Representatives at least 3 full business days in advance of making such an award or issuing such a letter: *Provided*, That if the Secretary of the Department of Energy determines that compliance with this section would pose a substantial risk to human life, health, or safety, an award may be made without notification and the Committees on Appropriations of the Senate and the House of Representatives shall be notified not later than 5 full business days after such an award is made or letter issued.**]**

[SEC. 312. (a) ULTRA EFFICIENT VEHICLES.—Section 136 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17013) is amended—

(1) in subsection (a)—

(A) in paragraph (1), by inserting "an ultra efficient vehicle or" after "means"; and

(B) by adding at the end the following new paragraph:

"(5) ULTRA EFFICIENT VEHICLE.—The term `ultra efficient vehicle' means a fully closed compartment vehicle designed to carry at least 2 adult passengers that achieves—

"(A) at least 75 miles per gallon while operating on gasoline or diesel fuel;

"(B) at least 75 miles per gallon equivalent while operating as a hybrid electric-gasoline or electric-diesel vehicle; or

"(C) at least 75 miles per gallon equivalent while operating as a fully electric vehicle.";

(2) in subsection (b)—

(A) by inserting ", ultra efficient vehicle manufacturers," after "automobile manufacturers";

(B) in paragraph (1)—

(i) by striking "or" at the end of subparagraph (A);

(ii) by striking "and" at the end of subparagraph (B) and inserting "or"; and

(iii) by adding at the end the following new subparagraph:

"(C) ultra efficient vehicles; and"; and

(C) in paragraph (2), by inserting ", ultra efficient vehicles," after "qualifying vehicles";

(3) in subsection (g), by inserting "or are utilized primarily for the manufacture of ultra efficient vehicles" after "20 years"; and

(4) in subsection (h)(1)(B), by striking "automobiles" the first place it appears and inserting "ultra efficient vehicles, automobiles,".

(b) RECONSIDERATION OF PRIOR APPLICATIONS.—The Secretary of Energy shall reconsider applications for assistance under section 136 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17013) that were—

(1) timely filed under that section before January 1, 2009;

(2) rejected on the basis that the vehicles to which the proposal related were not advanced technology vehicles; and

(3) related to ultra efficient vehicles.**]**

[SEC. 313. (a) Except as provided in subsection (b), none of the funds appropriated or otherwise made available by this title for the Strategic Petroleum Reserve may be made available to any person that as of the enactment of this Act—

(1) is selling refined petroleum products valued at $1,000,000 or more to the Islamic Republic of Iran;

(2) is engaged in an activity valued at $1,000,000 or more that could contribute to enhancing the ability of the Islamic Republic of Iran to import refined petroleum products, including—

(A) providing ships or shipping services to deliver refined petroleum products to the Islamic Republic of Iran;

(B) underwriting or otherwise providing insurance or reinsurance for such an activity; or

(C) financing or brokering such an activity; or

(3) is selling, leasing, or otherwise providing to the Islamic Republic of Iran any goods, services, or technology valued at $1,000,000 or more that could contribute to the maintenance or expansion of the capacity of the Islamic Republic of Iran to produce refined petroleum products.

(b) The prohibition on the use of funds under subsection (a) shall not apply with respect to any contract entered into by the United States Government before the date of the enactment of this Act.

(c) If the Secretary determines a person made ineligible by this section has ceased the activities enumerated in (a)(1)-(3), that person shall no longer be ineligible under this section.**]**

[SEC. 314. Section 132 of the Energy and Water Development Appropriations Act of 2006 (119 Stat 2261) is amended—

(1) in subsection (a)(3), by striking "Corps of Engineers" and inserting "Southwestern Power Administration";

(2) by adding at the end of subsection (a) the following new paragraph:

"(5) PAYMENT TO NON-FEDERAL LICENSEE.—Southwestern Power Administration shall compensate the licensee of Federal Energy Regulatory Commission Project No. 2221 pursuant to paragraph (3) using receipts collected from the sale of Federal power and energy related services. Pursuant to paragraph (6), Southwestern Power Administration will begin collecting receipts in the Special Receipts and Disbursement account upon the date of enactment of this paragraph. Payment to the licensee of Federal Energy Regulatory Commission Project No. 2221 shall be paid as soon as adequate receipts are collected in the Special Receipts and Disbursement Account to fully compensate the licensee, and in accordance with paragraph (2), such payment shall be considered non-reimbursable.";

(3) by adding at the end of subsection (a) the following new paragraph:

"(6) The Southwestern Power Administration shall compensate the licensee of Federal Energy Regulatory Commission Project No. 2221 in annual payments of not less than $5,000,000, until the licensee of Federal Energy Regulatory Commission Project No. 2221 is fully compensated pursuant to paragraph (3). At the end of each fiscal year subsequent to implementation, any remaining balance to be paid to the licensee of Project No. 2221 shall accrue interest at the 30-year U.S. Treasury bond rate in effect at the time of implementation of the White River Minimum Flows project.";

(4) by adding at the end of subsection (a) the following new paragraph:

"(7) ESTABLISHMENT OF SPECIAL RECEIPT AND DISBURSEMENT ACCOUNTS.—There is established in the Treasury of the United States a special receipt account and corresponding

disbursement account to be made available to the Administrator of the Southwestern Power Administration to disburse pre-collected receipts from the sale of federal power and energy and related services. The accounts are authorized for the following uses:

"(A) Collect and disburse receipts for purchase power and wheeling expenses incurred by Southwestern Power Administration to purchase replacement power and energy as a result of implementation of the White River Minimum Flows project.

"(B) Collect and disburse receipts related to compensation of the licensee of Federal Energy Regulatory Commission Project No. 2221.

"(C) Said special receipt and disbursement account shall remain available for not more than 12 months after the date of full compensation of the licensee of Federal Energy Regulatory Commission Project No. 2221."; and

(5) by adding at the end of subsection (a) the following new paragraph:

"(8) TIME OF IMPLEMENTATION.—For purposes of paragraphs (3) and (4), `time of implementation' shall mean the authorization of the special receipt account and corresponding disbursement account described in paragraph (7).". **]**

SEC. 307. (*a*) *Section 1801 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g) is amended in subsection (b)(2) by striking "amounts contained within the Fund" and inserting "assessments collected pursuant to section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1) as amended".*

(*b*) *Section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1) is amended:*

(*1*) *in subsection (a):*

(*A*) *by* striking *"$518,233,333" and inserting "$663,000,000"; and*

(*B*) *by* striking *"on October 24, 1992" and inserting "with fiscal year 2012".*

(*2*) *in subsection (c):*

(*A*) *by* inserting *"(1)" before "The Secretary";*

(*B*) *by* inserting *after "utilities": ", only to the extent provided in advance in appropriation Acts";*

(*C*) *by striking "$150,000,000" and inserting "$200,000,000";*

(*D*) *by* inserting *"beginning in fiscal year 2012" after "adjusted for inflation";*

(*E*) *by striking "(1)" and inserting "(A)";*

(*F*) *by striking "(2)" and inserting "(B)";*

(*G*) *by adding a new paragraph 2, ",(2) Amounts authorized to be collected pursuant to this section shall be deposited in the Fund and credited as offsetting receipts."*

(*3*) *in subsection (d), by striking "for the period encompassing 15 years after the date of the enactment of this title" and inserting "through fiscal year 2026"; and*

(*4*) *in subsection (e):*

(*A*) *in paragraph (1), by striking "15 years after the date of the enactment of this title" and inserting "September 30, 2026";*

(*B*) in *paragraph (2), by striking "$2,250,000,000" and inserting "$3,000,000,000"; and*

(*C*) in *paragraph (2) by inserting "beginning in fiscal year 2012" after "adjusted for inflation".*

SEC. 308. The Secretary shall collect up to $200,000,000 in assessments pursuant to section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1), as amended by this Act.

SEC. 309. For an additional amount for the "Other Defense Activities" account, $11,891,755, to increase the Department's acquisition workforce capacity and capabilities: Provided, That such funds may be transferred by the Secretary to any other account in the Department to carry out the purposes provided herein: Provided further, That such transfer authority is in addition to any other transfer

authority provided in this Act: Provided further, That such funds shall be available only to supplement and not to supplant existing acquisition workforce activities: Provided further, That such funds shall be available for training, recruitment, retention, and hiring additional members of the acquisition workforce as defined by the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 401 et seq.): Provided further, That such funds shall be available for information technology in support of acquisition workforce effectiveness or for management solutions to improve acquisition management.

SEC. 310. Not to exceed 5 per centum, or $100,000,000, of any appropriation, whichever is less, made available for Department of Energy activities funded in this Act or subsequent Energy and Water Development and Related Agencies Appropriation Acts may hereafter be transferred between such appropriations, but no appropriation, except as otherwise provided, shall be increased or decreased by more that 5 per centum by any such transfers, and any such proposed transfers shall be submitted to the Committee on Appropriations of the House and Senate. (Energy and Water Development and Related Agencies Appropriations Act, 2010.)

SEC. 501. None of the funds appropriated by this Act may be used in any way, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. 1913.

SEC. 502. To the extent practicable funds made available in this Act should be used to purchase light bulbs that are "Energy Star" qualified or have the "Federal Energy Management Program" designation.

[SEC. 503. Title IV of division A of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5) is amended by adding at the end of the title, the following new section 411:

"SEC 411. Up to 0.5 percent of each amount appropriated to the Department of the Army and the Bureau of Reclamation in this title may be used for the expenses of management and oversight of the programs, grants, and activities funded by such appropriation, and may be transferred by the Head of the Federal Agency involved to any other appropriate account within the department for that purpose: *Provided*, That the Secretary will provide a report to the Committees on Appropriations of the House of Representatives and the Senate 30 days prior to the transfer: *Provided further*,That funds set aside under this section shall remain available for obligation until September 30, 2012.".**]**

[SEC. 504. (a) DEFINITIONS.—In this section:

(1) *ADMINISTRATIVE* EXPENSES.—The term "administrative expenses" has the meaning as determined by the Director under subsection (b)(2).

(2) *AGENCY*.—The term "agency"—

(A) means an agency as defined under section 1101 of title 31, United States Code, that is established in the executive branch and receives funding under this Act; and

(B) shall not include the District of Columbia government.

(3) *DIRECTOR*.—The term "Director" means the Director of the Office of Management and Budget.

(b) ADMINISTRATIVE EXPENSES.—

(1) IN *GENERAL*.—All agencies shall include a separate category for administrative expenses when submitting their appropriation requests to the Office of Management and Budget for fiscal year 2011 and each fiscal year thereafter.

(2) *ADMINISTRATIVE* EXPENSES DETERMINED.—In consultation with the agencies, the Director shall establish and revise as necessary a definition of administration expenses for the purposes of this section. All questions regarding the definition of administrative expenses shall be resolved by the Director.

(c) BUDGET SUBMISSION.—Each budget of the United States Government submitted under section 1105 of title 31, United States Code, for fiscal year 2011 and each fiscal year thereafter shall include the amount requested for each agency for administrative expenses.**]**

[SEC. 505. None of the funds made available in this Act may be transferred to any department, agency, or instrumentality of the United States Government, except pursuant to a transfer made by, or transfer authority provided in this Act or any other appropriation Act.**]**

SEC. **[**506**]***503*. **[**Specific projects contained in**]** *To the extent that* the report of the Committee on Appropriations of the House of Representatives accompanying this Act **[**(H. Rept. 111-203) **]** *includes specific projects* that are considered congressional earmarks for purposes of clause 9 of rule XXI of the Rules of the House of Representatives, *such projects,* when intended to be awarded to a for-profit entity, shall be awarded under a full and open competition. *(Energy and Water Development and Related Agencies Appropriations Act, 2010.)*

Office of the Administrator

Weapons Activities

Defense Nuclear Nonproliferation

Naval Reactors