DOE/CF-002
Volume 1

DEPARTMENT OF ENERGY

FY 2007 CONGRESSIONAL BUDGET REQUEST

NATIONAL NUCLEAR SECURITY ADMINISTRATION

OFFICE OF THE ADMINISTRATOR
WEAPONS ACTIVITIES
DEFENSE NUCLEAR NONPROLIFERATION
NAVAL REACTORS

FEBRUARY 2006

VOLUME 1

OFFICE OF CHIEF FINANCIAL OFFICER

Printed with soy ink on recycled paper

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Office of the Administrator [redacted]

Weapons Activities [redacted]

Defense Nuclear Nonproliferation [redacted]

Naval Reactors [redacted]

Office of the Administrator

Weapons Activities

Defense Nuclear Nonproliferation

Naval Reactors

Volume 1

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The Department of Energy's FY 2007 Congressional Budget justification is available on the Office of Chief Financial Officer/CFO homepage at http://www.mbe.doe.gov/budget/

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

	FY 2005 Current Approp.	FY 2006 Current Approp.	FY 2007 Congressional Request	FY 2007 vs. FY 2006 $	FY 2007 vs. FY 2006 %
Discretionary Summary By Appropriation					
Energy And Water Development, And Related Agencies Appropriation Summary:					
Energy Programs					
Energy supply and Conservation	1,801,815	1,812,627	1,923,361	+110,734	+6.1%
Fossil energy programs					
Clean coal technology	-160,000	-20,000	——	+20,000	+100.0%
Fossil energy research and development	560,852	592,014	469,686	-122,328	-20.7%
Naval petroleum and oil shale reserves	17,750	21,285	18,810	-2,475	-11.6%
Elk Hills school lands fund	36,000	84,000	——	-84,000	-100.0%
Strategic petroleum reserve	126,710	207,340	155,430	-51,910	-25.0%
Northeast home heating oil reserve	4,930	——	4,950	+4,950	N/A
Strategic petroleum account	43,000	-43,000	——	+43,000	+100.0%
Total, Fossil energy programs	629,242	841,639	648,876	-192,763	-22.9%
Uranium enrichment D&D fund	495,015	556,606	579,368	+22,762	+4.1%
Energy information administration	83,819	85,314	89,769	+4,455	+5.2%
Non-Defense environmental cleanup	439,601	349,687	310,358	-39,329	-11.2%
Science	3,635,650	3,596,391	4,101,710	+505,319	+14.1%
Nuclear waste disposal	343,232	148,500	156,420	+7,920	+5.3%
Departmental administration	128,598	128,519	128,825	+306	+0.2%
Inspector general	41,176	41,580	45,507	+3,927	+9.4%
Total, Energy Programs	7,598,148	7,560,863	7,984,194	+423,331	+5.6%
Atomic Energy Defense Activities					
National nuclear security administration:					
Weapons activities	6,625,542	6,369,597	6,407,889	+38,292	+0.6%
Defense nuclear nonproliferation	1,507,966	1,614,839	1,726,213	+111,374	+6.9%
Naval reactors	801,437	781,605	795,133	+13,528	+1.7%
Office of the administrator	363,350	338,450	386,576	+48,126	+14.2%
Total, National nuclear security administration	9,298,295	9,104,491	9,315,811	+211,320	+2.3%
Environmental and other defense activities:					
Defense environmental cleanup	6,800,848	6,130,447	5,390,312	-740,135	-12.1%
Other defense activities	687,149	635,578	717,788	+82,210	+12.9%
Defense nuclear waste disposal	229,152	346,500	388,080	+41,580	+12.0%
Total, Environmental & other defense activities	7,717,149	7,112,525	6,496,180	-616,345	-8.7%
Total, Atomic Energy Defense Activities	17,015,444	16,217,016	15,811,991	-405,025	-2.5%
Power marketing administrations:					
Southeastern power administration	5,158	5,544	5,723	+179	+3.2%
Southwestern power administration	29,117	29,864	31,539	+1,675	+5.6%
Western area power administration	171,715	231,652	212,213	-19,439	-8.4%
Falcon & Amistad operating & maintenance fund	2,804	2,665	2,500	-165	-6.2%
Colorado River Basins	——	-23,000	-23,000	——	——
Total, Power marketing administrations	208,794	246,725	228,975	-17,750	-7.2%
Federal energy regulatory commission	——	——	——	——	——
Subtotal, Energy And Water Development and Related Agencies	24,822,386	24,024,604	24,025,160	+556	+0.0%
Uranium enrichment D&D fund discretionary payments	-459,296	-446,490	-452,000	-5,510	-1.2%
Excess fees and recoveries, FERC	-18,452	-15,542	-16,405	-863	-5.6%
Total, Discretionary Funding	**24,344,638**	**23,562,572**	**23,556,755**	**-5,817**	**-0.0%**

National Nuclear Security Administration

Overview

Appropriation and Program Summary

(dollars in millions)

	FY 2005 Current Appropriations	FY 2006 Original Appropriation	FY 2006 Adjustments	FY 2006 Current Appropriation	FY 2007 Request
National Nuclear Security Administration (NNSA)					
Office of the Administrator	363.4	341.9	-3.4	338.5	386.6
Weapons Activities (after S&S WFO offset)	6,625.5	6,433.9	-64.3	6,369.6	6,407.9
Defense Nuclear Nonproliferation	1,508.0	1,631.2	-16.3	1,614.8	1,726.2
Naval Reactors	801.4	789.5	-7.9	781.6	795.1
Total, NNSA	**9,298.3**	**9,196.5**	**-92.0**	**9,104.5**	**9,315.8**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

The FY 2007 Request for the National Nuclear Security Administration is $211 million, 2.3 percent, over the FY 2006 appropriated level. Defense Nuclear Nonproliferation programs increase by $111 million, 6.9 percent, to continue the Administration's high priority initiatives to reduce global nuclear danger by safeguarding and eliminating fissile materials in Russia, the United States, and around the world. The NNSA programs supporting nuclear weapon stockpile stewardship, naval reactors, and the nuclear weapons complex infrastructure are essentially flat. The Office of the Administrator account increases by 14 percent to replenish critical skill personnel for safety, security and contract oversight.

The NNSA budget justification contains information for five years as required by Sec. 3253 of P.L. 106-065. This section, entitled *Future-Years Nuclear Security Program (FYNSP)*, requires the Administrator to submit to Congress each year the estimated expenditures necessary to support the programs, projects and activities of the NNSA for a five year fiscal period, in a level of detail comparable to that contained in the budget.

Outyear Appropriation Summary
NNSA Future-Years Nuclear Security Program (FYNSP)

($ in millions)

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
NNSA					
Office of the Administrator	387	394	402	410	418
Weapons Activities (after S&S offset)	6,408	6,536	6,667	6,800	6,936
Defense Nuclear Nonproliferation	1,726	1,761	1,796	1,832	1,869
Naval Reactors	795	811	827	844	861
Total, NNSA	**9,316**	**9,502**	**9,692**	**9,886**	**10,084**

This year's FY 2006 to FY 2010 profile shows a cumulative decrease of $1,696 million from the FYNSP in the FY 2006 President's Budget Request. Much of this decrease, $696 million, is associated with the Department's decision to reverse the FY 2006 initiative to transfer legacy waste activities at NNSA sites from the Office of Environmental Management to NNSA. The remainder of the reduction, $1,000 million, reflects the reduction in FY 2006 appropriations from the requested level ($293 million), and the need to constrain outyear expenditures overall. The submission does not explicitly consider the results of the recent study of the Nuclear Weapons Complex by the Secretary of Energy Advisory Board.

FY 2005 Execution

(dollars in thousands)

	FY 2005 Approp	FY 2005 Balance/ General Reduction	Rescission	Reprogrammings and Other Transfers	Total Adjustments	Current FY 2005
Office of the Administrator....	356,200	0	-2,850	10,000	+7,150	363,350
Weapons Activities.....	6,226,471	0	-49,812	448,883	+399,071	6,625,542
Defense Nuclear Nonproliferation	1,420,397	0	-11,363	98,932	+87,569	1,507,966
Naval Reactors.....	807,900	0	-6,463	0	-6,463	801,437
Total, NNSA	**8,810,968**	**0**	**-70,488**	**557,815**	**+487,327**	**9,298,295**

FY 2006 Execution

(dollars in thousands)

	FY 2006 Approp	FY 2006 Balance/ General Reduction	Rescission	Reprogrammings and Other Transfers	Total Adjustments	Current FY 2006
Office of the Administrator....	341,869	0	-3,419	0	-3,419	338,450
Weapons Activities.....	6,433,936	0	-64,339	0	-64,339	6,369,597
Defense Nuclear Nonproliferation	1,631,151	0	-16,312	0	-16,312	1,614,839
Naval Reactors.....	789,500	0	-7,895	0	-7,895	781,605
Total, NNSA	**9,196,456**	**0**	**-91,965**	**0**	**-91,965**	**9,104,491**

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 Department of Energy (DOE). The NNSA brought together three existing major program components that maintain all of the weapons in the U.S. nuclear weapons stockpile and the nuclear weapons complex infrastructure, lead the Administration's efforts to reduce and prevent the proliferation of nuclear weapons, materials and expertise, and provide cradle-to-grave support for the Navy fleet's nuclear propulsion.

The NNSA is funded through four appropriations. The Weapons Activities appropriation funds four programs, Defense Programs, Nuclear Weapons Incident Response, Infrastructure and Environment, and Safeguards and Security, and has 14 GPRA units. The Defense Nuclear Nonproliferation appropriation funds one program, Defense Nuclear Nonproliferation, with 6 GPRA units. The Naval Reactors appropriation supports all activities, including Program Direction, for that program, and is a single GPRA unit. The Office of the Administrator appropriation provides support for all Federal NNSA employees in Headquarters and the field elements (except couriers and Naval Reactors), and also provides for Information Technology for Federal employees in Headquarters and field locations, and a single GPRA unit.

This overview will describe Strategic Context, Mission, Strategic Situation, Benefits, Strategic Goals, and Funding by General Goal. These items together put the NNSA program in perspective. It will also address the Program Assessment Rating Tool (PART) assessments for NNSA subprograms, Significant Program Shifts, and provides a high level summary of the program proposals.

Strategic Context

Following publication of the Administration's National Energy Policy, the Department developed a Strategic Plan that defines its mission, strategic goals for accomplishing that mission, and general goals to support the strategic goals. Each organization has developed program goals and quantifiable annual targets to support the goals. Thus, the "goal cascade" for NNSA is as follows:

Department Mission → Strategic Goal (25 years) → General Goal (10-15 years) → Program (GPRA Unit) Goal (5-10 years)

The goal cascade links major activities for each NNSA program to successive goals, and ultimately to DOE's mission. This helps ensure that the Department focuses its resources on fulfilling its mission. The cascade also facilitates linkage of resources to the goals in the budget request, and is used as the framework for reporting progress against performance metrics. Thus, the cascade approach facilitates integration of budget and performance information support of the Government Performance and Results Act (GPRA) and the President's Management Agenda.

The Department of Energy (DOE) Strategic Plan was updated in September 2003. The Department identified four strategic goals and seven long-term general goals toward achieving its mission. The NNSA is charged with responsibility for the Defense Strategic Goal and its three associated long-term general goals. The NNSA also supports the Environment Strategic Goal via general goal 6 on Environmental Management through Long-Term Response Actions at NNSA sites. NNSA issued an updated Strategic Plan in November 2004.

To provide a concrete link between budget, performance and reporting, the Department developed a "GPRA Unit" concept, with an associated numbering scheme for DOE-wide integration of program goals and for tracking performance reporting. Within DOE and NNSA, a GPRA Unit defines a major activity or group of activities that support the core mission and align resources with goals. Each NNSA GPRA Unit completes a Program Assessment Rating Tool (PART) self-assessment annually as part of NNSA's Planning, Programming Budgeting and Evaluation (PPBE) process. In addition, 15 NNSA GPRA Units have completed PARTs for OMB Review.

Mission

The mission of the National Nuclear Security Administration (NNSA) is to strengthen national security through the military application of nuclear energy and by reducing the global threat from terrorism and weapons of mass destruction.

NNSA Strategic Situation

NNSA faces several broad challenges in carrying out nuclear threat management and threat reduction. It must:

- plan to sustain its nuclear weapons capabilities, and other contributions to deterrence, absent nuclear testing;
- establish a flexible and agile nuclear weapons R&D and manufacturing enterprise as a means to hedge an uncertain nuclear future;
- maintain a robust and effective Naval Reactors program; and
- develop innovative technical and policy approaches to detecting, preventing, and reversing or, failing that, managing the proliferation of WMD worldwide.

As the Nation draws down the stockpile to the levels established in the Treaty of Moscow--between 1,700 and 2,200 deployed nuclear weapons—the NNSA must consider the long-term implications of successive warhead refurbishments for the weapons remaining in the stockpile. Successive refurbishments will take NNSA further and further from the tested configurations and this may affect confidence in the program's ability to continue to certify the safety and reliability of these legacy systems.

The NNSA must also consider that over the longer term, as existing warheads approach the end of their useful lives, remanufacturing them in successive refurbishment programs may not be the optimal solution. It may be prudent to field replacement warheads that address different needs, are easier and less costly to manufacture, and are less expensive to maintain than the current designs, while still providing high confidence in safety, security, reliability, and performance, absent nuclear testing.

Thus, the NNSA vision is for continued reductions in the nuclear stockpile and the maintenance of a safe, reliable, and credible nuclear deterrent into the indefinite future. This will require the transformation of that stockpile from one that meets Cold War requirements to one capable of addressing the needs of today and tomorrow. Establishing the capabilities to achieve and sustain this transformation should be the central focus of a responsive nuclear weapons infrastructure.

Strategic, General, and Program Goals

The Department's Strategic Plan identifies four strategic goals (one each for defense, energy, science and environmental aspects of the mission) plus seven general goals that link to the strategic goals. The NNSA mission directly or indirectly supports the following goals:

Defense Strategic Goal: To protect our national security by applying advanced science and nuclear technology to the Nation's defense.

Science Strategic Goal: To protect our national and economic security by providing world-class scientific research capacity and advancing scientific knowledge.

Environment Strategic Goal: To protect the environment by providing a responsible resolution to the environmental legacy of the Cold War and by providing for the permanent disposal of the Nation's high-level radioactive waste.

NNSA's organization, appropriation structure and programs support the following four General Goals:

General Goal 1, Nuclear Weapons Stewardship: Ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the U. S. nuclear weapons stockpile.

General Goal 2, Nuclear Nonproliferation: Provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the 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.

General Goal 3, Naval Reactors: Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.

General Goal 6, Environmental Management: Accelerate cleanup of nuclear weapons manufacturing and testing sites, completing cleanup of 108 contaminated sites by 2025.

In addition, NNSA activities that are conducted in direct support of Stockpile Stewardship also contribute indirectly to **General Goal 5, World Class Scientific Research Capacity** that provides world class scientific research capacity needed to ensure the success of the Department missions in national and energy security; advance the frontiers of knowledge in physical sciences and areas of biological, medical, environmental and computational sciences; or provide world-class research facilities for the nation's science enterprise.

Contribution to General Goal 1

NNSA activities funded by the Weapons Activities appropriation/program contribute to General Goal 1. These programs provide personnel and facilities and support for research, development and production activities associated with maintaining the enduring nuclear weapons stockpile. The activities are conducted at a nationwide network of government-owned, contractor operated laboratories, testing facilities and production plants that are maintained and recapitalized by the Federal government, and staffed by a highly specialized and trained scientific/technical workforce to assure a robust infrastructure supporting the U.S. nuclear deterrent.

The Weapons Activities program also supports General Goal 1 with national assets for transportation of weapons, weapon components and materials, national nuclear emergency response assets, and activities to assure safeguards and security for all NNSA facilities, including cyber security. Detailed multi-year performance goals, indicators, annual targets and results are included on tables within each GPRA Unit.

Contribution to General Goal 2

All NNSA activities funded by the Defense Nuclear Nonproliferation appropriation/program contribute to General Goal 2. The nonproliferation programs address the full dimension of the threat of weapons of

mass destruction proliferation, and achieve the desired controls through enhanced detection capabilities, protecting or eliminating weapons and weapons-usable materials, infrastructure and expertise, and by reducing the risk of accidents in nuclear fuel cycle facilities worldwide. Detailed multi-year performance goals, indicators, annual targets and results are included on tables within each GPRA Unit.

The United States is participating with the world community in a comprehensive ten-year nonproliferation effort known as the Global Partnership. The United States intends to provide half of the total $20 billion committed to fund nonproliferation programs in the Former Soviet Union through the DOE, DoD, and Department of State. The DOE and NNSA are providing almost half of the U. S. funding.

Contribution to General Goal 3

All NNSA activities funded by the Naval Reactors appropriation/program contribute to General Goal 3. Naval Reactors is responsible for all Naval nuclear propulsion work, beginning with reactor technology development, and continuing through reactor operation, and ending with reactor plant disposal. The program ensures the safe operation of reactor plants in operating nuclear powered submarines and aircraft carriers (constituting 40 percent of the Navy's principal combatants), and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements. Detailed multi-year performance goals, indicators, annual targets and results are included on tables within the GPRA Unit.

Contribution to General Goal 6

NNSA activities funded by the Weapons Activities' Environmental Projects and Operations Program contributes to General Goal 6. Legacy waste management activities at NNSA sites were proposed for transfer from EM in FY 2006; this transfer has now been reconsidered and reversed. However, NNSA has assumed responsibility for the long-term response actions at NNSA sites starting in FY 2007. Detailed multi-year performance goals, indicators, annual targets and results are included on tables within the GPRA Unit.

Although NNSA's mission activities are undertaken for purposes of Stockpile Stewardship, many Weapons Activities programs and facilities also contribute to **General Goal 5** to advance the nation's science enterprise. Examples include innovation in scientific computing achieved in NNSA's Advanced Simulation and Computing Campaign, high energy density physics knowledge through the National Ignition Facility, and applied and basic research in microelectronics, plutonium metallurgy, neutron science and a number of other disciplines. Many NNSA facilities support scientific research users from other elements of the DOE, as well as other Federal agencies, and partners in the academic and industrial communities.

Major FY 2005 Achievements

Working in partnership with the Department of Defense and the national laboratories, the NNSA provided the annual assessment that the nuclear stockpile is safe, secure and reliable; the Nuclear Weapons Stockpile Memorandum; and the Joint Surety Report, to the President.

NNSA achieved the Production Engineering milestone (Phase 6.4) for the B61-7/11, W76 and W80 Life Extension Programs.

Activities to remove Category I and II special nuclear materials from Los Alamos National Laboratory Technical Area 18 were completed in October 2005 as part of DOE's plan for nuclear materials consolidation and disposition.

NNSA completed rapid Materials Protection and Control upgrades to Russia's 19 Strategic Rocket Forces sites and signed all comprehensive upgrade contracts.

NNSA concluded Second Line of Defense Core Program country agreements with Ukraine and Slovenia, and Megaports agreements with 7 countries.

In April 2005, the official ground-breaking ceremony was held at the Seversk site in Russia to initiate the project that is expected to be completed in December 2008 to refurbish an existing fossil-fueled power plant to replace two of the existing three Russian weapons grade plutonium producing power generating reactors. The first boiler was placed in line in November 2005.

In July 2005, the United States and Russia completed negotiations on a protocol to the September 2000 Plutonium Management and Disposition Agreement covering liability protection for the US-Russian plutonium disposition program.

Through FY 2005, the U.S. Radiological Threat Reduction program has recovered more than 11,000 sources, containing 100,000 curies.

In addition to supporting safe steaming over two million miles in nuclear powered ships in FY 2005, the Naval Reactors Program has also made great strides in the development of both its next-generation aircraft carrier reactor plant design as well as its Transformational Technology Core reactor plant design by meeting planned milestones.

The Facilities and Infrastructure Recapitalization Program facility disposition effort has eliminated a cumulative total of more than two million gross square feet of excess facilities, with strict attention to cost efficiency and within cost parameters that compare favorably to best-in-class organizations.

NNSA completed 100 percent of the milestones for the National Ignition Facility project as defined by the Transition Period Implementation Plan.

NNSA delivered the "Blue Gene L" supercomputer, ranked number one of the world's top 500 computers, demonstrating a low power, high performance, small-footprint technology.

A new structure for addressing Personal Security Programs was established within NNSA that is reducing the security clearance backlog and increasing timeliness for processing clearances.

NNSA and the Office of Safety and Security Performance Assurance conducted Site Assistance Visits at all NNSA sites to identify technological upgrades that could be used to meet the 2005 Design Basis Threat as an offset to more expensive protective force increases.

NNSA deployed multiple field Emergency Response teams to conduct operations in support of the Department of Homeland Security for national events across the United States, including the Presidential inauguration.

NNSA's "Future Leaders" program was initiated to recruit and train new college graduates to assume career positions within the NNSA in safety, engineering and business management.

NNSA established a research partnership with Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence Program to increase their participation in national security-related research and to train and recruit HBCU graduates for employment within NNSA.

Funding by General and Program Goal

(dollars in millions)

	FY 2005	FY 2006	FY 2007
General Goal 1, Nuclear Weapons Stewardship			
Program Goal 01.27.00.00, Directed Stockpile Work	1,351.2	1,372.3	1,410.3
Program Goal 01.28.00.00, Science Campaign	277.3	276.7	263.8
Program Goal 01.29.00.00, Engineering Campaign	258.7	247.9	160.9
Program Goal 01.30.00.00, ICF Ignition and High Yield Campaign	536.8	543.6	451.2
Program Goal 01.31.00.00, Advanced Simulation and Computing Campaign	698.2	599.8	618.0
Program Goal 01.32.00.00, Pit Manufacturing and Certification Campaign	263.6	238.7	237.6
Program Goal 01.33.00.00, Readiness Campaign	265.5	216.6	206.0
Program Goal 01.34.00.00, Readiness in Technical Base and Facilities	1,657.7	1,644.8	1,685.8
Program Goal 01.36.00.00, Secure Transportation Asset	199.7	210.0	209.3
Program Goal 01.37.00.00, Nuclear Weapons Incident Response	98.4	117.6	135.4
Program Goal 01.38.00.00, Facilities and Infrastructure Recapitalization Program	313.7	149.4	291.2
Program Goal 01.39.00.00, Safeguards and Security (net of WFO offset)	721.9	765.8	721.4
Program Direction	307.7	285.0	316.5
Total, General Goal 1, Nuclear Weapons Stewardship	**6,949.4**	**6,668.2**	**6,707.4**
General Goal 2, Control of Weapons of Mass Destruction			
Program Goal 02.40.00.00, Nonproliferation and Verification Research and Development	219.8	318.8	268.9
Program Goal 02.41.00.00, HEU Transparency Implementation	20.8	19.3	0
Program Goal 02.42.00.00, Elimination of Weapons-Grade Plutonium Production	67.3	174.4	206.7
Program Goal 02.44.00.00, Nonproliferation and International Security	143.8	74.3	127.4
Program Goal 02.45.00.00, Global Initiatives for Proliferation Prevention	40.7	39.6	0
Program Goal 02.46.00.00, International Materials, Protection, Control and Cooperation	403.5	422.7	413.2
Program Goal 02.47.00.00, Fissile Materials Disposition	619.1	468.8	603.3
Program Goal 02.64.00.00, Global Threat Reduction Initiative	7.5	97.0	106.8
Program Direction	55.6	60.3	70.1
Total, General Goal 2, Control of Weapons of Mass Destruction	**1,578.1**	**1,675.2**	**1,831.1**
Total, General Goal 3, Program Goal 03.49.00.00, Defense Nuclear Power (Naval Reactors)	**801.4**	**781.6**	**795.1**

	(dollars in millions)		
	FY 2005	FY 2006	FY 2007
General Goal 6, Environmental Management			
Program Goal 06.65.00.00, Environmental Projects and Operations ...	0	0	17.2
Program Direction	0	<1	<1
Total, General Goal 6, Environmental Management	**0**	**0**	**17.2**
Transfer to the Office of the Administrator for Pajarito	**-3.2**	**0**	**0**
Undistributed Adjustment	**2.4**	**0**	**0**
Use of Prior Year Balances	**-30.8**	**-20.2**	**-34.7**
Total, NNSA	**9,298.3**	**9,104.5**	**9,315.8**

Outyear Funding by General and Program Goal

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
General Goal 1, Nuclear Weapons Stewardship				
Program Goal 01.27.00.00, Directed Stockpile Work	1,381.9	1,431.4	1,462.3	1,495.0
Program Goal 01.28.00.00, Science Campaign	282.2	281.3	274.3	268.4
Program Goal 01.29.00.00, Engineering Campaign	169.0	152.1	149.6	147.6
Program Goal 01.30.00.00, ICF Ignition and High Yield Campaign.....	426.0	415.2	414.8	400.0
Program Goal 01.31.00.00, Advanced Simulation and Computing Campaign.....	632.1	621.9	607.7	593.8
Program Goal 01.32.00.00, Pit Manufacturing and Certification Campaign.....	249.6	252.1	260.1	255.8
Program Goal 01.33.00.00, Readiness Campaign	202.6	198.1	192.4	187.7
Program Goal 01.34.00.00, Readiness in Technical Base and Facilities.....	1,767.6	1,833.8	1,907.5	2,008.9
Program Goal 01.36.00.00, Secure Transportation Asset.....	225.1	237.3	244.2	247.6
Program Goal 01.37.00.00, Nuclear Weapons Incident Response.....	137.8	140.0	142.3	144.7
Program Goal 01.38.00.00, Facilities and Infrastructure Recapitalization Program.....	310.4	339.3	368.1	397.0
Program Goal 01.39.00.00, Safeguards and Security (net of WFO offset)	734.2	746.3	758.6	771.2
Program Direction	323.0	329.0	336.0	343.0
**Total, General Goal 1, Nuclear Weapons Stewardship .... **	**6,842.0**	**6,978.0**	**7,118.0**	**7,261.0**

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
General Goal 2, Control of Weapons of Mass Destruction				
Program Goal 02.40.00.00, Nonproliferation and Verification Research and Development	279.4	293.9	311.6	324.0
Program Goal 02.41.00.00, HEU Transparency Implementation	0	0	0	0
Program Goal 02.42.00.00, Elimination of Weapons-Grade Plutonium Production	182.0	139.4	24.9	0
Program Goal 02.44.00.00, Nonproliferation and International Security	132.5	134.7	138.8	147.0
Program Goal 02.45.00.00, Global Initiatives for Proliferation Prevention	0	0	0	0
Program Goal 02.46.00.00, International Materials, Protection, Control and Cooperation	403.4	444.4	530.7	542.9
Program Goal 02.47.00.00, Fissile Materials Disposition	642.9	654.5	710.2	738.0
Program Goal 02.64.00.00, Global Threat Reduction Initiative	120.6	129.1	115.6	116.6
Program Direction	72.0	73.0	74.0	76.0
Total, General Goal 2, Control of Weapons of Mass Destruction	**1,833.0**	**1,869.0**	**1,906.0**	**1,945.0**
Total, General Goal 3, Program Goal 03.49.00.00, Defense Nuclear Power (Naval Reactors)	**811.0**	**827.3**	**843.8**	**860.7**
General Goal 6, Environmental Management				
Program Goal 06.65.00.00, Environmental Projects and Operations	17.5	17.8	18.1	18.4
Total, General Goal 6, Environmental Management	**17.5**	**17.8**	**18.1**	**18.4**
Total, NNSA	**9,502.1**	**9,692.2**	**9,886.0**	**10,083.7**

NNSA Program Direction expenditures funded in the Office of the Administrator appropriation have been allocated in support of General Goals 1 and 2. Goal 1 allocation includes Federal support for programs funded by the Weapons Activities appropriation, as well as NNSA corporate support, including Federal staffing at the site offices. Goal 2 allocation includes Federal support for all Nuclear Nonproliferation programs. Program Direction expenditures for Naval Reactors, supporting Goal 3, are funded separately within the Naval Reactors appropriation. Goal 6 is a new mission, and at this time, Program Direction support is estimated at less than $1 million in FY 2006 and FY 2007.

Program Assessment Rating Tool (PART)

The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently

than through traditional reviews. The PART process links seamlessly with the NNSA's PPBE concept, and PART "self-assessments" have initiated for all NNSA programs as a prominent aspect of the annual program review cycle.

The current focus is to continue to refine outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security, energy security, and improved environmental conditions. The Department has incorporated feedback from the OMB into the FY 2007 National Nuclear Security Administration's Budget Request and the Department will take the necessary steps to continue to improve performance.

Results of PART assessments in prior years are summarized in the table below:

FY 2004	FY 2005	FY 2006	FY 2007
Advanced Simulation and Computing Campaign – *Effective*	Inertial Confinement Fusion Ignition & High Yield Campaign and National Ignition Facility – *Moderately Effective*	Directed Stockpile Work – *Moderately Effective*	Science Campaign – *Moderately Effective*
International Materials Protection and Cooperation – *Effective*	Readiness in Technical Base and Facilities – Operations – *Moderately Effective*	Secure Transportation Asset – *Moderately Effective*	Readiness Campaign – *Effective*
Facilities and Infrastructure Recapitalization – *Moderately Effective*	Elimination of Weapons Grade Plutonium Production (new program) – Results Not *Demonstrated (reassessed in FY 2007 as Effective)*	Nonproliferation and International Security – *Effective*	Nonproliferation and Verification Research and Development – *Moderately Effective*
Safeguards and Security – *Adequate (reassessed in FY 2006 as Moderately Effective)*			Global Initiatives for Proliferation Prevention (GIPP) – *Effective*
			Naval Reactors – *Effective*

Significant Policy or Program Shifts

This budget request reflects some rebalancing of NNSA's programs within the five-year funding envelope, primarily to meet higher near term investment requirements in the Defense Nuclear Nonproliferation programs, and to somewhat improve the outyear profiles for the Facilities and Infrastructure Recapitalization program. Even with these additions to the FIRP program, it is no longer possible to meet the Congressional mandate of 2011 for completing activities under this program, and a legislative proposal to extend the completion date from 2011 to 2013 will be submitted. Funding has been shifted to the Program Direction account to cover additional hiring in high priority skills including safety, facilities representatives, security, nonproliferation and contract oversight, to continue the Future Leaders Intern Program, and to reflect functional transfers from other Departmental elements into NNSA.

The responsibility for newly generated waste at the Lawrence Livermore National Laboratory and the Y-12 National Security Complex was transferred to NNSA in FY 2006. Responsibility for newly generated waste at other NNSA sites was transferred previously by prior agreements. Starting in

FY 2007, NNSA has assumed new responsibility for Long Term Response Actions, and this program is included in NNSA's Environmental Programs and Operations GPRA Unit.

NNSA Budget Request Summary

NNSA's FY 2007-2011 budget proposal continues significant efforts to meet Administration and Secretarial priorities to leverage science to promote national security. Key focus areas include:

- Transforming the nuclear weapons stockpile and infrastructure while meeting Department of Defense requirements;
- Conducting innovative programs in the Former Soviet Union and other countries to address Nonproliferation priorities;
- Supporting naval nuclear propulsion requirements for the nuclear Navy;
- Providing nuclear emergency response assets in support of homeland security;
- Reducing the deferred maintenance backlog and achieving facility footprint reduction goals; and,
- Providing corporate management and oversight for NNSA programs and operations.

This budget proposal takes no explicit account of the recent Secretary of Energy Advisory Board (SEAB) study of the weapons complex. The recommendations are currently under study, and depending upon future implementation decisions, costs could be significant in the next five years.

Defense Programs: The United States continues a fundamental shift in national security strategy to address the realities of the 21st Century. The Administration's Nuclear Posture Review presents a national security environment in which threats may evolve more quickly and be less predictable and more variable than in the past. The NPR recognizes the need to transition from a threat-based nuclear deterrent with large numbers of deployed and reserve weapons, to a deterrent consisting of a smaller nuclear weapons stockpile with greater reliance on the capability and responsiveness of the Department of Defense and NNSA infrastructure to respond to threats. The NNSA infrastructure must be able to meet new requirements in a timely and agile manner while also becoming more sustainable and affordable. Actions including consolidating the nuclear weapons complex, and placing an emphasis on practical and streamlined business practices are critical to this transformation. Efforts are underway to consolidate the facilities and infrastructure needed for ongoing stockpile stewardship from the current Cold War configuration.

The FY 2007 budget request of $5.2 billion for Defense Programs strongly supports the implementation of the responsive infrastructure and the ongoing program of work that forms the backbone of the nuclear weapons deterrent. This includes all programs to meet the immediate needs of the stockpile, stockpile surveillance, annual assessment, and Life Extension programs. NNSA will continue to move ahead with the Reliable Replacement Warhead program to ensure a reliable deterrent for the long-term and to establish the path forward for stockpile transformation. The campaigns are focused on long-term vitality in science and engineering, including completing and operating the National Ignition Facility, continuing operation of the Los Alamos Neutron Science Center (LANSCE) facility through FY 2007, and on R&D supporting future DoD requirements. In addition, the NNSA is implementing a responsive infrastructure of people, science and technology base, and facilities and equipment needed to support a right-sized nuclear weapons infrastructure. The budget includes funding to accelerate warhead dismantlements and consolidation of special nuclear materials across the Complex.

Defense Nuclear Nonproliferation: Preventing weapons of mass destruction from falling into the hands of terrorists is one of this Administration's top national security priorities. The FY 2007 Request of $1.7 billion strongly supports the international programs that are denying terrorists the nuclear materials, technology and expertise needed to develop or otherwise acquire nuclear weapons. The FY 2007 budget request for Defense Nuclear Nonproliferation increases by 6.9 percent over the FY 2006 level. NNSA continues unprecedented efforts to protect the homeland and U.S. allies from threat, including $261 million for cutting-edge nonproliferation research and development for improved technologies to detect and monitor nuclear proliferation and nuclear explosions worldwide. There are also major efforts focused on potential threats abroad. NNSA is requesting $207 million for shutting down three Russian nuclear reactors still producing 1.2 metric tons of plutonium per year and replacing them with conventional fossil fuel power plants. Also, this budget requests $290 million for construction of the U.S. Mixed Oxide fuel fabrication plant to be built at the DOE's Savannah River Site in South Carolina. This facility will dispose of 34 metric tons of U.S. surplus plutonium.

A key breakthrough in nonproliferation efforts was achieved in 2005 with the agreement announced by Presidents Bush and Putin in Bratislava to accelerate U.S. and Russian efforts to improve security at a number of military warhead sites in Russia. Together with NNSA's ongoing materials protection and recovery programs, and border and port nuclear detection efforts, this agreement represents a great stride forward in reducing the threat from proliferation of warheads and weapons-usable nuclear materials.

Naval Reactors: The NNSA continues to support the United States Navy for nuclear propulsion systems. The FY 2007 request is an increase of 1.7 percent over the FY 2006 level. This increase allows the Naval Reactors program to develop new technologies, methods, and materials to support reactor plant design for the next generation reactors for submarines and aircraft carriers, and continue stewardship and remediation for their facilities and sites to maintain outstanding environmental performance.

Safeguards and Security: The FY 2007-2011 Budget request proposes that the physical security portion of NNSA's Safeguards and Security GPRA Unit be renamed "Defense Nuclear Security", consistent with the responsible NNSA organization. This program is responding to a revision in threat guidance affecting physical security at all NNSA sites. Meeting the Design Basis Threat will require further upgrades to equipment, personnel and facilities, and NNSA is committed to completing these activities. The Cyber Security program activities, managed by the NNSA Chief Information Officer, comprise the rest of this account, and the FY 2007 request is essentially level with the FY 2006 funding level. The Request includes funding for the DOE Diskless Conversion initiative. Meeting the post-9/11 security requirements has required a significant long-term investment, reflecting DOE's continuing commitment to meet these requirements.

Facilities and Infrastructure: The NNSA continues to address the deferred maintenance backlog and footprint reduction goals, as well as meet prudent investment rates in addressing the backlog. The NNSA will propose legislation to stretch the completion date for the Facilities and Infrastructure Recapitalization Program from 2011 to 2013.

Nuclear Weapons Incident Response: The FY 2007 request for these programs increases 15.1 percent over the FY 2006 level and remains essentially level through the FYNSP. The program is continuing efforts to enhance Emergency Response capabilities, and the budget request supports all assets as

planned, with emphasis on recruitment and training of personnel called into action during emergency situations. The FY 2007 increase is primarily associated with the research and development efforts of the Render Safe Research and Development program.

Environmental Programs and Operations/Long Term Response Actions: The FY 2007-2011 Budget Request does not include the transfer of legacy environmental management activities at NNSA sites that was proposed in the FY 2006 Budget Request. However, the responsibility for newly generated waste at the Lawrence Livermore National Laboratory and the Y-12 National Security Complex was transferred in FY 2006, and is managed in the Readiness in Technical Base and Facilities GPRA unit. NNSA has also assumed responsibility for environmental stewardship at its sites, and funding for long-term response actions is included in the FY 2007 and outyear budget requests.

Office of the Administrator: NNSA completed the reengineering of its Federal workforce last year and has begun to recruit to fill critical skill gaps in safety, security, facilities, and business positions, in addition to the Future Leaders Intern program initiated in FY 2005. The FY 2007 request increases 14.2 percent over the FY 2006 level, and provides full support for a slightly higher workforce level than in previous years, reflecting the skill gap closures.

Indirect Costs and Other Items of Interest

Institutional General Plant Projects

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 millions)

	FY 2005	FY 2006	FY 2007	$ Change	% Change
Los Alamos National Laboratory	3.4	14.4	11.8	-2.6	-18.1%
Lawrence Livermore National Laboratory	5.9	6.7	8.5	+1.8	+26.9%
Sandia National Laboratories	15.9	12.5	10.0	-2.5	-20.0%
Total Site IGPP	**25.2**	**33.6**	**30.3**	**-3.3**	**-9.8%**

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

In FY 2005, examples of NNSA approved projects for LANL, SNL and LLNL include:

- LANL – An institutional radio shop, a telecommunications duct bank and a medical clinic.
- SNL – Two 20,000 square foot office buildings that support staff from various programs.
- LLNL – An Emergency Operations Center expansion project and communication and software development facility renovations were funded.

In FY 2006, IGPP is projected to include additional institutional multi-program office buildings; a multi-program computer lab building; an institutional weapons archive center; road extension projects and parking lots.

Historically Black Colleges and Universities (HBCU) Support

A research and education partnership program with the HBCU's and the Massie Chairs of Excellence was initiated by the Congress through earmarks in the Office of the Administrator appropriation in FY 2005 and FY 2006. 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 NNSA. The NNSA's goal is a stable $10 million effort annually. The majority of the efforts directly support program activities, and it is expected that programs funded by the Weapons Activities, Defense Nuclear Nonproliferation and Naval Reactors appropriations will fund research with the HBCU's in areas including engineering, radiochemistry, material and computational sciences and sensor development. A targeted effort in education and curriculum development, and support for the Massie Chairs, will also be continued.

Facilities Maintenance and Repair[a]

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[b] [c]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Kansas City Plant	0	8,458	9,410
Lawrence Livermore National Laboratory	81,698	90,090	91,248
Los Alamos National Laboratory	46,104	52,884	48,387
Nevada Test Site	43,553	24,627	25,316
Pantex Plant	0	0	0
Sandia National Laboratories	72,900	73,774	74,659
Savannah River Site	1,676	3,215	3,334
Y-12 National Security Complex	26,429	0	0
Total, Indirect-Funded Maintenance and Repair	**272,360**	**253,048**	**252,354**

[a] Naval Reactors maintenance and repair funding is reported separately.

[b] FY 2005 funding reflects FY 2005 appropriation as outlined in DOE Quarterly Integrated Facilities and Infrastructure (IFI) Budget Crosscut Maintenance and Disposition Cost Reports.

[c] FY 2006-2011 funding shown reflects estimates based on the FY 2006 Ten-Year Comprehensive Site Plans (TYCSPs).

Outyear Indirect-Funded Maintenance and Repair[a]

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Kansas City Plant	9,350	9,566	9,788	10,291
Lawrence Livermore National Laboratory	93,250	96,327	97,103	98,957
Los Alamos National Laboratory	47,420	47,420	47,420	47,420
Nevada Test Site	26,025	26,754	27,503	28,273
Pantex Plant	0	0	0	0
Sandia National Laboratories	75,555	76,462	77,379	78,308
Savannah River Site	3,457	3,585	3,718	3,855
Y-12 National Security Complex	0	0	0	0
Total, Indirect-Funded Maintenance and Repair	**255,057**	**260,114**	**262,911**	**267,104**

Direct-Funded Maintenance and Repair[b] [c]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Kansas City Plant	24,959	22,258	24,762
Lawrence Livermore National Laboratory	0	3,091	3,171
Los Alamos National Laboratory	49,364	47,883	46,446
Nevada Test Site	10,580	13,447	13,824
Pantex Plant	34,800	37,000	33,000
Sandia National Laboratories	5,672	5,739	5,808
Savannah River Site	19,016	18,234	19,345
Y-12 National Security Complex	21,542	49,658	49,658
Total, Direct-Funded Maintenance and Repair	**165,933**	**197,310**	**196,014**

[a] FY 2005 funding reflects FY 2005 appropriation as outlined in DOE Quarterly Integrated Facilities and Infrastructure (IFI) Budget Crosscut Maintenance and Disposition Cost Reports.

[b] FY 2007-2011 funding shown reflects estimates based on the FY 2006 Ten-Year Comprehensive Site Plans (TYCSP)

[c] FY 2005 funding reflects FY 2005 appropriations outlined in DOE FY 2005 Quarterly Integrated Facilities and Infrastructure (IFI) Budget Crosscut Maintenance and Disposition Cost Reports.

Outyear Direct-Funded Maintenance[a]

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Kansas City Plant	24,604	25,174	25,758	27,081
Lawrence Livermore National Laboratory	3,254	3,338	3,425	3,514
Los Alamos National Laboratory	45,517	45,517	45,517	45,517
Nevada Test Site	14,211	14,609	15,018	15,438
Pantex Plant	33,900	34,800	35,600	36,600
Sandia National Laboratories	5,878	5,948	6,020	6,092
Savannah River Site	21,948	22,760	23,826	24,723
Y-12 National Security Complex	50,155	54,167	55,792	60,813
Total, Direct-Funded Maintenance and Repair	**199,467**	**206,313**	**210,956**	**219,778**

Direct-Funded Deferred Maintenance Backlog Reduction[b]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Kansas City Plant [a]	16,987	6,559	1,5874
Lawrence Livermore National Laboratory	20,737	13,975	30,839
Los Alamos National Laboratory	40,013	14,760	50,476
Nevada Test Site	20,803	11,108	24,547
Pantex Plant	32,309	8,203	24,737
Sandia National Laboratories	26,904	3,632	15,739
Savannah River Site	8,090	500	0
Y-12 National Security Complex	46,513	7,966	39,598
Total, Direct-Funded Deferred Maintenance Backlog Reduction	**212,356**	**66,703**	**201,810**

[a] Includes Roof Asset Management Program Funding (RAMP) of $15 million in FY 2005 and $10 million in FYs 2006, 2007, and 2008.

[b] Consistent with FIRP Planning and Recapitalization O&M funding reported in the FY 2007 OMB Request. (Excludes corporate facility management and administrative activities such as FIMS, CAIS, FFC, DCAA, and E-gov). Does not include FIRP Line Item Construction, FIRP Disposition, or other possible sources of repair and/or deferred maintenance funding.

Outyear Direct-Funded Deferred Maintenance Backlog Reduction[a]

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Kansas City Plant	16,578	18,175	19,767	21,368
Lawrence Livermore National Laboratory	32,429	37,035	44,630	48,243
Los Alamos National Laboratory	52,939	58,721	69,085	74,678
Nevada Test Site	26,263	28,794	31,316	33,851
Pantex Plant	35,088	39,461	44,223	47,802
Sandia National Laboratories	18,923	23,287	31,617	45,012
Savannah River Site	0	0	0	0
Y-12 National Security Complex	29,111	49,143	88,989	96,192
Total, Direct-Funded Deferred Maintenance Backlog Reduction	**211,331**	**254,616**	**329,627**	**367,146**

Total Maintenance and Repair Dollars

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Kansas City Plant	41,946	37,275	50,046
Lawrence Livermore National Laboratory	102,435	107,156	125,258
Los Alamos National Laboratory	135,481	115,527	145,309
Nevada Test Site	74,936	49,182	63,687
Pantex Plant	67,109	45,203	57,737
Sandia National Laboratories	105,476	83,145	96,206
Savannah River Site	28,782	21,949	22,679
Y-12 National Security Complex	94,484	57,624	89,256
Total, Direct-Funded Deferred Maintenance Backlog Reduction	**650,649**	**517,061**	**650,178**

Total Outyear Maintenance and Repair Dollars

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Kansas City Plant	50,532	52,915	55,313	58,740
Lawrence Livermore National Laboratory	128,933	136,700	145,158	150,714
Los Alamos National Laboratory	145,876	151,658	162,022	167,615
Nevada Test Site	66,499	70,157	73,837	77,562
Pantex Plant	68,988	74,261	79,823	84,402
Sandia National Laboratories	100,356	105,697	115,016	129,412
Savannah River Site	25,405	26,345	27,544	28,578
Y-12 National Security Complex	79,266	103,310	144,781	157,005
Total, Direct-Funded Deferred Maintenance Backlog Reduction	**665,855**	**721,043**	**803,494**	**854,028**

In addition to the above, some other cost such as Line Items, expense funded projects and General Plant Projects can be attributed to Maintenance activities. However those dollars have not been captured.

Outyear Funding by Site

Outyear funding by site, with associated narrative, for all NNSA programs is contained in the Site Appendix located at the end of the budget justification document.

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] *$11,880*), [$343,869,000] *$386,576,000*, to remain available until expended.

Explanation of Change

The FY 2007 Request increases primarily to support Salaries and Benefits for expanded Federal staffing to support Defense Nuclear Nonproliferation, facility representatives and safety personnel at the Site Offices, the Future Leaders Program, and positions transferred to the NNSA from other organizations (77 additional Full Time Equivalents). Other Related Expenses also increase to support Information Technology and the International Offices. Finally, the new budget authority increases due to the planned use of prior year unobligated balances in FY 2006; no such offset is available in FY 2007.

Office of the Administrator
National Nuclear Security Administration

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2005 Current Appropriation	FY 2006 Original Appropriation	FY 2006 Adjustments	FY 2006 Current Appropriation	FY 2007 Request
Office of the Administrator	363,350[a]	348,765	-3,419	345,346[b]	386,576
Use of Prior-Year Balances	0	-6,896	0	-6,896	0
Total, Office of the Administrator	363,350	341,869	-3,419	338,450	386,576

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Public Law Authorization:

Fiscal Year 2006 Energy and Water Development Appropriations Act. P.L. 109-103; National Defense Authorization Act for Fiscal Year 2006, (P.L. 109-163)

Outyear Appropriation Summary

(dollars in thousands)

	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Office of the Administrator	386,576	394,308	402,194	410,238	418,443

Mission

The Office of the Administrator creates 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.

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 and safeguards and security oversight. The Nation also benefits from the re-engineering of NNSA Federal personnel which demonstrated that resources and staff deployment are

[a] The FY 2005 program level of $370,350,000 for the Office of the Administrator is being achieved through the planned use of prior year unobligated balances in the amount of $7,000,000. Within this amount, $10,000,000 has been deposited into the Pajarito Plateau Homesteaders Compensation fund to settle claims by Pajarito Plateau homesteaders pertaining to the acquisition of lands and property for the Manhattan Project.

[b] The FY 2006 program level of $345,346,000 for the Office of the Administrator is being achieved through the planned use of prior year unobligated balances in the amount of $6,896,000.

regularly assessed against current and future program needs, and rigorous program management standards in the Program Assessment Rating Tool (PART), for the most efficient and cost-effective deployment of Federally-funded management resources.

Strategic, General, and Program Goals
The Department's Strategic Plan identifies four Strategic goals (one each for defense, energy, science, and environmental aspects of the mission) plus seven general goals that tie to the strategic goals. The Office of the Administrator appropriation supports the following goals:

Defense Strategic Goal: To protect our national security by applying advanced science and nuclear technology to the Nation's defense.

General Goal 1, Nuclear Weapons Stewardship: Ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the U.S. nuclear weapons stockpile.

General Goal 2, Nuclear Nonproliferation: Provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the 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.

Contribution to General Goals 1 and 2
The Office of the Administrator (Program Goal 01.02.50.00.00), contributes to General Goals 1 and 2 by providing the Federal personnel and resources necessary to plan, manage, and oversee the operation of the National Nuclear Security Administration's programs designed to meet these goals.

Funding by General Goal

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Goal 1, Nuclear Weapons Stewardship	307,747	285,086	316,478
General Goal 2, Nuclear Nonproliferation	55,603	60,260	70,098
Total, Office of the Administrator	363,350	345,346	386,576

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148**.**

Outyear Funding by General Goal

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Goal 1, Nuclear Weapons Stewardship	322,808	329,264	335,850	342,567
General Goal 2, Nuclear Nonproliferation	71,500	72,930	74,388	75,876
Total, Office of the Administrator	394,308	402,194	410,238	418,443

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative average NNSA Program score on the OMB Program Assessment Rating Tool (PART) assessment indicating progress in budget performance integration and results (Efficiency)	R: 76.8%	R: 81.2% T: 70%	R: 83.7% T: 75%	T: 80%	T: 85%	T: 85%	T: 85%	T: 85%	T: 85%	By 2007, increase average PART scores to 85%.

Means and Strategies

The Office of the Administrator Program will use various means and strategies including collaborative activities to achieve its goals. The NNSA is working with the DOE to adopt enhanced business systems to make sure that we are excellent stewards of U.S. national nuclear security. The NNSA has implemented a disciplined planning, programming, and budgeting process to assure taxpayers that these programs are integrated and cost effective. The program is also implementing information and acquisition management tools and practices for improved job performance and efficiency. The NNSA will use creative personnel practices to ensure the best talent is recruited, retained, and rewarded, and all employees are accountable to the NNSA Administrator for performance in achieving their elements of the NNSA's mission. The re-engineering of NNSA Federal staffing that was developed jointly by managers throughout the organization has redeployed technical staff to where the work is performed, and centralized common business and administrative functions to improve the quality of oversight and increase efficiency.

The Office of the Administrator budget is comprised of 69 percent Salaries and Benefits for NNSA Federal staff. The remaining 31 percent includes several major efforts with largely fixed costs in the areas of Information Technology, Space and Occupancy, and support for the International Offices. A small percentage of discretionary spending funds the areas of Travel, Training, and Support Services.

Validation and Verification

To validate and verify program performance, the NNSA will conduct various internal and external reviews and audits. The 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.

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 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 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) the Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART); (2) NNSA Administrator Program Reviews; (3) Program Manager Detailed Technical Reviews; (4) the NNSA Mid-Year Finance and Performance Review; (5) quarterly reporting of progress through the Department's JOULE performance tracking system; (6) Program Management Self Assessment (PMSA) reporting; and (7) the NNSA Administrator's Annual Performance Report.

The NNSA Administrator reviews each NNSA program at least annually during the NNSA Administrator Reviews. These reviews involve all members of the NNSA management council to ensure progress and recommendations are fully integrated 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 another more detailed review 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 reviews work together to ensure that advance warnings are given to NNSA managers in order for corrective actions to be implemented.

The results of these reviews are reported quarterly in the Department's JOULE performance tracking system and PMSA reporting, and annually in the NNSA Administrator's Annual Performance Report and the DOE Performance Accountability Report (PAR). These documents help to measure the progress that NNSA programs are making toward achieving both annual targets and long-term goals. These summary level documents help senior managers verify and validate progress toward NNSA and Departmental commitments listed in the budget.

In addition, NNSA programs are independently reviewed. The Government Accountability Office (GAO), Inspector General (IG), National Security Council, Defense Nuclear Facilities Safety Board, Secretary of Energy Advisory Board, and others conduct these independent reviews. Recent GAO and IG reports on the Office of the Administrator include PPBE Process and Structure (A02AL048) and Review of NNSA's Management Structure (360337). The current draft Inspector General review on the Design Basis Threat (DBT) implementation, and an independent review of NNSA's security activities (MEIS) in April of 2005, both reported very favorably on NNSA's PPBE processes.

Significant Program Shifts

- Staffing increases in FY 2007 by 77 Full Time Equivalents or FTEs, to support Defense Nuclear Nonproliferation, facility representatives and safety personnel at the Site Offices, the Future Leaders Program, and positions transferred to the NNSA from other organizations. The payroll estimate for FY 2007 also includes the selective replacement of 30 positions by the fourth quarter of FY 2007 (those positions are projected attrition losses by the end of FY 2006).

- The new budget authority requested in FY 2006 was reduced by $6,896,000 through the planned use of prior year unobligated balances. There are no FY 2007 planned use of prior year balances, thus the requirement for new budget authority increases by this amount.

- The FY 2007 Request includes $1,619,525 for NNSA program contributions for A-123 requirements associated with the Department's management assessment of the effectiveness of internal controls over financial reporting, within the Working Capital Fund.

- The FY 2007 Request transfers $1,369,203 out of the NNSA to operate the new consolidated training services organization associated with an A-76/competitive sourcing study of the Department's Human Resources Training Services functions.

- The FY 2007 Request reflects a transfer of $1,909,000 from the Office of Environmental Management for 9 FTEs associated with Newly Generated Waste (NGW) and 4 FTEs associated with Long Term Response Actions (LTRA) activities.

- The FY 2007 Request reflects a transfer of $807,000 from the Office of Security and Safety Performance Assurance for 2 FTEs associated with the consolidation of North Atlantic Treaty Organization (NATO) and Related International Security Programs and 2 FTEs associated with the consolidation of Continuity of Operations (COOP) program management activities.

- The FY 2007 Request also reflects a transfer of $154,000 from the Office of Legacy Management for 1 FTE associated with the administration of the Massie Chairs of Excellence Program.

Major Outyear Considerations

- The Office of the Administrator account will have significant challenges in the outyears with the impacts of escalation on payroll and support to the National Nuclear Security Administration (NNSA) Federal staff.

Historically Black Colleges and Universities (HBCU) Support

- The FY 2007 Request includes $1,000,000 to provide continuing funding for the NNSA's partnership with the Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence Program. This research partnership program was initiated by the Congress in FY 2005, and 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 NNSA. The NNSA's goal is a stable $10,000,000 effort annually, but the majority of this funding directly supports program activities and is included in the budget request for Weapons Activities and Defense Nuclear Nonproliferation.

Office of the Administrator

Full Time Equivalents (FTEs)

	Actual FY 2005	Projected FY 2006	Requested FY 2007
Office of the Administrator			
Headquarters			
Office of the Administrator	52	62	62
Defense Programs	170	170	170
Defense Nuclear Nonproliferation	235	256	280
Emergency Operations	47	88	90
Infrastructure and Environment	20	31	34
Management and Administration	79	93	93
Defense Nuclear Security	18	26	30
Future Leaders Program	15	40	62
Subtotal, Headquarters	*636*	*766*	*821*
NNSA Service Center	425	468	466
Livermore Site Office	92	93	100
Los Alamos Site Office	100	113	125
Sandia Site Office	86	90	92
Nevada Site Office	98	96	99
Pantex Site Office	83	86	85
Y-12 Site Office	78	81	82
Kansas City Site Office	49	51	50
Savannah River Site Office	21	22	23
Total, Office of the Administrator	**1,668**	**1,866**	**1,943**

Office of the Administrator

Funding by Site

(dollars in thousands)

	FY 2005 Adjusted Approp	FY 2006 Adjusted Approp	FY 2007 Cong Request	$ Change	% Change
NNSA Program Direction					
Headquarters	201,486	178,109	208,124	+30,015	+16.9%
NNSA Service Center	62,762	65,909	69,109	+3,200	+4.9%
Livermore Site Office	16,240	16,544	18,294	+1,750	+10.6%
Los Alamos Site Office	17,458	17,213	20,179	+2,966	+17.2%
Sandia Site Office	12,304	12,992	14,137	+1,145	+8.8%
Nevada Site Office	17,848	17,756	17,926	+170	+1.0%
Pantex Site Office	12,033	12,424	13,102	+678	+5.5%
Y-12 Site Office	12,271	12,679	13,479	+800	+6.3%
Kansas City Site Office	5,961	6,331	6,697	+366	+5.8%
Savannah River Site Office	3,166	3,639	3,659	+20	+0.5%
Chicago (Non-NNSA)	1,592	1,513	1,617	+104	+6.9%
Idaho (Non-NNSA)	122	122	131	+9	+7.4%
Richland (Non-NNSA)	107	115	122	+7	+6.1%
Subtotal	**363,350**	**345,346**	**386,576**	**+41,230**	**+11.9%**
Use of Prior Year Balances	0	-6,896	0	+6,896	-100.0%
Total	**363,350**	**338,450**	**386,576**	**+48,126**	**+14.2%**

Office of the Administrator

Funding by Object Class

(dollars in thousands)

	FY 2005 Adjusted Approp	FY 2006 Adjusted Approp	FY 2007 Cong Request	$ Change	% Change
NNSA Program Direction					
Salaries and Benefits	216,667	240,239	265,288	+25,049	+10.4%
Travel	12,418	12,730	14,367	+1,637	+12.9%
Support Services	36,660	30,202	29,138	-1,064	-3.5%
Other Related Expenses					
Information Technology	28,415	27,695	33,264	+5,569	+20.1%
Space and Occupancy Costs	28,591	27,646	35,033	+7,387	+26.7%
Other Related Expenses	39,069	5,374	7,844	+2,470	+46.0%
Training	1,530	1,460	1,642	+182	+12.5%
Subtotal, Other Related Expenses	97,605	62,175	77,783	+15,608	+25.1%
Subtotal	**363,350**	**345,346**	**386,576**	**+41,230**	**+11.9%**
Use of Prior Year Balances	0	-6,896	0	+6,896	-100.0%
Total	**363,350**	**338,450**	**386,576**	**+48,126**	**+14.2%**

Detailed Justification

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Salaries and Benefits	**216,667**	**240,239**	**265,288**

Provides support for the National Nuclear Security Administration (NNSA) Federal staff (1,943 Full Time Equivalents or FTEs in FY 2007), including annual Cost of Living Adjustments (COLAs), base salary increases, promotions, severance costs, performance awards, health and retirement benefits, workman's compensation, and other payroll adjustments. The request also supports the international offices, including Foreign Service Nationals.

Salaries and Benefits have been provided to fully fund staffing in Defense Nuclear Nonproliferation up to 280 FTEs (290 on-board staff), including 19 new hires in FY 2007. Another 12 new hires are planned for the Los Alamos Site Office to increase staffing up to 125 FTEs (129 on-board staff). Finally, staffing levels assume the replacement of 30 positions by the fourth quarter of FY 2007 (those positions are projected attrition losses by the end of FY 2006).

FY 2007 continues to provide Salaries and Benefits funding to support the Future Leaders Program (the third class of 30 NNSA interns is planned to start in the 4th quarter of FY 2007). The Future Leaders Program supports the interns for two years: during this time they are not counted against a site's managed staffing targets. After the two years, the interns assume a position within the staffing targets at the receiving locations.

Salaries consume approximately 80 percent of the estimate, leaving about 20 percent for benefits. Benefit escalation, particularly the Government's share of health insurance premiums, has proven to be much more costly than average cost of living adjustments (increasing over 10 percent annually in recent years). The Government pays about 70 percent of an employee's health insurance premium.

Travel	**12,418**	**12,730**	**14,367**

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.

International travel is increasing with the growth of the Defense Nuclear Nonproliferation mission; it is a key element of the nonproliferation work with international agencies and the Former Soviet Union republics. Defense Nuclear Nonproliferation travel accounts for 43 percent of the total travel request.

Support Services	**36,660**	**30,202**	**29,138**

Provides technical support for highly specialized analytical expertise required to address critical technical program issues in nonproliferation and national security; including areas of security, facilities representatives, ES&H, and project management (FY 2007 $14,514,684).

Funding request provides management support for studies and review of NNSA corporate policies and procedures concerning management operations and planning, including reengineering closeout costs (FY 2007 $1,300,981).

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Provides administrative support including operation of mailrooms and maintenance of various databases (FY 2007 $13,322,021). Any escalation cost increases or new contract requirements will be offset by reductions to the burn rate of existing tasks and/or the elimination of other tasks.

Other Related Expenses..... **75,285** **62,175** **76,783**

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. Also included is support for implementation of NNSA's capital planning and acquisition management programs associated with IT investments at NNSA Management and Operating facilities. The Information Technology request for FY 2007 is $33,264,000 and provides support for responding to deferred activities such as desktop and network equipment refresh, application consolidation, and replacing sunset technology.

Supports $35,033,111 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 2007 allocation for space and occupancy costs is comprised of the following areas and associated funding estimates:

- Rental payments $14,173,830
- Facilities and maintenance $9,243,218
- Utilities $4,174,810
- Building occupancy costs $1,794,870
- A-123 program contribution $1,619,525
- Supplies and materials $1,287,580
- Standard Accounting and Reporting System (STARS) $1,183,050
- Equipment maintenance $825,924
- Printing and production $663,974
- Janitorial $66,330

Provides $4,108,995 in FY 2007 for operational costs associated with the international offices in Moscow, Vienna, Tokyo, Kiev, and Beijing; all critical to executing the Defense Nuclear Nonproliferation programs. The increased funding supports the establishment of the Beijing Office, State Department security cost sharing charges, and the State Department's international cooperative administrative support charges.

Supports necessary training and skills maintenance of the NNSA Federal staff of $1,641,760, including $220,000 to support extensive training for 60 interns in the Future Leaders Program.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Provides $1,355,116 in FY 2007 for E-Government initiatives (Business Gateway, Grants.gov, Geospatial One-Stop, Recruitment One-Stop, Enterprise Human Resource Initiative, Lines of Business, and the Integrated Acquisition Environment).

Supports $931,080 in funding for activities required for NNSA's Federal personnel, including minor procurements; the National Archives and Records Administration (NARA); the Diversity Partnership program; Small Business Administration Certification and Training; and other services and miscellaneous activities.

Provides $353,856 in support of non-payroll funding for Permanent Change of Station (PCS) moves for Federal personnel.

Supports the Defense Contract Audit Agency (DCAA) audit assessment of $83,510.

Provides $11,880 for official reception and representation expenses for NNSA activities.

Congressionally Directed Activity	**22,320**	**TBD**	**1,000**

The NNSA will support the FY 2006 earmark, however funding source is yet to be determined. FY 2007 supports $1,000,000 in continuing funding for the NNSA's partnership with the Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence Program.

Subtotal, Office off the Administrator	**363,350**	**345,346**	**386,576**
Use of Prior Year Balances	**0**	**-6,896**	**0**
Total, Office of the Administrator	**363,350**	**338,450**	**386,576**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
▪ **Salaries and Benefits**	
Reflects a 10.4 percent increase associated with 77 additional FTEs (expanded Federal staffing to support Defense Nuclear Nonproliferation, facility representatives and safety personnel at the Site Offices, the Future Leaders Program, and positions transferred to the NNSA from other organizations), full year impact of the 3.1 percent January 2006 Cost of Living Adjustment (COLA), support for nine months of a 2.2 percent January 2007 COLA, benefit escalation, promotions, within-grade increases, and projected excepted service increases.	**+25,049**
▪ **Travel**	
Reflects a 12.9 percent increase due to overseas travel requirements supporting Defense Nuclear Nonproliferation and minor increases associated with rotational assignments for the NNSA interns	**+1,637**
▪ **Support Services**	
Reflects a 3.5 percent decrease, minor increases in technical contract escalation costs or new contract requirements have been offset by reductions to the burn rate of existing tasks and/or the elimination of other tasks in administrative and management support areas.	**-1,064**
▪ **Other Related Expenses**	
Reflects a 23.5 percent increase, information technology increases due to responding to deferred activities such as desktop and network equipment refresh, application consolidation, and sunset technology replacement; space and occupancy costs increase to support expanded Federal staffing; the international offices increase funding to fully establish the Beijing Office and support State Department security cost sharing and international cooperative administrative support charges; and increases associated with the NNSA program contributions for A-123 requirements for the Department's management assessment of the effectiveness of internal controls over financial reporting	**+14,608**
▪ **Congressionally Directed Activity**	
Supports continuing funding for the NNSA's partnership with the Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence Program. FY 2006 funding is TBD as the Congressional earmark did not provide additional funds to support the program	**+1,000**
Subtotal Funding Change, Office of the Administrator	**+41,230**

	FY 2007 vs. FY 2006 ($000)
▪ **Use of Prior Year Balances**	
The new budget authority requested in FY 2006 was reduced by $6,896,000 through the planned use of prior year unobligated balances. There is no planned use of prior year balances in FY 2007, thus the request for new budget authority increases by that amount.	**+6,896**
Total Funding Change, Office of the Administrator	**+48,126**

Funding Profile by Category

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	$ Change	% Change
Headquarters					
Salaries and Benefits	91,288	103,949	116,928	+12,979	+12.5%
Travel	8,046	9,139	10,583	+1,444	+15.8%
Support Services	20,638	16,512	16,516	+4	+0.0%
Other Related Expenses	81,514	48,509	64,097	+15,588	+32.1%
Total, Headquarters	201,486	178,109	208,124	+30,015	+16.9%
Total, Full Time Equivalents	622	753	808	+55	+7.3%
NNSA Service Center					
Salaries and Benefits	45,288	50,519	53,637	+3,118	+6.2%
Travel	1,641	1,230	1,230	0	0.0%
Support Services	7,654	7,168	6,034	-1,134	-15.8%
Other Related Expenses	8,179	6,992	8,208	+1,216	+17.4%
Total, NNSA Service Center	62,762	65,909	69,109	+3,200	+4.9%
Total, Full Time Equivalents	425	468	466	-2	-0.4%
Livermore Site Office					
Salaries and Benefits	12,115	12,775	14,548	+1,773	+13.9%
Travel	390	379	434	+55	+14.5%
Support Services	1,901	1,535	1,496	-39	-2.5%
Other Related Expenses	1,834	1,855	1,816	-39	-2.1%
Total, Livermore Site Office	16,240	16,544	18,294	+1,750	+10.6%
Total, Full Time Equivalents	92	93	100	+7	+7.5%
Los Alamos Site Office					
Salaries and Benefits	13,477	15,040	18,567	+3,527	+23.5%
Travel	365	378	386	+8	+2.1%
Support Services	1,350	765	780	+15	+2.0%
Other Related Expenses	2,266	1,030	446	-584	-56.7%
Total, Los Alamos Site Office	17,458	17,213	20,179	+2,966	+17.2%
Total, Full Time Equivalents	100	113	125	+12	+10.6%
Sandia Site Office					
Salaries and Benefits	10,782	11,561	12,770	+1,209	+10.5%
Travel	319	182	294	+112	+61.5%
Support Services	734	741	794	+53	+7.2%
Other Related Expenses	469	508	279	-229	-45.1%
Total, Sandia Site Office	12,304	12,992	14,137	+1,145	+8.8%
Total, Full Time Equivalents	86	90	92	+2	+2.2%

Funding Profile by Category (continued)

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	$ Change	% Change
Nevada Site Office					
Salaries and Benefits	13,289	13,778	14,051	+273	+2.0%
Travel	524	451	460	+9	+2.0%
Support Services	2,172	1,525	1,556	+31	+2.0%
Other Related Expenses	1,863	2,002	1,859	-143	-7.1%
Total, Nevada Site Office	17,848	17,756	17,926	+170	+1.0%
Total, Full Time Equivalents	98	96	99	+3	+3.1%
Pantex Site Office					
Salaries and Benefits	10,346	10,781	11,709	+928	+8.6%
Travel	294	255	233	-22	-8.6%
Support Services	1,082	918	940	+22	+2.4%
Other Related Expenses	311	470	220	-250	-53.2%
Total, Pantex Site Office	12,033	12,424	13,102	+678	+5.5%
Total, Full Time Equivalents	83	86	85	-1	-1.2%
Y-12 Site Office					
Salaries and Benefits	9,976	10,838	11,577	+739	+6.8%
Travel	410	310	301	-9	-2.9%
Support Services	995	922	943	+21	+2.3%
Other Related Expenses	890	609	658	+49	+8.0%
Total, Y-12 Site Office	12,271	12,679	13,479	+800	+6.3%
Total, Full Time Equivalents	78	81	82	+1	+1.2%
Kansas City Site Office					
Salaries and Benefits	5,519	5,950	6,314	+364	+6.1%
Travel	179	174	198	+24	+13.8%
Support Services	44	43	10	-33	-76.7%
Other Related Expenses	219	164	175	+11	+6.7%
Total, Kansas City Site Office	5,961	6,331	6,697	+366	+5.8%
Total, Full Time Equivalents	49	51	50	-1	-2.0%
Savannah River Site Office					
Salaries and Benefits	2,766	3,298	3,317	+19	+0.6%
Travel	250	232	248	+16	+6.9%
Support Services	90	73	69	-4	-5.5%
Other Related Expenses	60	36	25	-11	-30.6%
Total, Savannah River Site Office	3,166	3,639	3,659	+20	+0.5%
Total, Full Time Equivalents	21	22	23	+1	+4.5%

Funding Profile by Category (continued)

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	$ Change	% Change
Chicago Operations Office (Non-NNSA)					
Salaries and Benefits	1,592	1,513	1,617	+104	+6.9%
Travel	0	0	0	0	0.0%
Support Services	0	0	0	0	0.0%
Other Related Expenses	0	0	0	0	0.0%
Total, Chicago Operations Office	1,592	1,513	1,617	+104	+6.9%
Total, Full Time Equivalents	12	11	11	0	0.0%
Idaho Operations Office (Non-NNSA)					
Salaries and Benefits	122	122	131	+9	+7.4%
Travel	0	0	0	0	0.0%
Support Services	0	0	0	0	0.0%
Other Related Expenses	0	0	0	0	0.0%
Total, Idaho Operations Office	122	122	131	+9	+7.4%
Total, Full Time Equivalents	1	1	1	0	0.0%
Richland Operations Office (Non-NNSA)					
Salaries and Benefits	107	115	122	+7	+6.1%
Travel	0	0	0	0	0.0%
Support Services	0	0	0	0	0.0%
Other Related Expenses	0	0	0	0	0.0%
Total, Richland Operations Office	107	115	122	+7	+6.1%
Total, Full Time Equivalents	1	1	1	0	0.0%
Office of the Administrator					
Salaries and Benefits	216,667	240,239	265,288	+25,049	+10.4%
Travel	12,418	12,730	14,367	+1,637	+12.9%
Support Services	36,660	30,202	29,138	-1,064	-3.5%
Other Related Expenses	97,605	62,175	77,783	+15,608	+25.1%
Subtotal, Office of the Administrator	363,350	345,346	386,576	+41,230	+11.9%
Use of Prior Year Balances	0	-6,896	0	+6,896	-100.0%
Total, Office of the Administrator	363,350	338,450	386,576	+48,126	+14.2%
Total, Full Time Equivalents	1,668	1,866	1,943	+77	+4.1%

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Support Services

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	$ Change	% Change
Administrative support	16,405	14,411	13,322	-1,089	-7.6%
Management support					
Re-engineering support	768	336	0	-336	-100.0%
Other management support	2,613	1,677	1,301	-376	-22.4%
Subtotal, Management support	3,381	2,013	1,301	-712	-35.4%
Technical support					
Security support	5,550	4,365	4,646	+281	+6.4%
Facility representative support	378	368	377	+9	+2.4%
ES&H technical support	2,478	2,241	2,195	-46	-2.1%
Project management support	1,930	1,374	1,617	+243	+17.7%
Other technical support	6,538	5,430	5,680	+250	+4.6%
Subtotal, Technical support	16,874	13,778	14,515	+737	+5.3%
Total, Support Services	**36,660**	**30,202**	**29,138**	**-1,064**	**-3.5%**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Other Related Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	$ Change	% Change
Training	1,530	1,460	1,642	+182	+12.5%
Space and Occupancy Costs					
Rental payments	11,848	11,088	14,174	+3,086	+27.8%
Facilities and maintenance	8,442	7,387	9,243	+1,856	+25.1%
Utilities	3,949	3,743	4,175	+432	+11.5%
Building occupancy costs	1,744	1,812	1,795	-17	-0.9%
A-123 program contribution	0	0	1,619	+1,619	+100.0%
Supplies and materials	1,365	1,245	1,288	+43	+3.5%
STARS	0	1,183	1,183	0	0.0%
Equipment maintenance	622	619	826	+207	+33.4%
Printing and production	554	504	664	+160	+31.7%
Janitorial	67	65	66	+1	+1.5%
Subtotal, Space and Occupancy Costs	28,591	27,646	35,033	+7,387	+26.7%
Other Expenses					
HBCUs (Congressionally Directed Activity)	22,320	TBD	1,000	+1,000	+100.0%
Pajarito Settlement	10,000	0	0	0	0.0%
International Offices	1,997	1,755	4,109	+2,354	+134.1%
Egov initiatives	114	1,155	1,355	+200	+17.3%
Other Services	1,228	936	931	-5	-0.5%
PCS moves	2,576	1,447	354	-1,093	-75.5%
DCAA audits	72	69	83	+14	+20.3%
Reception and representation	12	12	12	0	0.0%
Pueblos	750	0	0	0	0.0%
Subtotal, Other Expenses	39,069	5,374	7,844	+2,470	+46.0%
Subtotal, Other Related Expenses	**69,190**	**34,480**	**44,519**	**+10,039**	**+29.1%**
Information Technology	28,415	27,695	33,264	+5,569	+20.1%
Total, Other Related Expenses	**97,605**	**62,175**	**77,783**	**+15,608**	**+25.1%**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

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, weapons 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; the purchase of not to exceed [40] 14 passenger motor vehicles, for replacement only, including not to exceed two buses; [$6,433,936,000], *$6,407,889,000* to remain available until expended.

Explanation of Change

Changes from the language proposed in FY 2006 are to the funding amounts and motor vehicles.

Weapons Activities

Funding Profile by Subprogram

(dollars in thousands)

	FY 2005 Current Appropriation	FY 2006 Original Appropriation	FY 2006 Adjustments	FY 2006 Current Appropriation	FY 2007 Request
Weapons Activities					
Directed Stockpile Work	1,351,206	1,386,189	-13,862	1,372,327	1,410,268
Science Campaign	277,253	279,464	-2,794	276,670	263,762
Engineering Campaign	258,767	250,411	-2,504	247,907	160,919
Inertial Confinement Fusion Ignition and High Yield Campaign	536,756	549,073	-5,491	543,582	451,191
Advanced Simulation and Computing Campaign	698,196	605,830	-6,058	599,772	617,955
Pit Manufacturing and Certification Campaign	263,570	241,074	-2,411	238,663	237,598
Readiness Campaign	265,472	218,755	-2,188	216,567	205,965
Readiness in Technical Base and Facilities	1,657,712	1,647,885	-3,130	1,644,755	1,685,772
Secure Transportation Asset	199,709	212,100	-2,121	209,979	209,264
Nuclear Weapons Incident Response	98,427	118,796	-1,188	117,608	135,354
Facilities and Infrastructure Recapitalization Program	313,722	150,873	-1,508	149,365	291,218
Environmental Projects and Operations	0	0	0	0	17,211
Safeguards and Security	751,929	805,486	-7,735	797,751	754,412
Subtotal, Weapons Activities	**6,672,719**	**6,465,936**	**-50,990**	**6,414,946**	**6,440,889**
Use of Prior Year Balances	-16,372	0	-13,349	-13,349	0
Security Charge for Reimbursable Work	-30,000	-32,000	0	-32,000	-33,000
Transfer to the Office of the Administrator for Pajarito	-3,205	0	0	0	0
Undistributed Budget Authority [a]	2,400	0	0	0	0
Total, Weapons Activities	**6,625,542**	**6,433,936**	**-64,339**	**6,369,597**	**6,407,889**

NOTE: The FY 2006 adjustments column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148. It also reflects the approval of the following reprogrammings for Readiness in Technical Base and

[a] Results from application of the 0.8 percent across-the-board rescission against the gross Weapons Activities appropriation prior to receipt of the $300,000,000 which was derived by transfer from the Department of Defense in accordance with Public Law 108-447.

Facilities using prior year funding—Savannah River General Plant Projects and Project 03-D-102, National Security Sciences Building.

Public Law Authorization:
P.L. 109-163, National Defense Authorization Act, FY 2006
P.L. 109-103, Energy and Water Development Appropriations Act, 2006

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Weapons Activities				
Directed Stockpile Work	1,381,893	1,431,364	1,462,287	1,494,962
Science Campaign	282,223	281,344	274,296	268,441
Engineering Campaign	169,012	152,114	149,639	147,584
Inertial Confinement Fusion Ignition and High Yield Campaign	426,035	415,222	414,823	400,013
Advanced Simulation and Computing Campaign	632,095	621,943	607,746	593,761
Pit Manufacturing and Certification Campaign	249,588	252,174	260,096	255,832
Readiness Campaign	202,636	198,090	192,401	187,659
Readiness in Technical Base and Facilities	1,767,586	1,833,813	1,907,510	2,008,941
Secure Transportation Asset	225,057	237,344	244,212	247,580
Nuclear Weapons Incident Response	137,766	140,019	142,332	144,701
Facilities and Infrastructure Recapitalization Program	310,369	339,257	368,054	396,996
Environmental Projects and Operations	17,518	17,805	18,099	18,400
Safeguards and Security	768,269	781,279	794,608	808,235
Subtotal, Weapons Activities	**6,570,047**	**6,701,768**	**6,836,103**	**6,973,105**
Security Charge for Reimbursable Work	-34,000	-35,000	-36,000	-37,000
Total, Weapons Activities	**6,536,047**	**6,666,768**	**6,800,103**	**6,936,105**

Major Outyear Considerations

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Weapons Activities	6,570,047	6,701,768	6,836,103	6,973,105

NNSA describes major outyear considerations at each GPRA-Unit level within this appropriation.

The NNSA FY 2007-2011 budget proposal continues significant efforts to meet Administration and Secretarial priorities for Weapons Activities. Key focus areas include:

- Meeting the immediate needs of the stockpile, stockpile surveillance, annual assessment, and Life Extension Programs

- Transforming the nuclear weapons stockpile and infrastructure, while meeting Department of Defense requirements through the Reliable Replacement Warhead program and Responsive Infrastructure initiative

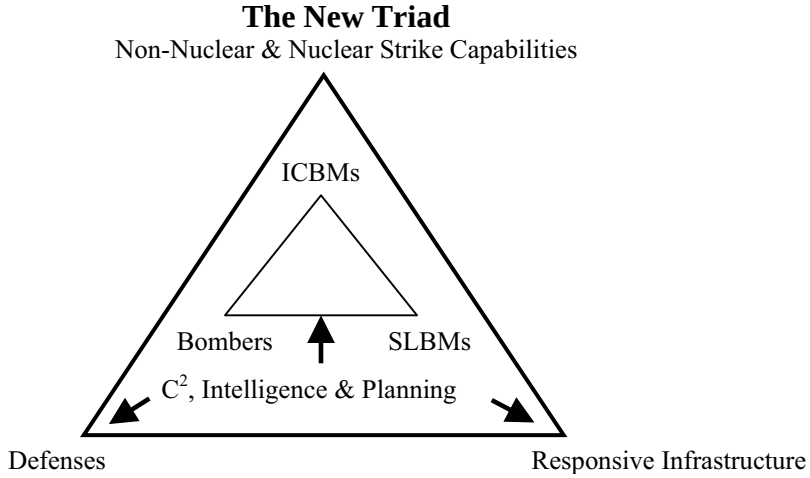
- Fully implementing the 2005 Design Basis Threat and supporting the Department's Diskless Computing cyber security initiative

- Reducing the deferred maintenance backlog and achieving facility footprint reduction goals

- Providing nuclear emergency response assets in support of homeland security and the transfer of the Render Safe Research and Development funding from the Defense Nuclear Nonproliferation appropriation to the Weapons Activities Nuclear Weapons Incident Response Emergency Response program where it is managed.

Responsive Infrastructure Implementation

The Department of Defense (DOD) Nuclear Posture Review (NPR)[a], completed in December 2001, concluded that the 21st century presents a national security environment in which threats may evolve more quickly, be more variable in nature, and be less predictable than in the past. It also recognized that the roles of U.S. nuclear forces and the infrastructure to support those forces must evolve to meet the requirements of the new threat environment. The NPR calls for a transition from a threat-based nuclear deterrent with large numbers of deployed and reserve weapons to a deterrent based on capabilities with a smaller nuclear weapons stockpile and greater reliance on the capability and responsiveness of the DoD and National Nuclear Security Administration (NNSA) infrastructure to respond to threats. A new triad has been constructed to illustrate how offensive capabilities, defenses, and a responsive infrastructure must be balanced to fulfill future security strategy requirements.



[a] Nuclear Posture Review, Report to the Congress in Response to Sections 1041 (as amended) and 1042 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, PL 106-398, December 2001.

The NNSA nuclear weapons infrastructure must provide the capabilities to prevent technological surprise and provide a safe, secure and reliable national deterrent to meet evolving requirements. While continuing to support an aging stockpile, the nuclear weapons complex must meet future requirements in a timely and agile manner. The NNSA must demonstrate resilience to unanticipated events and support the ability to anticipate innovations by an adversary and to counter them before the U.S. nuclear deterrent is degraded. However, the ability to meet DoD needs in a timely and agile manner is not enough. The NNSA complex must also become more sustainable and more affordable.

Actions to achieve a responsive infrastructure span the entire DoD and NNSA nuclear weapons enterprise including all functions that support the Nation's nuclear weapons stockpile. These functions encompass research and development, design, engineering, manufacturing, testing, surveillance, maintenance, transportation, logistics, dismantlement, material disposition, environmental management, and facility operations. The elements of a responsive infrastructure include the people, science and technology base, facilities, and equipment needed to support a right-sized nuclear weapons infrastructure. A responsive infrastructure also includes practical and streamlined business practices. Investment in the Stockpile Stewardship Program (SSP) over the past 10 years has enabled changes to implement a more responsive future. The SSP has provided the tools, capabilities, and improved understanding of the fundamental science of nuclear weapons that ensures confidence in the safety, performance, and reliability of the stockpile even though the average age of warheads in the stockpile is now nearly 20 years. It is the success of stockpile stewardship that now enables changes to both the stockpile and the infrastructure that supports it without relying on underground nuclear testing.

The NNSA has developed a strategy for Responsive Infrastructure and is developing a detailed implementation plan to achieve the program objectives. Specific implementation actions are planned for each of the following strategic objectives:

- Effectively organize and manage the infrastructure,

- Size and locate facilities and functions to optimize total complex efficiency, while providing needed capabilities, and

- Establish an infrastructure that is sustainable and capable of supporting the stockpile for the long-term.

Implementation actions are being incorporated into existing program elements: Directed Stockpile Work, Campaigns, Readiness in Technical Base and Facilities (RTBF), and Secure Transportation Asset. Some program elements, such as RTBF and the Readiness Campaign, will be particularly pivotal in enhancing long-term responsiveness of the Nuclear Weapons Complex. Funding to manage the strategy, drive change, and support cross-cutting initiatives required to achieve responsiveness objectives is currently included in Directed Stockpile Work – Stockpile Services.

Nuclear Materials Consolidation and Disposition

The NNSA is also accelerating efforts for warhead dismantlement and consolidation of special nuclear materials across the nuclear weapons complex. Both of these efforts will contribute to increasing the physical security at NNSA sites by decreasing the distribution of materials requiring the highest level of protection.

Mission

The Weapons Activities mission is to ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security, and reliability of the United States (U.S.) nuclear weapons stockpile.

Benefits

The Weapons Activities program supports the NNSA and DOE missions by maintaining a robust infrastructure of people, programs, and facilities to provide specialized scientific and technical capability for stewardship of the nuclear weapon stockpile.

Strategic and Program Goals

The Department's Strategic Plan identifies four strategic goals (one each for defense, energy, science, and environment aspects of the mission) plus seven general goals that tie to the strategic goals. The Weapons Activities authorization supports the following goals:

Defense Strategic Goal: To protect our national security by applying advanced science and nuclear technology to the Nation's defense.

General Goal 1, Nuclear Weapons Stewardship: Ensure that our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security and reliability of the U.S. nuclear stockpile.

Environment Strategic Goal: To protect the environment by providing a responsible resolution to the environmental legacy of the Cold War and by providing for the permanent disposal of the Nation's high-level radioactive waste.

General Goal 6, Environmental Management: Accelerate cleanup of nuclear weapons manufacturing and testing sites, completing cleanup of 108 contaminated sites by 2025.

Contribution to General Goal 1

Within the Weapons Activities appropriation, 12 programs each make unique contributions to General Goal 1 as follows:

The Directed Stockpile Work (Program Goal 01.27.00.00) contributes to this goal by ensuring that the nuclear warheads and bombs in the U.S. nuclear stockpile are safe, secure, and reliable.

The Science Campaign (Program Goal 01.28.00.00) contributes to this goal by developing improved capabilities to assess the safety, reliability, and performance of the nuclear portion of weapons without further underground testing; maintaining readiness to conduct underground nuclear testing if directed by the president; and developing essential scientific capabilities and infrastructure.

The Engineering Campaign (Program Goal 01.29.00.00) contributes to this goal by providing validated engineering sciences and engineering modeling and simulation tools for design, qualification, and certification; improved surety technologies; radiation hardening design and modeling capabilities; microsystems and microtechnologies; component and material lifetime assessments; and predictive aging models and surveillance diagnostics.

The Inertial Confinement Fusion Ignition and High Yield Campaign (Program Goal 01.30.00.00) contributes to this goal by developing laboratory capabilities to create and measure extreme conditions of temperature, pressure, and radiation, including thermonuclear burn conditions, approaching those in a nuclear explosion and by conducting weapons-related research in these environments.

The Advanced Simulation and Computing Campaign (Program Goal 01.31.00.00) contributes to this goal by providing leading edge, high-end simulation capabilities to meet weapons assessment and certification requirements, including weapon codes, weapons science, platforms, and computer facilities.

The Pit Manufacturing and Certification Campaign (Program Goal 01.32.00.00) contributes to this goal by restoring the capability and some limited capacity to manufacture pits of all types required for the nuclear weapons stockpile.

The Readiness Campaign (Program Goal 01.33.00.00) contributes to this goal by developing and delivering design-to-manufacturing capabilities to meet the evolving and urgent needs of the stockpile and support the transformation of the Nuclear Weapons Complex into an agile and more responsive enterprise with shorter cycle times and lower operating costs.

The Readiness in Technical Base and Facilities (Program Goal 01.34.00.00) contributes to this goal by operating and maintaining 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 (staff, tools, and replacement parts); environmental, safety, and health costs; and planning, prioritizing and constructing state-of-the-art facilities, infrastructure, and scientific tools that are not directly attributable to Directed Stockpile Work (DSW) or a campaign, within approved baseline costs and schedule.

The Secure Transportation Asset (Program Goal 01.36.00.00) contributes to this goal by safely and securely transporting nuclear weapons, weapons components, and special nuclear materials to meet projected DOE, Department of Defense (DoD) and other customer requirements.

The Nuclear Weapons Incident Response Program (Program Goal 01.37.00.00) contributes to this goal by responding to and mitigating nuclear and radiological incidents worldwide.

The Facilities Infrastructure and Recapitalization Program (FIRP) (Program Goal 01.38.00.00) contributes to this goal by restoring, rebuilding, and revitalizing the physical infrastructure of the nuclear weapons complex.

The Safeguards and Security program (Program Goal 01.39.00.00) contributes to this goal by protecting NNSA personnel, facilities, nuclear weapons, and information from a full spectrum of threats, most notably from terrorism, which has become of paramount concern post the September 11, 2001 attacks in the Homeland.

Contribution to General Goal 6

Within the Weapons Activities appropriation, one program makes a unique contribution to General Goal 6 as follows:

The Environmental Projects and Operations program (Program Goal 06.65.00.00) contributes to this goal by reducing the risks to human health and the environment at NNSA sites and adjacent areas by operating and maintaining environmental clean up systems installed by the Office of Environmental Management; performing long-term environmental monitoring activities; and by integrating a responsible environmental stewardship program with the NNSA's mission activities at these sites.

In addition, NNSA activities that are conducted in direct support of Stockpile Stewardship also contribute indirectly to **General Goal 5, World Class Scientific Research Capacity** that provides world class scientific research capacity needed to ensure the success of the Department missions in national and energy security; advance the frontiers of knowledge in physical sciences and areas of biological, medical, environmental and computational sciences; or provide world-class research facilities for the nation's science enterprise.

Funding by General and Program Goal

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Goal 1, Nuclear Weapons Stewardship			
Program Goal 01.27.00.00, Directed Stockpile Work	1,351,206	1,372,327	1,410,268
Program Goal 01.28.00.00, Science Campaign	277,253	276,670	263,762
Program Goal 01.29.00.00, Engineering Campaign	258,767	247,907	160,919
Program Goal 01.30.00.00, Inertial Confinement Fusion Ignition and High Yield Campaign	536,756	543,582	451,191
Program Goal 01.31.00.00, Advanced Simulation and Computing Campaign	698,196	599,772	617,955
Program Goal 01.32.00.00, Pit Manufacturing and Certification Campaign	263,570	238,663	237,598
Program Goal 01.33.00.00, Readiness Campaign	265,472	216,567	205,965
Program Goal 01.34.00.00, Readiness in Technical Base and Facilities	1,657,712	1,644,755	1,685,772
Program Goal 01.36.00.00, Secure Transportation Asset	199,709	209,979	209,264
Program Goal 01.37.00.00, Nuclear Weapons Incident Response	98,427	117,608	135,354
Program Goal 01.38.00.00, Facilities and Infrastructure Recapitalization Program	313,722	149,365	291,218
Program Goal 01.39.00.00, Safeguards & Security	751,929	797,751	754,412
Total, General Goal 1, Nuclear Weapons Stewardship	**6,672,719**	**6,414,946**	**6,423,678**
General Goal 6, Environmental Management			
Program Goal 06.65.00.00, Environmental Projects and Operations	0	0	17,211
Total, General Goal 6, Environmental Management	**0**	**0**	**17,211**
Subtotal, Weapons Activities	**6,672,719**	**6,414,946**	**6,440,889**
Use of Prior Year Balances	-16,372	-13,349	0
Security Charge for Reimbursable Work	-30,000	-32,000	-33,000
Transfer to the Office of the Administrator for Pajarito.	-3,205	0	0
Undistributed Budget Authority [a]	2,400	0	0
Total, Weapons Activities	**6,625,542**	**6,369,597**	**6,407,889**

[a] Results from application of the 0.8 percent across-the-board rescission against the gross Weapons Activities appropriation prior to receipt of the $300,000,000 which was derived by transfer from the Department of Defense in accordance with Public Law 108-447.

Outyear Funding by General and Program Goal

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Goal 1, Nuclear Weapons Stewardship				
Program Goal 01.27.00.00, Directed Stockpile Work	1,381,893	1,431,364	1,462,287	1,494,962
Program Goal 01.28.00.00, Science Campaign	282,223	281,344	274,296	268,441
Program Goal 01.29.00.00, Engineering Campaign	169,012	152,114	149,639	147,584
Program Goal 01.30.00.00, Inertial Confinement Fusion Ignition and High Yield Campaign	426,035	415,222	414,823	400,013
Program Goal 01.31.00.00, Advanced Simulation and Computing Campaign	632,095	621,943	607,746	593,761
Program Goal 01.32.00.00, Pit Manufacturing and Certification Campaign	249,588	252,174	260,096	255,832
Program Goal 01.33.00.00, Readiness Campaign	202,636	198,090	192,401	187,659
Program Goal 01.34.00.00, Readiness in Technical Base and Facilities	1,767,586	1,833,813	1,907,510	2,008,941
Program Goal 01.36.00.00, Secure Transportation Asset	225,057	237,344	244,212	247,580
Program Goal 01.37.00.00, Nuclear Weapons Incident Response	137,766	140,019	142,332	144,701
Program Goal 01.38.00.00, Facilities and Infrastructure Recapitalization Program	310,369	339,257	368,054	396,996
Program Goal 01.39.00.00, Safeguards & Security	768,269	781,279	794,608	808,235
Total, General Goal 1, Nuclear Weapons Stewardship	**6,552,529**	**6,683,963**	**6,818,004**	**6,954,705**
General Goal 6, Environmental Management				
Program Goal 06.65.00.00, Environmental Projects and Operations	17,518	17,805	18,099	18,400
Total, General Goal 6, Environmental Management	**17,518**	**17,805**	**18,099**	**18,400**
Subtotal, Weapons Activities	**6,570,047**	**6,701,768**	**6,836,103**	**6,973,105**
Use of Prior Year Balances	0	0	0	0
Security Charge for Reimbursable Work	-34,000	-35,000	-36,000	-37,000
Total, Weapons Activities	**6,536,047**	**6,666,768**	**6,800,103**	**6,936,105**

Funding for a proportional share of the NNSA's annual assessment required to pay for Defense Contract Audit Agency activities is included in this appropriation. The amount estimated for the Weapons Activities is $1,351,936 for FY 2006 and $1,418,487 for FY 2007, to be paid from program funding.

Means and Strategies

The Weapons Activities program will use various means and strategies to achieve its program goals. However, various external factors may impact the ability to achieve these goals. The program also performs collaborative activities to help meet its goals.

The NNSA will conduct a wide range of tests and experimental activities 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 and components, and surveillance tests. Computer simulations will be used in these assessments. 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 the weapon production plants and the laboratories, the NNSA will make deliveries of limited life and other weapon components for nuclear weapons stockpile management and refurbishment, according to schedules developed jointly by the NNSA and the DoD. Dismantlement activities are also carried out in support of this objective. Activities will be conducted with DoD, ranging from training in nuclear weapons field maintenance to partnerships in research supporting non-nuclear munitions.

The NNSA will continue with the campaigns approach for activities that develop or mature critical capabilities needed to achieve weapons stockpile certification. The campaigns are focused efforts with specific objectives and milestones, planned and executed by integrated teams from the laboratories, Nevada Test Site (NTS) and production plants. The six campaigns are Science, Engineering, Inertial Confinement Fusion Ignition and High Yield, Advanced Simulation and Computing, Pit Manufacturing and Certification, and Readiness.

The NNSA will continue to oversee and maintain the physical plant infrastructure at government-owned, contractor-operated laboratories, NTS and production plants, according to applicable statutes, laws, agreements and standards. The NNSA is developing detailed cost models for selected facilities to ensure that mission critical requirements for readiness are maintained. The NNSA will implement the recommendation of the DoD Nuclear Posture Review by improving infrastructure, hiring and training personnel, and revising and exercising relevant plans and safety documentation. The NNSA's test readiness activities are consistent on a timescale established by national policy. 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 Comprehensive Site Plans (TYCSPs) that establish the foundation for the strategic planning of the facilities and infrastructure of the complex. The NNSA's nuclear weapons complex is a government-owned, contractor-operated enterprise (with the exception of the Secure Transportation Asset (STA)) 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 provide for enhancements to the STA to meet increased operating and security standards, and will maintain nuclear emergency operations assets. The NNSA will identify the workforce skills necessary to meet long-term stockpile stewardship requirements and will develop staffing plans to attract and retain staff.

The Administration's reviews to create a new vision for the role of the Nation's military in the 21st century have the potential to affect performance goals.

Some activities will be conducted with DoD, ranging from training in nuclear weapons field maintenance to partnerships in research supporting non-nuclear munitions. Stockpile Stewardship activities are synergistic with Work for Others activity, sponsored principally by the DoD. There are a number of collaborations with universities and colleges, mainly associated with the strategic computing activities, Science Campaign, and Inertial Confinement Fusion Ignition and High Yield Campaign research effort. Also, a limited number of technology partnership efforts with industry may be continued.

Validation and Verification

To validate and verify program performance, the NNSA will conduct various internal and external reviews and audits. The 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, the Department's Office of Independent Oversight and Performance Assurance and various scientific groups. Each year, numerous external independent reviews are conducted of selected program and projects. Additionally, the 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.

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 PPBE Planning Phase and linked in a performance cascade to annual targets and detailed technical milestones. During the PPBE Programming Phase, budget and resource 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 Budgeting Formulation. Program and financial performance for each measure is monitored and progress verified during Budget Execution and the Evaluation Phase.

The NNSA validation and verification activities during the Budget Execution and the PPBE Evaluation Phase include a set of tiered performance reviews to examine a range of information from detailed technical progress to program management controls to corporate performance against long-term goals. This set of reviews includes: (1) the Office of Management and Budget (OMB) Program Assessment Rating Tool (PART); (2) NNSA Administrator Program Reviews; (3) Program Managers' Detailed Technical Reviews; (4) quarterly reporting of progress through the Department's Joule performance tracking and program management self-assessment systems; and (5) the NNSA Administrator's Annual Performance Report.

The NNSA is using the OMB PART process to perform annual internal self-assessments of the management strengths and weaknesses of each NNSA program. Among other things, the PART 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 and reinforced by the President's Management Agenda. Independent PART assessments conducted by OMB provide additional recommendations to strengthen NNSA programs.

Each NNSA program is reviewed at least annually by the NNSA Administrator during the NNSA Administrator Reviews. These reviews involve all members of the NNSA management council to ensure progress and recommendations are fully integrated 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.

Other reviews are conducted at the Deputy and Associate Administrator level for their programs. For example, the Deputy Administrator for Defense Programs conducts monthly program reviews for critical programs such as the Life Extension Programs, and quarterly program reviews. The focus of these reviews is to verify and validate that program managers are achieving technical programmatic milestones, within planned, scope, cost and schedule that result in progress toward annual targets and long-term goals.

A more detailed program review is conducted by the program managers and for weapons programs, with Department of Defense customers. The focus of these reviews is to verify and validate that NNSA contractors are achieving detailed technical milestones that support programmatic milestone and result in progress towards annual targets and long-term goals. These three reviews work together to ensure that advanced warnings are given to NNSA managers in order for corrective actions to be implemented. NNSA sites are responsible and accountable for accomplishing the verification and validation of their and their sub-contractors performance data and results prior to submission to NNSA Headquarters.

The results of all of these reviews are reflected quarterly in the DOE Joule performance tracking systems and program management self-assessments, and the DOE Consolidated Quarterly Performance Report (CQPR), annually in the NNSA Administrator's Annual Performance Report, and the DOE Performance and Accountability Report (PAR). Both of the latter documents help to measures the progress the 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 the NNSA and Departmental commitments listed in the budget.

Additionally, the NNSA performs a validation of approximately 20 percent of its budget on an annual basis. A two Phase process was developed for use during the FY 2006 Budget Formulation. This consisted of Phase 1: Validation of the Need for the Program's Proposed Activities (Program Review) and Phase 2: Pricing Validation of Selected Programs (Pricing Review).

Budget validation efforts focused 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 2007 process, the Directed Stockpile Work/Stockpile Services and Readiness in Technical Base and Facilities/Other Than Operations of Facilities participated in Phase I. Phase II was performed for the Directed Stockpile Work/Stockpile Services. During the FY 2006 process, the Science Campaign, Readiness Campaign, and Safeguards and Security Program participated in Phase I. Phase II was performed for the Science Campaign. These reviews found the overall process for developing the budgets for FY 2006 satisfactory and the cost estimates were found valid and reasonable.

During the FY 2007 process, the DSW-Stockpile Services Program participated in Phase I and II. The reviews found the overall process for developing the budgets for the FY 2007 satisfactory and the cost estimates were found valid and reasonable.

Program Assessment Rating Tool (PART)

The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews. The PART process links seamlessly with the NNSA's PPBE concept, and we have initiated PART "self-assessments" for all NNSA programs as a prominent aspect of the annual program review cycle.

The current focus is to continue to refine outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security, energy security, and improved environmental conditions. The Department has incorporated feedback from the OMB into the FY 2007 National Nuclear Security Administration's Budget Request and the Department will take the necessary steps to continue to improve performance.

Results of PART assessments in prior years are summarized in the table below:

FY 2004	FY 2005	FY 2006	FY 2007
Advanced Simulation and Computing Campaign – *Effective*	Inertial Confinement Fusion Ignition & High Yield Campaign and National Ignition Facility – *Moderately Effective*	Directed Stockpile Work – *Moderately Effective*	Science Campaign – *Moderately Effective*
Facilities and Infrastructure Recapitalization – *Moderately Effective*	Readiness in Technical Base and Facilities – Operations – *Moderately Effective*	Secure Transportation Asset – *Moderately Effective*	Readiness Campaign – *Effective*
Safeguards and Security – *Adequate (reassessed in FY 2006 as Moderately Effective)*			

Significant Program Shifts

The United States continues a fundamental shift in national security strategy to address the realities of the 21st Century. The DoD's Nuclear Posture Review calls for a transition from a threat-based nuclear deterrent with large numbers of deployed and reserve weapons to a deterrent based on capabilities with a smaller nuclear weapons stockpile, and greater reliance on the capability and responsiveness of the Department of Defense and NNSA infrastructure to respond to threats. NNSA will continue all programs to meet the immediate needs of the stockpile, stockpile surveillance, annual assessment, and Life Extension Programs. NNSA will continue to move ahead with the Reliable Replacement Warhead program to establish the path forward for stockpile transformation. NNSA also plans to increase the rate of warhead dismantlements, pursue complex-wide risk mitigation efforts, and begin to address expanding the NNSA dismantlement infrastructure of people, processes, equipment and tooling.

The campaigns are focused on long-term vitality in science and engineering, including continuing operation of the Los Alamos Neutron Science Center (LANSCE) facility through FY 2007, and on R&D supporting future DoD requirements. In addition, the NNSA is implementing a responsive infrastructure of people, science and technology base, and facilities and equipment needed to support an appropriate nuclear weapons infrastructure. The budget also includes funding to accelerate materials consolidation

efforts throughout the Complex. The NNSA is evaluating its programmatic requirements for test capabilities at Site 300 at Lawrence Livermore National Laboratory in order to determine the feasibility of initializing closeout by the end of the Future-Years Nuclear Security Program (FYNSP) period. To accommodate these priorities, a number of previously planned activities and facilities will be either shut down, placed in standby, delayed or terminated during the FYNSP period, including the refurbishment of LANSCE, the Atlas facility in Nevada and the Tonopah Test Range.

The National Nuclear Security Administration (NNSA) has made considerable progress in the area of nuclear material consolidation and disposition. In October 2005, the NNSA completed removal of security Category I/II special nuclear material located at the Los Alamos Criticality Experiments Facility (TA-18). Programmatic materials were moved to a more secure facility at the Nevada Test Site and to TA-55 at Los Alamos National Laboratory, while excess highly enriched uranium (HEU) was shipped to the Y-12 National Security Complex (Y-12), in Oak Ridge, Tennessee. Sandia National Laboratories' New Mexico site is executing a plan to remove all security Category I/II special nuclear materials from the site by the end of FY 2008, substantially decreasing security requirements at the site. At Y-12, construction of the Highly Enriched Uranium Materials Facility is well underway. Completion of this facility will allow Y-12 to consolidate HEU materials into a much smaller, and easier to protect, high security footprint. And finally, Y-12 and the NNSA's surplus HEU disposition program have eliminated, through downblending, over 70 metric tons of HEU removed from national security programs.

For the Facilities and Infrastructure and Revitalization Program, the NNSA continues to address the deferred maintenance backlog and footprint reduction goals, as well as meet prudent investment rates in addressing the backlog. The NNSA will propose legislation to stretch the completion date for the Facilities and Infrastructure Recapitalization Program from 2011 to 2013.

The FY 2007 request for the Nuclear Weapons Incident Response Program, increases 13.9 percent over the FY 2006 level and remains essentially level through the FYNSP. The program is continuing efforts to enhance Emergency Response capabilities, and the budget request supports all assets as planned, with emphasis on recruitment and training of personnel called into action during emergency situations. The FY 2007 increase is primarily associated with the research and development efforts of the Render Safe Research and Development program.

For the Environmental Programs and Operations/Long Term Response Actions Program, the FY 2007-2011 Budget Request does not include the transfer of legacy environmental management activities at NNSA sites that was proposed in the FY 2006 Budget Request. However, the responsibility for newly generated waste at the Lawrence Livermore National Laboratory and the Y-12 National Security Complex was transferred in FY 2006, and is managed in the Readiness in Technical Base and Facilities GPRA unit. NNSA has also assumed responsibility for environmental stewardship at its sites, and funding for long-term response actions is included in the FY 2007 and outyear budget requests.

Historically Black Colleges and Universities (HBCU) Support

A research and education partnership program with the HBCU's and the Massie Chairs of Excellence was initiated by the Congress through earmarks in the Office of the Administrator appropriation in FY 2005 and FY 2006. 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 NNSA. The NNSA's goal is a stable

$10 million effort annually. The majority of the efforts directly support program activities, and it is expected that programs funded in the Weapons Activities appropriation will fund research with the HBCU's totaling approximately $4 to $6 million in FY 2007, in areas including engineering, material sciences, computational science, disaster modeling, and environmental sciences.

Directed Stockpile Work

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Directed Stockpile Work			
Life Extension Programs			
B61 Life Extension Program	118,038	50,375	58,934
W76 Life Extension Program	230,766	149,277	151,684
W80 Life Extension Program	141,988	98,158	102,044
Subtotal, Life Extension Programs	**490,792**	**297,810**	**312,662**
Stockpile Systems			
B61 Stockpile Systems	86,270	65,376	63,782
W62 Stockpile Systems	18,068	8,876	3,738
W76 Stockpile Systems	122,177	62,891	56,174
W78 Stockpile Systems	43,986	32,299	50,662
W80 Stockpile Systems	41,237	26,070	27,230
B83 Stockpile Systems	45,273	26,121	23,365
W84 Stockpile Systems	2,451	4,398	1,465
W87 Stockpile Systems	88,580	50,162	59,333
W88 Stockpile Systems	62,713	32,493	39,796
Subtotal, Stockpile Systems	**510,755**	**308,686**	**325,545**
Reliable Replacement Warhead	**0**	**24,750**	**27,707**
Weapons Dismantlement and Disposition	**72,907**	**59,400**	**75,000**
Stockpile Services			
Production Support	0	227,700	236,115
Research & Development Support	0	60,640	63,948
Research & Development Certification and Safety	154,216	225,450	194,199
Management, Technology, and Production	113,607	167,891	159,662
Reliable Replacement Warhead	8,929	0	0
Responsive Infrastructure	0	0	15,430
Subtotal, Stockpile Services	**276,752**	**681,681**	**669,354**
Total, Directed Stockpile Work	**1,351,206**	**1,372,327**	**1,410,268**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Life Extension Programs				
B61 Life Extension Program	58,884	600	0	0
W76 Life Extension Program	112,404	139,967	130,434	135,398
W80 Life Extension Program	100,596	154,046	118,442	106,344
Subtotal, Life Extension Programs	271,884	294,613	248,876	241,742
Stockpile Systems				
B61 Stockpile Systems	97,759	90,496	152,447	174,001
W62 Stockpile Systems	2,405	1,783	37	38
W76 Stockpile Systems	64,185	51,076	57,987	51,297
W78 Stockpile Systems	38,483	38,979	34,249	33,299
W80 Stockpile Systems	25,401	30,753	32,923	32,926
B83 Stockpile Systems	17,881	22,019	18,337	16,872
W84 Stockpile Systems	801	425	422	416
W87 Stockpile Systems	36,300	35,018	35,651	31,735
W88 Stockpile Systems	40,079	49,245	35,924	32,758
Subtotal, Stockpile Systems.	323,294	319,794	367,977	373,342
Reliable Replacement Warhead	14,555	29,656	29,625	28,661
Weapons Dismantlement and Disposition	29,162	41,578	43,803	41,806
Stockpile Services				
Production Support	285,688	286,998	300,253	295,044
Research & Development Support	106,188	97,687	113,743	118,298
Research & Development Certification and Safety	160,187	164,421	157,948	153,211
Management, Technology, and Production	157,396	163,002	165,217	209,097
Responsive Infrastructure	33,539	33,615	34,845	33,761
Subtotal, Stockpile Services	742,998	745,723	772,006	809,411
Total, Directed Stockpile Work	1,381,893	1,431,364	1,462,287	1,494,962

Description

The goal of Directed Stockpile Work (DSW) is to ensure that the nuclear warheads and bombs in the United States (U.S.) nuclear weapons stockpile are safe, secure, and reliable.

This goal is achieved by: (1) developing solutions to extend weapon life, identifying and correcting potential technical issues; (2) refurbishing warheads/bombs to install the life extension solutions and other authorized modifications to enhance safety, security, and reliability; (3) conducting evaluations to certify warhead/bomb reliability and to detect/anticipate potential weapon issues, mainly from aging; (4) conducting scheduled warhead/bomb maintenance; (5) by producing and installing limited use components (6) dismantling warheads/bombs retired from the stockpile; (7) researching options which fulfill requirements for the Reliable Replacement Warhead (RRW), and (8) providing the unique people skills, equipment, testers and logistics support to perform nuclear weapons operations. The DSW effort has been coordinated with the Department of Defense (DoD).

DSW sets the pace and scope for critical activities to revitalize the National Nuclear Security Administration (NNSA) infrastructure supporting the U.S. nuclear weapons stockpile. As indicated in the Nuclear Posture Review provided to Congress in January 2002, a Responsive Infrastructure is the cornerstone of the new nuclear triad. A responsive NNSA infrastructure – people, facilities, equipment, business practices, and technical processes – includes innovative science and technology research and development at the National laboratories and agile production facilities that are able to sustain the nuclear weapons stockpile and guarantee the Nation's nuclear security in a dynamic and uncertain threat environment. DSW provides the basic requirements for a responsive infrastructure and defines/conducts specific projects that focus on achieving responsiveness for selected warhead issues. The mission is to achieve a nuclear weapons enterprise that is more cost-effective and sustainable, more responsive to stockpile uncertainties and adverse geopolitical change, discourages adversaries from pursuing threatening activities, and enables increased reliance on deterrence through capability rather than numbers of weapons.

Benefits

Within DSW, each of four major activities makes unique contributions to Program Goal 01.27.00.00. In Life Extension Programs (LEPs), activities are working to extend the life of three nuclear weapon types (B61, W76, and W80). In Stockpile Systems, activities are conducted to ensure the weapon types in the enduring stockpile are safe and reliable. Work scope included in these activities are ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, required maintenance, safety studies, and military liaison work for the B61, W62, W76, W78, W80, B83, W84, W87, and W88 systems. In Weapons Dismantlement and Disposition, activities contribute to the goal by retiring and dismantling/disposing of warheads. In Stockpile Services, activities provide research, development and production support base capabilities for multiple warheads – e.g., certification and safety efforts; performing quality engineering and plant management, technology and production services; and investigating options for meeting DoD requirements.

Background Information

In June 2004, the NNSA submitted the revised stockpile plan to Congress showing a significant reduction in the nation's deployed strategic nuclear weapons stockpile by 2012. DSW budgets have been formulated during the budget period accordingly. These reductions are reflected in the quantities for the LEPs, with an increase in weapon dismantlements. Continued coordination is required with the DoD regarding W80 LEP outyear funding.

Phase 6.X Process. This process defines a common set of phases and procedures for activities supporting joint DoD-Department of Energy (DOE) nuclear weapons development and refurbishment, as agreed by the DoD, DOE, and the Nuclear Weapons Council (NWC) for weapons currently in the stockpile. Procedures include appropriate levels of review and decision authority, consistent with approved guidelines.

Phase 6.1 Concept Assessment: This Phase includes continuing studies and continuous exchange of information, both formal and informal, resulting in the focusing of sufficient interest in a concept for a refurbished or modified weapon or component.

Phase 6.2 Feasibility Study and Option Down Select: This Phase includes determination of the feasibility and desirability to undertake a refurbishment, establishment or revalidation of weapon military characteristics, and determination of respective responsibilities between the DOE and the DoD for the various tasks involved in program execution.

Phase 6.2A Design Definition and Cost Studies: This Phase, the DOE identifies information on costs, production schedules, and tradeoffs, including those involving safety, security, survivability, and control features for the weapon. The DoD develops the necessary plans, such as flight testing, and procurement of trainers, handling gear, and new DoD components.

Phase 6.3 Development Engineering: This Phase begins with the initiation of the DOE developmental engineering effort and culminates in the design release by the design laboratories to the production plants.

Phase 6.4 Production Engineering: This Phase includes activities adapting the design into a manufacturing system that can produce weapons and components on a production basis, culminating in the DOE release of the design for production or engineering releases for sustainment.

Phase 6.5 First Production: This Phase includes production of the first refurbished weapons, evaluation by the DOE and the DoD, and the DoD's formal acceptance action or approval for full-scale production or modification.

Phase 6.6 Full-Scale Production: This Phase, the DOE undertakes the full-scale production of refurbished weapons for the stockpile.

Planning and Scheduling

The DSW Program and Implementation Plans contain cost, scope, and schedule for work accomplishment. More detailed classified schedules are contained in the site Research & Development (R&D) and production documents. Stockpile maintenance, refurbishment, and life extension efforts are currently delineated in the Production and Planning Directive (P&PD) and the Stockpile Life Extension and Refurbishment Planning Component Description Document. These requirements are further promulgated to the Nuclear Weapons Complex (hereafter referred to as "the Complex") through individual weapon Program Control Documents (PCDs) and the Master Nuclear Schedule (MNS). Refurbishment activities in FY 2007 will focus on accomplishing refurbishment of bomb and warhead components to extend the life of the stockpile under approved programs. Critical to the stockpile maintenance program is the ability of the complex to meet new delivery schedules and to mitigate or prevent through continuous monitoring any new impacts to the progress of this effort.

Weapons Systems Cost Data
The Weapons Activities portion of the budget is supplemented with a classified annex, which contains the Selected Acquisition Reports (SARs) for the three LEPs consistent in format with those submitted by the DoD.

Major FY 2005 DSW Achievements

Completed 100 percent of Annual Stockpile Certification and Surety Assessment activities.

Accomplished B61-3/4/7/10/11 Alt 356/358/359 Spin Rocket Motor (SRM) Phase 6.4 authorization and completed scheduled FY 2004 Phase 6.4 activities, including joint Air Force/NNSA development flight testing.

Continued B61-7/11 Life Extension Program Phase 6.4 activities including completion of two Combined Environments (CE) system level tests, two Cable Pull Down (CPD) system level tests, and pre-production activities.

Completed B61-3/4/10 Alt 335/339/354 Field Retrofits.

For the W76 LEP, completed Phase 6.3 activities, provided hardware that met design definition to complete planned Joint Flight testing with the DoD, completed Final Design Review, continued Phase 6.4 activities, and completed activities as planned in the W76 Full Scale Engineering Development Schedule.

For the W80 LEP, accomplished Phase 6.3 programmatic target activities to include – completed preliminary Design Review and Acceptance Group (DRAAG) review, completed Phase 6.3 Inter-laboratory Peer Review and received authorization to commence Phase 6.4 activities.

Completed 81 percent of scheduled W56 and Canned Subassembly (CSA) dismantlements.

Completed 95 percent of the FY 2005 scheduled Stockpile Maintenance activities and 87 percent of the FY 2005 Stockpile Evaluation activities. These activities include the following:

- Maintenance/Logistics Deliverables met by accomplishing the following - 1,288 reservoirs produced, 1,266 reservoirs filled, 244 neutron generators produced, 73 gas generators shipped, 605 Alt 900 series kits shipped to DoD.

- Supported 342 requisitions (4,721 parts) for the base and military spares program.

Surveillance Support accomplished the following: completed 120 surveillance disassemblies and inspections (D&I), reversing a 3-year growth of weapon D&I backlog by completing 22 more than the FY 2005 requirement; completed 27 flight tests with DoD; completed 54 laboratory system tests while transitioning to the new Weapon Evaluation Test Laboratory.

Major Outyear Considerations

DSW outyear funding supports activities in several major areas, which are – Life Extension Programs (LEP), Stockpile Systems, Weapons Dismantlement and Disposition, Stockpile Services and RRW. DSW also sets the pace and scope for critical activities to transform the U.S. nuclear weapons stockpile and to enhance the responsiveness of the infrastructure required to support it. These activities support the major goal of DSW, which is to ensure the Untied States nuclear weapons stockpile is safe, secure, and reliable. The following provides the explanation of outyear funding profile, explanation of any significant year- to- year changes, and explanation of programmatic assumptions.

Life Extension Programs were developed to extend the stockpile lifetime of a warhead or warhead components at least 20 years with a goal of 30 years. The funding profile supports three LEPs for the B61, W76, and W80. The B61 LEP will support continued production of units to meet the DoD requirements for the specified number of warheads. The W76 LEP will support the First Production Unit date of FY 2007 to also include certification activities to allow the warhead to enter the stockpile. Once authorized, the full-scale production will begin for the W76. The W80 LEP will continue development support activities for certifications and qualification. Additionally, process prove-in will continue to reach the FPU date which is currently being reviewed. More detailed information regarding LEP funding and activities are located in each individual Selective Acquisition Report (SAR) that is submitted annually in a classified annex to the budget.

Stockpile Systems will provide for each weapon-type: routine maintenance; periodic repair; replacement of limited life components; support the annual assessment process; resolution and timely closure of significant finding investigations; and, surveillance to assure continued safety, security, and reliability.

Reliable Replacement Warhead is an 18-month study approved by the NWC. The goal of the RRW study is to identify designs that will sustain long term confidence in a safe, secure, and reliable stockpile and enable transformation to a responsive nuclear weapons infrastructure. The RRW study will present the preferred RRW design options and recommendations to the NWC for decision of how to go further. The RRW budget will increase when the RRW option is selected and starts development and production engineering activities.

Weapons Dismantlement and Disposition encompasses weapons dismantlement, characterization of components, and disposition of the hardware that results from weapons dismantlement. The increase in FY 2007 funding will focus on efforts to mitigate risk and maximize throughput at Pantex.

Stockpile Services covers research, development and production work that supports multiple units, which cannot be attributable to one warhead type. Increases in the two support (e.g., Production Support and Research & Development Support) categories are due to the establishing those categories in FY 2006 without increasing the overall DSW funding profile. Prior to FY 2007, specific tasks to enhance the responsiveness of the NNSA infrastructure have been included in several Stockpile Services activities. These responsive infrastructure tasks include planning, alternative evaluations, enterprise model development, and cross-cutting pilot projects. Facilitating the capability for multi-unit processing in Pantex cells is an example of a responsive infrastructure (RI) pilot project. Starting in FY 2007, RI tasks are consolidated into the identified Responsive Infrastructure activity under Stockpile Services.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget Request and the Department will take the necessary steps to continue to improve performance.

For FY 2006, the OMB evaluated the DSW program using the PART. The OMB gave DSW scores of 100 percent on the Purpose and Design, and Strategic Planning Sections; 88 percent on the Program Management Section; and 74 percent on the Results Section. Overall, the OMB rated the DSW program 84 percent, its second highest category of "Moderately Effective." The OMB assessment found that the program appears to be well managed, with a clear and unique purpose and clear, meaningful, and measurable performance metrics that the program was demonstrating good progress in meeting. Additionally, the OMB assessment found that, because a contractor base in Government-owned facilities uniquely executes the program's nuclear weapons activities, the program lacks the capability to use competitive sourcing/cost comparisons for prime procurements. The OMB encouraged efforts to be cost-effective. In response to the OMB findings, the NNSA is continuing to improve contractor evaluation processes and weapon performance metrics; and monitor the new DSW efficiency measure to determine if it provides insight into additional cost-effective opportunities.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile. (MET GOAL)	Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile. (MET GOAL)
Meet all annual weapons maintenance, refurbishment, and dismantlement schedules developed jointly by the DOE and DoD. (MET GOAL)	Meet all annual weapons maintenance, refurbishment, and dismantlement schedules developed jointly by the DOE and DoD. (MIXED RESULTS)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Annual percentage of warheads in the Stockpile that are safe, secure, reliable, and available to the President for deployment (Annual Outcome)	R: 100%	R: 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.
Annual percentage of items supporting Enduring Stockpile Maintenance completed (Annual percentage of prior-year non-completed items completed) (Annual Output)	R: 93% (79%)	R: 85% (77%) T: 95% (100%)	R: 44% (85%) 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).
Cumulative percentage of progress in completing Nuclear Weapons Council (NWC)-approved W76-1 Life Extension Program (LEP) activity (Long-term Output)	R: 18%	R: 24%	R: 29% T: 29%	T: 34%	T: 39%	T: 44%	T: 49%	T: 54%	T: 59%	By 2020, complete NWC-approved W-76-1 LEP.
Cumulative percentage of progress in completing NWC-approved W80-3 LEP activity (Long-term Output)	R: 18%	R: 22%	R: 30% T: 30%	T: 36%	T: 42%	T: 48%	T: 54%	T: 60%	T: 66%	By 2017, complete NWC-approved W80-3 LEP.
Cumulative percentage of progress in completing NWC-approved B61-7/11 LEP activity (Long-term Output)	R: 10%	R: 20%	R: 27% T: 30%	T: 40%	T: 70%	T: 90%	T: 100%	N/A	N/A	By 2009, complete NWC-approved B61-7/11 LEP.
Cumulative percentage of progress in completing NWC-approved W87 LEP (Long-term Output)	R: 85%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	By 2004, complete NWC-approved W87 LEP.
Cumulative percent reduction in projected W80 warhead production costs per warhead from established validated baseline, as computed and reported annually by the W80 LEP Cost Control Board (Efficiency)	N/A	N/A	R: Baseline T: Baseline	T: 0.5%	T: 1.0%	T: 1.5%	T: 2.0%	T: 2.0%	T: 2.0%	By 2009, reduce the projected W80 LEP warhead production costs per warhead from established validated baseline by 2.0% (interim target).

Detailed Justification

	(Dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Life Extension Program.....	**490,792**	**297,810**	**312,662**

NNSA developed the LEP Program to extend the stockpile lifetime of a warhead or warhead components at least 20 years with a goal of 30 years. NNSA, in conjunction with the applicable service from the DoD, executes a Life Extension Program following the procedural guidelines of the Phase 6.x process. The activities below describe what research, development, and production work current LEP require to meet the authorized First Production Unit (FPU) date, with the necessary weapon military characteristics throughout the Stockpile-to-Target Sequence.

- **B61 Life Extension Program**..... **118,038** **50,375** **58,934**

  The B61 LEP will extend the life of the B61 for an additional 20 years. The B61 Life Extension Program includes refurbishment of the canned subassembly; and replacement of associated seals, foam supports, cables and connectors, the group X kit (e.g., washers, o-rings), and limited life components on the B61 Mods 7 and 11.

  In FY 2007, programmatic activities will include the continuation of production quantities to meet DoD requirements. More specifically, the labs will continue to provide systems design support for the production of the piece parts to the production plants, including initiating necessary production definition changes to improve manufacturability and disposition instructions for production issues, and completing qualifications to support DRAAG and Major Assembly Release (MAR). The production plants will continue steady state production of the foam supports, cushions, cables, refurbished case, and nitrogen cartridge in addition to surrogate material production with machining and material drying.

- **W76 Life Extension Program**..... **230,766** **149,277** **151,684**

  The W76 LEP will extend the life of the W76 for an additional 30 years with the FPU in FY 2007. Activities include design, qualification, certification, production plant Process Prove-In (PPI), and Pilot Production. The pre-production activities will ensure the design of refurbished warheads meets all required military characteristics. Additional activities include work associated with the manufacturability of the components including the nuclear explosive package; the Arming, Firing, and Fuzing (AF&F) system; gas transfer system; and associated cables, elastomers, valves, pads, cushions, foam supports, telemetries, and miscellaneous parts.

  In FY 2007, programmatic activities include completion of all 6.4, Production Engineering processes to support achieving 6.5, First Production authorization in April 2007; issuance of the remaining Sub-System Engineering Releases to the production plants to support the FPU in September 2007, completion of the remaining Seamless Safety for the 21st Century (SS-21) integrated activities and procurement of tools developed through this process by June 2007 and completion of certification and qualification activities to certify the refurbished design with margins and uncertainties; fabrication activities, procedure development, and training, Process Prove-In (PPI) activities on the AF&F and telemetry and aft supports, AF&F subsystems, and other major assemblies.

	(Dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **W80 Life Extension Program**.....	**141,988**	**98,158**	**102,044**

The W80 LEP extends the life of the W80 for an additional 20 years. Activities will include qualification and certification activities to ensure refurbished warheads meet all required military characteristics; replacing the neutron generator, trajectory sensing signal generator, gas transfer system, and other associated components.

In FY 2007, programmatic activities include providing Sub-System Engineering Releases to support component FPUs at each site; achieving neutron tube target loading (NTTL) build requirements; conducting significant PPI activities; conducting joint flight tests, component and subsystem tests, and hydrodynamic tests; conducting design reviews including an interim DRAAG and final Weapon Development Report; neutron generator FPU; and, performing qualification and certification activities to ensure refurbished warheads meet all required military characteristics.

Stockpile Systems.....	**510,755**	**308,686**	**325,545**

Each weapon-type in the stockpile requires routine maintenance; periodic repair; replacement of limited life components; surveillance to assure continued safety, security, and reliability; and other support activities. The activities below describe those specific activities by weapon-type.

▪ **B61 Stockpile Systems**.....	**86,270**	**65,376**	**63,782**

Enduring stockpile workload efforts on all modifications of the B61 will include ongoing assessment and certification activities; cyclical limited life component exchange activities; surveillance activities; and any required alterations, modifications, repairs, and safety studies.

In FY 2007, programmatic activities include achieving Phase 6.5 Authorization and the FPU for the spin rocket motor, Alts 356/358/359, by FY 2007; supporting the annual assessment process; 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; conducting integrated experiments per current approved baseline plan; conducting development, design, and peer reviews on the spin rocket motor and support stockpile flight tests of the spin rocket motor; producing the 1M and 2M gas reservoirs; continuing surveillance tests for the B61-3/4/10 and the B61-7/11; disassembling and inspecting the stockpile laboratory tests units; and conducting component laboratory tests and stockpile flight tests for stockpile evaluation.

▪ **W62 Stockpile Systems**.....	**18,068**	**8,876**	**3,738**

Enduring stockpile workload efforts on the W62 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, repairs, and safety studies.

In FY 2007, programmatic activities include supporting the annual assessment process, providing laboratory and management support to the POG and DoD Safety Studies; supporting resolution of SFIs; conducting material, component, analysis, and evaluation of performance and safety; continuing surveillance tests plus targeted surveillance of aging components; conducting stockpile flight tests; and dismantlement of test beds.

(Dollars in thousands)

	FY 2005	FY 2006	FY 2007
▪ **W76 Stockpile Systems**	**122,177**	**62,891**	**56,174**

Enduring stockpile workload efforts on the W76 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies.

In FY 2007, programmatic activities include: supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline plan; steady state production of the 1X Acorn; production of the MC4380A replacement neutron generator; production of telemetry units and neutron generator monitors; production of unique structural parts and Acorns for joint test assemblies; building three joint test assemblies; conducting stockpile laboratory and flight tests; and disassembling and inspecting test units.

▪ **W78 Stockpile Systems**	**43,986**	**32,299**	**50,662**

Enduring stockpile workload efforts on the W78 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies.

In FY 2007, programmatic activities include: supporting the realignment of baselining and hydrodynamic testing from Stockpile Services R&D, supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline plan; completing the MC4381 neutron generator FPU and beginning the retrofit; initiating production activities for the firing system to support surveillance rebuilds, continuing work on the improved LF-7A gas transfer system, conducting stockpile flight tests using the redesigned W78 joint test assemblies, and disassembly and inspection of stockpile laboratory and flight units and test beds; and conducting planned priority hydrotests.

▪ **W80 Stockpile Systems**	**41,237**	**26,070**	**27,230**

Enduring stockpile workload efforts on all modifications of the W80 include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies.

In FY 2007, programmatic activities include completion of the remaining SS-21 integrated activities and procurement of tools developed through this process for the W80-0/1 by FY 2007 and initiating SS-21 integrated activities on the W80-03; supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline plan; the steady state production of the 1K Reservoir; producing telemetry units, neutron generator monitors, cables, and other joint test assembly hardware for support of stockpile flight tests; continuing polymeric evaluation testing; building joint test assemblies; and conducting the disassembly and inspection of stockpile laboratory units,

flight tests units, and test beds; and, achieving the initial operational capability of the updated code management system at selected sites.

- **B83 Stockpile Systems** **45,273** **26,121** **23,365**

  Enduring stockpile workload efforts on all modifications of the B83 include ongoing assessment and certification activities; limited life component exchange activities; surveillance activities; and required alterations, modifications, repairs, and safety studies.

  In FY 2007, programmatic activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; conducting material, component, and system level testing and evaluating performance and safety characteristics; surveillance of B83 detonators and pits in support of the annual certification effort; accomplishing stockpile laboratory and flight tests; completing the disassembly and inspection of stockpile laboratory and flight test units; and rebuilding B83-1 test units.

- **W84 Stockpile Systems** **2,451** **4,398** **1,465**

  Enduring stockpile workload efforts on the W84 include ongoing assessment and certification activities.

  In FY 2007, programmatic activities include providing laboratory and management support to the POG; supporting resolution of SFIs; conducting material, component and system level testing; evaluating performance and safety characteristics; and disassembly and inspection of some existing joint test assembly units.

- **W87 Stockpile Systems** **88,580** **50,162** **59,333**

  Enduring stockpile workload efforts on the W87 include ongoing assessment and certification activities, limited life component exchange activities; surveillance activities; and required alterations, modifications, repairs, and safety studies.

  In FY 2007, programmatic activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFIs; conducting material, component, and system level testing; and evaluating performance and safety characteristics; producing environmental sensing devices, firing sets, and lightning arrestor connectors in support of surveillance rebuilds; restarting production of other cables, valves, and mechanical piece parts; developing a new W87 stockpile flight test vehicle; conducting disassemblies and inspections of stockpile laboratory test units and stockpile flight test units; production of joint test assemblies and test beds; providing range support and data collection of W87 stockpile flight tests; continuing surveillance of W87 detonators and pits; and conducting planned hydrotests.

	(Dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **W88 Stockpile Systems**	**62,713**	**32,493**	**39,796**

Enduring stockpile workload efforts on the W88 include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required alterations, modifications, repairs, and safety studies.

In FY 2007, programmatic activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; supporting resolution of SFIs; submitting data for surveillance cycle reports; conducting integrated experiments per current approved baseline plan; ongoing engineering development activities for the 4T reservoir; continuing forging procurements; disassembling and inspection of stockpile laboratory test units and stockpile flight test units; and production of joint test assemblies and test beds.

Reliable Replacement Warhead	**0**	**24,750**	**27,707**

The Nuclear Weapons Council (NWC) approved the Reliable Replacement Warhead (RRW) Feasibility Study which began in May 2005, and is expected to take 18 months to complete. The goal of the RRW Study is to identify designs that will sustain long term confidence in a safe, secure and reliable stockpile and enable transformation to a responsive nuclear weapon infrastructure. The Joint DOE/DoD RRW Project Officer's Group (POG) was tasked to oversee a laboratory design competition for a RRW warhead with the FPU goal of FY 2012. The POG will assess technical feasibility including certification without nuclear testing, design definition, manufacturing, and an initial cost assessment to determine whether the proposed candidates will meet the RRW study objectives and requirements. At the end of the study, the POG will establish the preferred RRW design options and recommendations to the NWC Standing and Safety Committee (NWCSSC) and NWC. In FY 2005, RRW activity was funded under Stockpile Services.

In FY 2007 specific activities include: with NWC approval, proceed with detailed design and preliminary cost estimates of RRW concepts to confirm that RRW designs provide surety enhancements, can be certified without nuclear testing, are cost-effective, and will support both stockpile and infrastructure transformation.

Weapons Dismantlement and Disposition ..	**72,907**	**59,400**	**75,000**

Weapons Dismantlement and Disposition includes all activities that support or perform tasks to reduce the quantity of retired weapons or retired weapon components in the inventories, to include the interim storage, surveillance, and complete disposition of retired weapons and weapon components. Specific activities include weapon dismantlement, characterization of components, disposal of retired warhead system components, and surveillance of selected components from retired warheads. Other supporting activities specific for retired warheads include: conducting facility hazard assessments including studies of lightning, environmental sensing devices, and fire protection; issuing safety analysis reports; conducting laboratory and production plant safety studies in implementation of SS-21; procuring shipping and storage equipment; providing oversight of testers; and supporting the Tri-lab office efforts on dismantlement activities.

(Dollars in thousands)

FY 2005	FY 2006	FY 2007

In FY 2007, program workload activities, in addition to the normal dismantlement process mentioned above, includes increasing funding to the container refurbishment program, purchasing special disassembly tooling and increasing material recycle operations..Ongoing risk mitigation activities will increase in scope to include the disposition of legacy weapons material.

Stockpile Services **276,752** **681,681** **669,354**

Stockpile Services covers research, development and production work that supports two or more weapon-types, are the same for each weapon-type, are not identified or allocated to a specific weapon-type, or are those activities where an association of the cost would otherwise be made by an allocation. In addition, this major category includes R&D and Production Support which have been removed from other DSW categories and established as separate subcategories in order to present a clearer look at both direct warhead workload and programmatic Stockpile Services support activities.

- **Production Support** **0** **227,700** **236,115**

  Production Support includes those activities that directly support internal site-specific production missions only. In this context, the term "support" refers to the site-specific personnel and routine functional costs associated with keeping the basic capability and capacity of the site at a sufficient level to conduct the required production mission. The production mission is defined as weapon assembly, weapon disassembly, component production, and weapon safety and reliability testing. Production Support does not pay for actual production workload because that is funded by the other DSW categories.

  In 2007, production support functional activities will be focused on: engineering support; manufacturing support; quality supervision and control; tool, gage, and test equipment procurement, maintenance, inspection, and support; purchasing, shipping, and material support; production efficiency; and development and maintenance of electronic product-flow information systems.

- **Research & Development Support** **0** **60,640** **63,948**

  Research and Development (R&D) Support includes ongoing activities that directly support the internal design laboratory site-specific R&D mission. These activities include the basic research required for developing neutron generators and gas transfer systems, surveillance activities, and the base capability for conducting hydrodynamic experiments. The neutron generator and gas transfer research is typically beyond the basic research of a Campaign and is the first stage of technology weaponization.

(Dollars in thousands)

FY 2005	FY 2006	FY 2007

In FY 2007, activities include supporting neutron generator development (electronic and small generator types); designing gas transfer systems, including conducting qualification and computer modeling and simulation activities that are required; and conducting system/component surveillance evaluations to analyze results obtained from component and flight testing. Also, will support military liaison for trainers and hardware; aircraft compatibility activities, including providing avionics and interface control documentation; and studying permissive action link equipment for use control. In addition, R&D Support includes activities involving preparing and providing the infrastructure for conducting hydrodynamic tests in support of enduring stockpile systems and life extension programs.

- **Research & Development Certification and Safety** **154,216** **179,450** **194,199**

R&D Certification and Safety activities provide underlying capabilities for R&D efforts at design laboratories and the Nevada Test Site (NTS). It includes stockpile studies and programmatic work that provide the necessary administrative or organizational infrastructure to support R&D activities. It also includes the experimental base program for plutonium and sub-critical experiments.

In FY 2007, activities include: performing safety surety studies to support NNSA/DOD safety assessments, which include providing technical advice and support to the Nuclear Weapons Safety Study Groups of the military services; providing the technical information and oversight for sub-critical experiments conducted at NTS; conducting plutonium experiments; providing the programmatic management for the laboratory aspect of the DSW program to assure that resources are provided and commitments are met for the DSW mission; providing integration and coordination activities to assure that DSW, Campaigns, and RTBF requirements are understood and integrated; supporting information technology development for archiving, data management, code management systems, and engineering data warehouse maintenance; conducting research on selected topics involving collateral effects that would result from the use of nuclear weapons; participating in cooperative research activities such as the joint munitions research program in accordance with DOD agreements; and supporting infrastructure activities that involve landlord responsibilities or capital equipment for R&D.

Congressionally Directed Activity **0** **6,000** **0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $6 million for LANL to conduct hydrodynamic testing to support the stockpile.

Congressionally Directed Activity **0** **40,000** **0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $40 million to maintain the subcritical experiment program including the Phoenix Explosive Pulse Program.

(Dollars in thousands)

	FY 2005	FY 2006	FY 2007
▪ **Management, Technology, and Production**	**113,607**	**164,891**	**159,662**

Stockpile Management, Technology, and Production (SMTP) are those activities associated with general stockpile management, use control technologies, and multi-use weapon component production. Additionally, SMTP includes those activities that benefit the weapons complex mission as a whole, as opposed to Production Support activities that support internal site-specific production missions only.

In FY 2007, a major emphasis continues to be on safety and use control activities, use control and independent assessments, and procurement of multi-use weapon components, material, and support equipment. Other SMTP activities include: supporting complex-wide information systems for engineering and quality control releases; fielding of new core surveillance diagnostics emerging from the Enhanced Surveillance Campaign; maintaining and archiving technical knowledge, engineering practices, and weapon design, safety, and operating procedure information; and supporting and conducting activities that maintain and evaluate stockpile multi-use components, instrumentation, and ancillary equipment.

Congressionally Directed Activity	**0**	**3,000**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $3 million to conduct independent assessments of the safety of the stockpile and secure information exchange within the Complex.

▪ **Reliable Replacement Warhead**	**8,929**	**0**	**0**

Reliable Replacement Warhead is reflected as a separate activity for FY 2006 and FY 2007, consistent with FY 2006 Congressional direction.

▪ **Responsive Infrastructure**	**0**	**0**	**15,430**

Infrastructure is broadly defined to include the people, business practices, technical processes, equipment and facilities required to support the nuclear weapons stockpile. A responsive infrastructure supports stockpile objectives in a timely and sustainable manner. Since activities to achieve a more responsive infrastructure are cross-cutting, responsive infrastructure implementation is structured as a strategy to be managed and detail tasks completed in existing line programs. The objective of implementation activities is to ensure the NNSA infrastructure is responsive to the needs of the future.

These resources support implementing the NNSA responsive infrastructure strategy, facilitating specific improvements in responsiveness of the nuclear weapons complex, and tracking progress towards specific measurable, improvement goals. Responsive infrastructure implementation activities include planning, performance data collection, enterprise model development, and evaluations to support major decisions affecting the nuclear weapons complex infrastructure. National Environmental Policy Act compliance processes will be supported, if required, to support the transformation to a more responsive nuclear weapons complex. Special pilot project initiatives will be supported to facilitate process or product changes that enhance infrastructure

(Dollars in thousands)

FY 2005	FY 2006	FY 2007

responsiveness. Examples of pilot project initiatives include establishing more uniform business and engineering practices across the complex and standardization of specific components (e.g. gas transfer systems) across several weapon systems.

In FY 2007 activities include improving governance and business practices of an integrated/interdependent enterprise, supporting decision processes to right-size the complex, and completing pilot project initiatives outlined in the Responsive Infrastructure Strategy Implementation Plan. Specific cross-cutting pilot projects, such as facilitating multi-unit processing at Pantex to increase throughput, will be completed that have major complex-wide benefits.

Total, Directed Stockpile Work	**1,351,206**	**1,372,327**	**1,410,268**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Life Extension Programs	
▪ **B61 Life Extension Program**	
This increase will resolve the production quantity disconnect and ensure directive schedule requirements are fully met.	**+8,559**
▪ **W76 Life Extension Program**	
This increase supports the completion of pre-FPU R&D activities offset by Process Prove-In of production activities to achieve FPU and the purchase of production-rate tooling to support and sustain production after FPU.	**+2,407**
▪ **W80 Life Extension Program**	
This decrease results in a requirement to re-baseline the FPU of FY 2009 to FY 2010.	**+3,886**
Total, Life Extension Programs	**+14,852**
Stockpile Systems	
▪ **B61 Stockpile Systems**	
This decrease balances reduced support required for Alt356/358/359 scheduled for FPU and additional evaluation activities required by SS-21 implementation. Additionally baselining and hydrodynamic testing has been redirected from Stockpile Services.	**-1,594**
▪ **W62 Stockpile Systems**	
This decrease is the result of the removal of closeout activities for the W62 JTA and completing pit surveillance activities in FY 2006 offset by reallocating W62 specific work from Stockpile Services.	**-5,138**
▪ **W76 Stockpile Systems**	
This decrease reflects completion of the evaluation backlog, reduced neutron generator production, and completion of certification activities offset by realignment of baselining and hydrodynamic testing from Stockpile Services.	**-6,717**
▪ **W78 Stockpile Systems**	
This increase supports realignment of baselining and hydrodynamic testing from Stockpile Services R&D and neutron generator production increase to support P&PD 2005.	**+18,363**
▪ **W80 Stockpile Systems**	
This increase supports the restart of evaluation activities.	**+1,160**

	FY 2007 vs. FY 2006 ($000)
▪ **B83 Stockpile Systems**	
This decrease is the result of reduced requirements of Aft Subassembly rebuilds and moving funding from the B83 to support other systems partially offset by reallocating performance and safety modeling from Stockpile Services to the B83 system.	**-2,756**
▪ **W84 Stockpile Systems**	
This decrease is the result of planned retirements that reduce workload.	**-2,933**
▪ **W87 Stockpile Systems**	
This increase supports additional surveillance activity and realigning performance and safety activities from Stockpile Services to the W87 system. ...	**+9,171**
▪ **W88 Stockpile Systems**	
This increase supports increased production schedules of the 4T reservoir, support of the Joint Test Assembly (2), and realignment of baselining from Stockpile Services R&D.	**+7,303**
Total, Stockpile Systems	**+16,859**
Reliable Replacement Warhead	
This increase supports the planning of an RRW candidate design, engineering development of the design concept, and conducting qualification testing and analysis.	**+2,957**
Weapons Dismantlement and Disposition	
This increase will support a ramp-up in risk mitigation activities. Accomplishing these activities will better prepare the NNSA for meeting the aggressive objectives that will be listed in the forthcoming Dismantlement Infrastructure Report. This level of activity maximizes capacity usage at Pantex Plant, which must meet dismantlement and other DSW requirements such as cyclical surveillance and critical LEP disassembly and assembly activities.	**+15,600**
Stockpile Services	
▪ **Production Support**	
This increase supports the replacement of a large number of equipment and tooling repairs. Without these experiment repairs, LEPs and stockpile surveillance will be adversely impacted.	**+8,415**
▪ **Research & Development Support**	
This increase is the result of realigning funding from R&D Certification and Safety for Hydrodynamic test program infrastructure, archiving and institutional support and realigning baselining funding to the specific Stockpile Systems.	**+3,308**

	FY 2007 vs. FY 2006 ($000)
▪ **Research & Development Certification and Safety**	
This decrease is the result of realigning funds and is partially-offset by supporting subcritical experiments at the Nevada Test Site. Includes a $6 million earmark for LANL to conduct hydrodynamic testing to support the stockpile and a $40 million earmark for Nevada Test Site (NTS) to support sub critical experiments to include the Phoenix Explosive Pulse Power program. NNSA will continue to support LANL and the NTS to perform these types of activities.	**-31,251**
▪ **Management, Technology, and Production**	
This decrease impacts the analysis efforts needed for use control special studies and independent safety assessments and defers some procurements of weapon support equipment and handling gear. Includes a $3 million earmark for Sandia National Laboratories (SNL) to support independent assessments. NNSA will continue to support SNL to perform this type of work.	**-8,229**
▪ **Responsive Infrastructure (RI)**	
This increase supports RI ramp up to address the identified capability shortcomings for meeting the NNSA/DoD responsiveness requirements.	**+15,430**
Total, Stockpile Services	**-12,327**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	1,146	1,180	1,215
Capital Equipment	17,359	17,879	18,416
Total, Capital Operating Expenses	**18,505**	**19,059**	**19,631**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	1,252	1,289	1,328	1,368
Capital Equipment	18,968	19,537	20,123	20,727
Total, Capital Operating Expenses	**20,220**	**20,826**	**21,451**	**22,095**

[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 2006 and FY 2007 funding shown reflects estimates based on projected FY 2005 obligations.

Science Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Science Campaign			
Primary Assessment Technologies	73,388	49,221	50,527
Test Readiness	0	19,800	14,757
Dynamic Materials Properties	85,837	83,055	80,727
Advanced Radiography	54,934	49,025	36,745
Secondary Assessment Technologies	63,094	75,569	81,006
Total, Science Campaign	**277,253**	**276,670**	**263,762**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Science Campaign				
Primary Assessment Technologies	59,480	56,130	52,541	53,908
Test Readiness	15,082	15,115	14,782	14,245
Dynamic Materials Properties	84,430	85,526	83,641	81,102
Advanced Radiography	27,373	25,477	27,406	26,118
Secondary Assessment Technologies	95,858	99,096	95,926	93,068
Total, Science Campaign	**282,223**	**281,344**	**274,296**	**268,441**

Description

The goal of the Science Campaign is to develop improved capabilities to assess the safety, reliability, and performance of the nuclear physics package of weapons without further underground testing; enhance readiness to conduct underground nuclear testing as directed by the President; and develop essential scientific capabilities and infrastructure.

This includes providing capabilities to support annual assessment and certification of Life Extension Programs, planned Reliable Replacement Warhead (RRW) designs, and to improve response times for resolving significant findings and certifying warhead replacement components that meet the goals of responsive infrastructure. As a part of this, the Science Campaign is principally responsible for the development of Quantification of Margins and Uncertainties (QMU), which is the methodology that applies scientific capabilities to stockpile certification issues, and to communicate certification findings in a common framework.

The pace of work under the Science Campaign is timed to support an Advanced Strategic Computing (ASC) Campaign milestone in FY 2010 to release substantially improved simulation codes for primaries and secondaries in support of RRW and other certification requirements in the 2012 time frame. This shared code release will require the incorporation of improved physics models, which must be provided by FY 2009, including validated models for plutonium equation of state (EOS) and constitutive

properties, improved boost physics models, completion of the Dual Axis Radiographic Hydrodynamic Test (DARHT) 2nd axis as a validation tool and the use of the High Energy Density Physics (HEDP) facilities.

Three important budgetary changes should be noted. First, as the Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign has been restructured to focus on FY 2010 ignition goals, the FY 2007 budget for the Science Campaign reflects the shift of important HEDP work out of the ICF Campaign to the Science Campaign particularly for Primary Assessment Technologies and Secondary Assessment Technologies. Second, the funding for the Pulse Power Technologies Program, previously provided under RTBF, is shifted to Secondary Assessment Technologies reflecting how the capability will be employed for stockpile certification issues. Among other things, the Pulsed Power Technologies Program will support the optimization of the performance of the new ZR facility. Third, as the DARHT 2nd axis project is completed, resources within the Science Campaign are redirected to experimental programs to make use of new capabilities that are coming on line, including DARHT, Z Facility Refurbishment (ZR), OMEGA Extended Performance (EP) Facility, and ultimately, the National Ignition Facility (NIF).

The Science Campaign is the principal mechanism for supporting the science required to maintain the technical vitality of the national nuclear weapons laboratories, to enable them to respond to emerging national security needs and to maintain a technological edge to prevent a national security surprise. As such, the campaign also develops and maintains the scientific infrastructure of the three national nuclear weapons laboratories and maintains a set of academic alliances to help ensure scientific vitality in important fields of research. The Science Campaign is maintaining readiness to conduct underground nuclear testing as directed by the President.

The Science Campaign integrates budget and performance by setting level one milestones for primary and secondary certification that reflect national program priorities. As experience is gained in the application of the QMU methodology and as QMU is further refined, the results are increasingly being used to identify technical areas requiring improvement and to develop level 2 milestones to prioritize resources. Program success is determined by the extent to which improved understanding of important phenomena provides confidence that failure modes and margins are properly identified and the extent to which uncertainties are improved in predictive capabilities.

Benefits

Within the Science Campaign, the Primary Assessment Technologies, Dynamic Material Properties, Advanced Radiography, and Secondary Assessment Technologies subprograms each make unique contributions to Program Goal 01.28.00.00. In conjunction with the ASC Campaign, the Primary Assessment Technologies subprogram develops the tools, methods, and knowledge required to certify the nuclear safety and nuclear performance of any aged or rebuilt primary to required levels of accuracy without nuclear testing. The Dynamic Material Properties subprogram focuses on utilizing experiments to foster the development of detailed understanding and accurate modeling of the properties and behavior of materials used within the nuclear explosives package. It also funds university programs that support science fundamental to stockpile stewardship and develops potential future laboratory employees. The Advanced Radiography subprogram develops technologies for three-dimensional imagery of imploding mock primaries with sufficient spatial and temporal resolution to experimentally validate computer simulations of the implosion process as well as to tie these results to prior data obtained from full-scale underground nuclear tests. The Secondary Assessment Technologies

subprogram develops the tools, methods, and knowledge required to certify the nuclear performance of secondaries without nuclear testing.

Major FY 2005 Achievements

Primary and Secondary Physics
- Developed an implementation of QMU for the W76, W80 and W88 warheads and used the QMU tools to evaluate uncertainties on the W76 and W80.
- Conducted archival data re-analysis and underground test (UGT) analysis in support of pit lifetime evaluation.
- Conducted laser experiments on instabilities at the Omega laser at the University Rochester.
- Completed two series of hydrodynamic experiments on the National Ignition Facility to acquire data relevant to the stockpile jointly with the ICF Campaign.
- Developed and implemented improved energy balance models for use in secondary performance assessment.

Radiography and Test Readiness
- Completed a rigorous technical review and design acceptance testing for the DARHT 2nd axis recovery and commissioning project and received DOE CD-3 "construction start" approval.
- Completed initial beam stability testing with excellent results; cell refurbishment started using a rigorous "lean-manufacturing" process with integral quality assurance processes.
- Completed six major integrated device hydrodynamics tests at the Lawrence Livermore National Laboratory (LLNL) Contained Firing Facility and three at Los Alamos National Laboratory (LANL) on the DARHT 1st axis.
- Developed diagnostics for, and executed validation experiments at the LANL Los Alamos Neutron Science Center (LANSCE) proton radiography facility and other facilities for damage models, behavior of high explosives, and integral validation.
- Achieved a 24-month readiness posture including delivery of replacement Field Test Neutron Generators.
- The test readiness program also completed table-top readiness exercises at LANL and LLNL, and the documented safety analysis for the Device Assembly Facility at the Nevada Test Site (NTS).

Materials
- Conducted plutonium experiments on the JASPER gas gun at the NTS to provide: precision equation-of–state data, including equation-of–state data on aged plutonium, and quasi-isentropic compression data on important phase transformation kinetics.
- Completed the commissioning of the Atlas facility at the NTS and began stewardship experiments.
- Supported 21 stockpile stewardship academic alliance grants and four university centers of excellence nationwide, training post-doctoral fellows and graduate students in technical areas of relevance to stockpile stewardship.
- Completed measurements of constitutive properties of plutonium alloys supporting uncertainty quantification.
- Obtained first results in a dynamic diamond anvil cell to allow testing of phase transition kinetics at high pressure and temperature.
- Completed an updated database for improved reactive burn high explosive models utilizing experimental results on aged explosive.

- Demonstrated enhanced understanding of the chemistry and processing characteristics of removable and shock-resistant encapsulants as a foundation for improving their performance in stockpile systems.
- Completed a series of gas gun shock compression experiments on two model reactive systems to study shock-induced decomposition.
- Developed and implemented improved target fabrication and metrology capabilities appropriate to the use of planar targets on the NIF.

Major Outyear Considerations

During the period FY 2007-2011, the Science Campaign will endeavor to make significant progress toward providing the experimental data and certification methodologies necessary to support the current stockpile workload and future requirements that will include the Reliable Replacement Warhead and reflect an evolving stockpile. In order to achieve this challenging goal, a balanced weapon science program is necessary that integrates the products of the Science Campaign with the simulation capabilities developed in the Advanced Simulation and Computing program.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output- oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2007, the OMB evaluated the Science Campaign using the PART. The OMB gave the Science Campaign scores of 100 percent on the Purpose and Design Section, 91 percent on the Strategic Planning Section, 83 percent on the Program Management Section, and 72 percent on the Results Section. Overall, the OMB rated the Science Campaign 82 percent, its second highest rating of "Moderately Effective." The OMB assessment found that the program appears to be well managed, with a clear and unique purpose and clear, meaningful, and measurable performance metrics that the program was demonstrating good progress in meeting. Additionally, the OMB assessment found that the program needs to continue to strengthen procedures to hold its contractors accountable for cost, schedule, and results. The OMB also found that NNSA should improve coordination of activities across multiple programs aimed at nuclear weapons activities—especially the six campaigns. In response to the OMB findings, the NNSA is continuing to improve contractor accountability by expanding the linkage of contractor awards to performance results/evaluation and improving communication and coordination of work across all Weapons Activities programs.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Meet the FY 2002 milestones in the science campaign to achieve scientific understanding of the nuclear package of weapon systems to sustain our ability to annually certify the nuclear weapon stockpile without underground nuclear testing. (MET GOAL)	Meet the critical FY 2003 Campaign performance targets contained in the NNSA Future-Year Nuclear Security Program (FYNSP). (MIXED RESULTS) Implement the recommendations requested by the Nuclear Posture Review to refine test scenarios and evaluate the cost/benefit tradeoffs to sustain optimum test readiness that best supports the New Triad. (MET GOAL)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of progress in development of the Quantification of Margins and Uncertainties (QMU) methodology to provide quantitative measures of confidence in the performance, safety, and reliability of the United States (U.S.) nuclear weapons stockpile (Long-term Outcome)	N/A	R: 10%	R: 25% T: 25%	T: 40%	T: 55%	T: 70%	T: 85%	T: 100%	N/A	By 2010, complete development of QMU methodology to apply quantitative measures of confidence in the performance, safety, and reliability of the nuclear weapons stockpile.
Cumulative percentage of progress towards completing the Dual-Axis Radiographic Hydrotest Facility (DARHT) to provide data required to certify the safety and reliability of the U.S. nuclear weapons stockpile (Long-term Outcome)	N/A	R: 16%	R: 25% T: 25%	T: 60%	T: 80%	T: 100%	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.
Readiness, measured in months, to conduct an underground nuclear test as established by current NNSA policy (Long-term Outcome)	R: 36	R: 30	R: 24 T: 24	T: 24	T: 24	T: 24	T: 24	T: 24	T: 24	By 2005, achieve a 24-month underground nuclear test readiness (2003 Baseline of 36-month).
Annual percentage of hydrodynamic tests completed in accordance with the National Hydrodynamics Plan, to support the assessment of nuclear performance (Annual Output)	N/A	R: 60%	R: 75% T: 75%	T: 75%	T: 75%	T: 75%	T: 75%	T: 75%	T: 75%	Annually, complete at least 75% of all scheduled hydrodynamic tests in accordance with the National Hydrodynamics Plan.

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of progress towards creating and measuring extreme temperature and pressure conditions for the 2013 stockpile stewardship requirement (Long-term Outcome)*	R: 56%	R: 62% T: 63%	R: 68% T: 68%	T: 70%	T: 70%	T: 75%	T: 80%	T: 85%	T: 90%	By 2013, create and measure extreme conditions so High Energy Density Physics facilities can be used to provide stockpile stewardship data.
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)	N/A	R: Baseline T: Baseline	R: $405K T: $405K	T: $380K	T: $360K	T: $340K	T: $340K	T: $340K	T: $340K	By 2008, reduce the annual average cost of obtaining plutonium experimental data on JASPER to $340K (80% of the 2004 baseline cost of $425K).

* Indicator and targets transferred from ICF Campaign in 2005, effective in 2006.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Primary Assessment Technologies	**73,388**	**49,221**	**50,527**

The Primary Assessment Technologies subprogram is responsible for the development and implementation of the QMU methodology for primaries and provides the experimental capabilities to support, along with ASC, the development of analytic tools and methodologies required to certify the nuclear safety and performance of any aged or rebuilt primary without nuclear testing. Key milestones include the release of validated models to support an FY 2010 ASC code release for future certification including support of RRW activities, and subsequent assessment of the ability of that code release to predict integrated behavior of nuclear primaries. Improved materials and high explosives burn models will be integrated in the codes in FY 2007.

A principal source of uncertainty in current codes is the modeling of boost physics, and approximately one half of the effort of this campaign is devoted to experimental efforts to improve these models. These experimental efforts include efforts to establish initial conditions for boost through integrated experiments including subcritical experiments and hydrotests, as well as experiments to investigate the boosting process itself. The High Energy Density (HED) facilities will continue to be used in FY 2007 to measure weapon-relevant material properties, including EOS. Ultimately this effort will depend critically upon NIF experiments as the only way, without nuclear testing, to gain access to conditions relevant to thermonuclear burn important for understanding the boost process. Initial NIF ignition experiments in FY 2010 will therefore be important as well as a campaign of ignition, burn and other HED physics experiments in the subsequent years.

Establishing the predictive uncertainties of improved ASC codes will also rely upon the reanalysis of historical nuclear test data and development of an accessible archive of information relevant to the certification of primaries. While this is an invaluable source of information, recent experience has demonstrated that thorough re-analysis of archived raw data, using modern interpretive models, codes and methods, is often required to extract the best value from this data. This work will be essential for the validation of new ASC codes in the FY 2011- 2012 time frame to support RRW certification and will support required FY 2007 milestones for assessment of the W76 and W88.

Experimental work in this campaign will continue to address areas such as plutonium behavior in integrated experiments under extreme conditions, interface physics, and transport models. This will require intermediate scale and large-scale subcritical experiments, hydrotests, proton radiography experiments and subcritical experiments at U1A. Work will also be done using gas gun experiments executed at the Joint Actinide Shock Physics Experimental Research Facility (JASPER) as well as development of the Phoenix experiment to be fielded at the Nevada Test Site (NTS) in FY 2008 to provide high-pressure plutonium data.

Test Readiness	**0**	**19,800**	**14,757**

Test Readiness maintains underground nuclear test unique capabilities that are not supported in other stockpile stewardship programs. Funds in test readiness support and train critical personnel, acquire and maintain test-specific equipment, and maintain critical infrastructure in a state of readiness adequate to prepare and execute an underground nuclear test on a timescale established by national

policy, which under current law is 18 months but which has thus far been limited to 24 months by Congressional funding. To maintain 24 month readiness, the current outyear profile will have to be revisited. Critical documentation with long lead-times will be prepared and key personnel will be trained and mentored.

In FY 2007 we will validate the test readiness posture through a management self assessment; maintain the 70 percent Authorization Basis, continue training the next generation of diagnosticians, and begin to address the infrastructure problems that will be identified by the assessment currently underway in the Test Readiness Program.

Dynamic Materials Properties **85,837** **61,055** **74,727**

Models of materials behavior under the extreme conditions of implosion and nuclear explosion of a weapon are a principal source of uncertainty in ASC weapons simulations of nuclear performance and safety. Therefore, a principal goal of this subprogram is, in coordination with ASC, to provide experimental data to support the development of improved models of materials of interest in nuclear weapons primaries and secondaries. This effort is critical to meeting the FY 2009 requirement for improved materials models for incorporation in ASC codes.

The largest component of this effort is the execution of the dynamic plutonium strategy to provide improved models for EOS and constitutive properties. This involves experiments on plutonium and surrogates at the JASPER and TA-55 gas guns, Z Facility Refurbishment, Los Alamos Neutron Science Center (LANSCE) and subcritical experiments at U1A. The subprogram will also support high-pressure material property experiments at synchrotron light sources. Ongoing EOS work will also continue for uranium, for plutonium surrogates, polymers and foams.

In FY 2007 this subprogram will deliver a preliminary set of experimental data for plutonium, within defined pressure/temperature regimes and with quantified uncertainties, required for the development and validation of, static and dynamic multiphase EOS as the basis for certification. It will also provide experimental data to support the development of a validated 3D description of the constitutive properties of plutonium and it will contribute fundamental data to the integrated effort to help understand the effect of aging on the EOS of plutonium.

In addition, large-scale lasers will enable investigations of the dynamic response of materials under ultra-high-pressure conditions of shock loading at facilities such as the OMEGA laser in Rochester and the Jupiter laser facility at Lawrence Livermore National Laboratory (LLNL).

A second principal effort is to characterize the reaction kinetics and dynamics of high explosives, with special emphasis on improving the modeling of insensitive high explosives that will be used in replacement warheads to provide improved safety and surety.

Another focus of responsive infrastructure is to move toward the use of insensitive high explosive, requiring more detailed understanding of its properties and response. The Dynamic Materials Properties subprogram will increase the emphasis on experiments to provide data on the properties of insensitive high explosive including equation of state and constitutive properties.

The Dynamic Materials Properties subprogram is, with ICF, the source of support for the Stockpile Stewardship Academic Alliances program to fund academic centers of excellence in materials, low-energy nuclear science and high-energy density physics as well as providing competitively awarded individual investigator grants in scientific disciplines of benefit to the long term health of stockpile stewardship. In FY 2007 a new program solicitation and selection process will be completed to complement and/or continue the present agreements. This is a program to help ensure the scientific vitality of our laboratories in the future across the spectrum of scientific and national security missions.

Congressionally Directed Activity **0** **3,000** **3,000**

The Conference earmarked $3 million for the University of Nevada Las Vegas for Cooperative Agreements funded within Dynamic Materials Properties Program.

Congressionally Directed Activity **0** **3,000** **3,000**

The Conference earmarked $3 million for the University of Nevada Reno for Cooperative Agreements funded within Dynamic Materials Properties Program.

Congressionally Directed Activity **0** **1,000** **0**

The Conference added funds for Dynamic Materials for LCS laser upgrade at the Idaho Accelerator Center funded within Dynamic Materials Properties Program.

Congressionally Directed Activity **0** **15,000** **0**

The Conference added funds for Dynamic Materials, Secondary Technologies for LANL to restore high-energy density experimental capabilities funded within Dynamic Materials Properties Program.

Advanced Radiography **54,934** **49,025** **36,745**

The goal of the Advanced Radiography subprogram is to develop improved hydrotest and radiographic capabilities to infer the integral performance of a nuclear weapon during the primary implosion phase in order to assure the continuing reliability and safety of the stockpile. These facilities will be key to analyzing system modifications to improve safety and surety upgrades to weapons systems and to ensuring the nuclear performance of aged, modified or replacement systems.

The subprogram is focused on completing the recovery and commissioning of the 2nd axis of the DARHT facility at Los Alamos National Laboratory by mid 2008. By the end of FY 2007, all cell refurbishment and installation work will have been completed and commissioning activities will be well underway. The project expects to complete final commissioning and demonstration of 2-axis multi-time hydrotesting in FY 2008, at which time the project will be closed out. After the completion of the 2nd axis of DARHT, the effort in this subprogram will be reduced while NNSA focuses on the optimization and use of current radiographic capabilities. These efforts are expected to include development of the next generation gamma-ray camera systems to optimize data return and to improve the performance of multi-pulse x-ray conversion targets.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

While the DARHT facility is, and will remain, the nation's premier radiographic hydrotest facility for the future, the LLNL Contained Firing Facility (CFF)/Flash X-ray Accelerator remains a critical facility to provide much needed hydrotest capacity in supporting the requirements of the national hydrotest plan. Furthermore, CFF provides unique diagnostics that support focused experiments to improve ASC codes and models. The development of new technology for high-resolution multi-Mega electron Volt pulsed sources that are not currently available but may be required by future experiments will continue. The subprogram will also invest in advanced technology for diagnosing hydrotest experiments.

With the ramp down in DARHT project efforts, the Advanced Radiography subprogram will provide a limited resumption of projects such as proton radiography experiments at LANSCE in support of QMU objectives.

Secondary Assessment Technologies..... **63,094** **75,569** **81,006**

The goal of the Secondary Assessment Technologies subprogram is to advance secondary assessment through development and implementation of QMU. LANL and LLNL will develop modern tools and analysis needed to identify and delineate failure modes, performance gates, and margins that are relevant to stockpile systems.

This subprogram takes advantage of the past UGT data, conducts and utilizes a variety of above ground experiments to develop new data and physical models needed to increase and assure the accuracy of the simulations. The key elements in this subprogram are: primary output, initial case dynamics, radiation flow, hydrodynamics, and overall weapon outputs and effectiveness. Specific research directions are based on highest impact to bounding the uncertainties in current and emerging stockpile issues. The approach is to focus efforts on physics and computational issues relevant to each uncertainty to the accuracy required for the stockpile weapon systems.

The subprogram performs and analyzes explosively-driven hydrodynamic, and High-Energy-Density (HED) above ground experiments on ICF facilities, in addition to using nuclear test data to validate and improve the models and processes used in modern 2 and 3-dimensional design codes. Increasingly, experiments on HED facilities, including the Z Facility at SNL, the OMEGA laser at the University of Rochester, and the NIF at LLNL are used to obtain the data needed at the extreme conditions relevant to the goals of the subprogram. In FY 2007 this subprogram will fund work that was formerly funded under the ICF Campaign, to develop and demonstrate experimental platforms for unique HED conditions relevant to weapon physics issues using ICF facilities such as Z, OMEGA, and NIF.

FY 2007 specific work will include validation of physics and materials models to support calculations relevant to energy balance uncertainties. In FY 2007 this subprogram will also develop and test three new candidate materials for a part of the nuclear explosive package that meet manufacturability requirements, implement new materials models into code, and assess the feasibility of using these materials for stockpile applications.

In FY 2007, the funding for the Pulse Power Technologies Program, previously provided under RTBF, is included in this subprogram. Funds will be used to optimize the performance of the newly

(dollars in thousands)

FY 2005	FY 2006	FY 2007

refurbished Z facility, and to improve performance of z-pinch and radiography for weapon science. Specific applications undertaken in FY 2007 include ongoing development of advanced radiographic sources and development of pulsed power technology to support material properties experiments.

Total, Science Campaign	**277,253**	**276,670**	**263,762**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Primary Assessment Technologies	
This increase reflects the funding and responsibility shift in HED Experiments in support of primary certification from ICF to this subprogram.	**+1,306**
Test Readiness	
The funding decrease will lead to an increase in time required to field a well-diagnosed nuclear test. During FY 2007, Test Readiness will be maintained at 24 months. To maintain the 24 month readiness, the current outyear profile will have to be revisited.	**-5,043**
Dynamic Materials Properties	
This increase reflects nominal changes to meet subprogram goals consistent with overall NNSA budget priorities and resources and Congressionally-directed.	**+13,672**
Advanced Radiography	
This decrease reflects a drawdown in effort as DARHT 2nd axis project activities approach completion.	**-12,280**
Secondary Assessment Technologies	
This increase reflects the shift in HED Experiments and Pulsed Power Technologies in support of secondary certification from ICF and RTBF to this subprogram. This will support experiments, diagnostics, and target fabrication and supports preparation for a campaign of weapons physics stewardship experiments in FY 2008 on SNL's refurbished Z facility.	**+5,437**
Congressionally Directed Activity: The decrease is a result of a congressional increase that is not continued in FY 2007.	**-16,000**
Total Funding Change, Science Campaign.....	**-12,908**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	690	710	732
Capital Equipment	8,788	9,051	9,323
Total, Capital Operating Expenses	**9,478**	**9,761**	**10,055**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Capital Operating Expenses	**10,357**	**10,667**	**10,987**	**11,317**

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

Dual-Axis Radiographic Hydrotest (DARHT)
Second (2nd) Axis Recovery and Commissioning Project,
Los Alamos National Laboratory (LANL)

1. Significant Changes

During the final baselining process the project cost increased by $2.35M (from $87.45 M to $89.8 M) due principally to:

- Additional project contingency added at the recommendation of the Office of Engineering and Construction Management, External Independent Review of the final baseline and construction start proposal (CD-2/3). The increased contingency raises confidence level to 95% that the project will be completed within the CD-2 baseline budget envelope of $89.8 M
- Additional required tasks that were identified in the final planning and red-team review process in the areas of: controls for the downstream transport, hardware installation and hookup, diagnostics support and commissioning, injector support, and cell removal and reinstallation;

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start (Cell Redesign Initiated)	Final Design Complete (Cell Redesign Completed)	Physical Construction Start (Cell Refurbishment Start)	Physical Construction Complete (Commissioning Complete)	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006 Budget Request *(Preliminary Baseline)*	2Q FY 2004	3Q FY 2005	3Q FY 2005	2Q FY 2008	N/A	N/A
FY 2007	2Q FY 2004	3Q FY 2005	3Q FY 2005	2Q FY 2008	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006 Budget Request *(Preliminary Baseline)*	59,050	28,400	N/A	87,450	0	87,450
FY 2007	60,953	28,847	N/A	89,800	0	89,800

4. Project Description, Justification, and Scope

Project Description

The DARHT 2nd Axis Refurbishment and Commissioning Project is an expense-funded project within the Advanced Radiography subprogram of the Science Campaign. This project will re-design and refurbish the DARHT II accelerator and injector cells to correct high-voltage breakdown problems that prevent proper operation of the accelerator and will further complete accelerator commissioning activities required to bring DARHT II on-line to support the National Hydrotest Program. The commissioning activities that had already been budgeted within the Advanced Radiography subprogram as part of ongoing programmatic work are re-integrated into the scope of this project.

Justification

DARHT was a line item construction project that was closed out in FY 2003 after completing the established acceptance criteria in December 2002 to meet the Critical Decision CD-4 (Project Completion) requirement. National Nuclear Security Agency (NNSA) had received authorization and appropriations to complete the commissioning of the accelerator within the Advanced Radiography subprogram of the Science Campaign. In April 2003, during the commissioning of the DARHT 2nd axis accelerator (DARHT II), LANL observed high voltage breakdown in several of the accelerator cells while attempting to raise the cell operating voltages to attain beam energy of 18.1 MeV. LANL spent the remainder of FY 2003 investigating the sources of the breakdowns and establishing a preliminary proposal for technical solutions to correct the problems. NNSA conducted an external review of the DARHT 2nd axis status in December 2003, which established that the most feasible technical path was a proposal to modify each of the individual cells so that the accelerator would achieve as nearly as possible the original design specifications. Given the nature of the problem and the requirements of the Hydrotest Program, no lower cost options were found to be feasible. This project is funded from Operating and Maintenance funds instead of Capital funds due to the research and development (R&D) component required to complete this refurbishment and commissioning effort.

NNSA has continued to review the requirements for hydrotesting both as a whole and for individual weapons systems and has reaffirmed the requirement for a 2-axis multi-time radiographic capability for weapons certification, and as a technique to reduce risks and uncertainties in the understanding of the performance of weapons systems in the stockpile.

Scope

The project consists of a focused accelerator research and development project OPC performed in parallel with a capital improvement project TEC to refurbish the cells. The research and development (R&D) effort has been focused on the re-design and testing of proposed modifications to the DARHT II accelerator and injector cells to correct the high-voltage breakdown problems.

After the cell redesign was been completed and certified by an external review, NNSA commenced a formal capital improvement project (upon approval of Critical Decision 1/2a/3a) to refurbish and reinstall the accelerator and injector cells.

In order to assure successful commissioning, the project will perform additional R&D work on beam transport modeling as well as modeling of the accelerator and downstream transport systems which included tests on the Experimental Test Accelerator (ETA-II) Lawrence Livermore National Laboratory (LLNL) in preparation for the scaled-accelerator validation tests. These efforts are budgeted as OPC. In parallel with the refurbishment effort, the project conducted beam stability and scaled accelerator testing at DARHT II, initially with un-refurbished cells and later with refurbished cells. This testing along with the full energy commissioning effort is budgeted as TEC.

Once the cell refurbishment has been completed, the project will conduct a DARHT accelerator Management Self Assessment (MSA), perform an Accelerator Readiness Review, and perform full scale accelerator commissioning. At project completion, the DARHT 2nd axis will be ready for integration into the DARHT facility to support the National Hydrotest Program.

The Total Project Costs include the R&D and commissioning efforts as well as the cell refurbishment effort.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision–0: Approve Mission Need – 1Q FY 2005
- Critical Decision–1: Approve Baseline Range – 3Q FY 2005
- Critical Decision–2a/3a: Equipment procurement, begin refurbishment of 26 accelerator cells in support of the scaled accelerator testing – 3Q FY 2005
- Critical Decision–2/3: Approve Performance Baseline, start refurbishment of the remainder of the cells – 1Q FY 2006
- Critical Decision–4a: Beam accelerated to shuttle dump – 4Q FY 2007
- Critical Decision–4b: Multi-pulse capability – 3Q FY 2008

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Operating Expense Funded by Fiscal Year			
Cell Refurbishment/Commissioning			
2004	21,400	21,400	21,400
2005	19,975	19,975	19,975
2006	26,250	26,250	26,250
2007	17,670	17,670	16,670
2008	4,505	4,505	4,505
Total TEC	89,800	89,800	89,800

6. Details of Project Cost Estimate
Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	0	0
Construction Phase		
Site Preparation	0	0
Equipment	51,653	48,400
All other construction	0	0
Contingency	9,300	10,650
Total, Construction	60,953	59,050
Total, TEC	60,953	59,050

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	0	0
R&D Related to Cell Refurbishment	21,765	21,428
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	7,082	6,972
Total, OPC	28,847	28,400

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	0	0	0	0	0	0	0	0
TEC (Cell Refurbishment Commissioning)	39,658	17,670	3,625	0	0	0	0	60,593
OPC Other than D&D	27,967	0	880	0	0	0	0	28,847
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	67,625	17,670	4,505	0	0	0	0	89,800

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	3Q FY 2008
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

(Related Funding requirements)*

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

* Annual facility operating costs associated with this project are funded in RTBF Operations of Facilities.

9. Required D&D Information

N/A

10. Acquisition Approach

NNSA is managing the DARHT II Refurbishment and Commissioning Project as a formal project under DOE O 413.3. LANL will be responsible for the management and the execution of the project in collaboration with LLNL, and Lawrence Berkeley National Laboratory (LBNL). NNSA has established its own external review committee, which will be tasked with reviewing the project prior to approving critical decisions. Particular emphasis is being placed on establishing formal acceptance criteria and establishing a rigorous Quality Assurance Program prior to commencement of cell refurbishment. LANL and LBNL staff performed cell acceptance and component testing to confirm the performance of the redesigned cells. LANL technical staff and on-site contractors will perform the actual modifications to the DARHT accelerator and injector cells including the removal and re-installation of the cells from/to the DARHT accelerator hall. LANL, LBNL, and LLNL physicists will conduct the modeling and experiments associated with beam transport and the performance of the down stream electron-beam transport. LANL performed the long pulse beam stability tests, and will perform scaled accelerator validation tests and the accelerator commissioning, supported by LLNL and LBNL staff as appropriate. The requirement for the accelerator performance as set forth in the CD-0 document is at 16.6 MeV and the technical goal is at 18.1 MeV.

Engineering Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Engineering Campaign			
Enhanced Surety	32,859	39,600	26,731
Weapons Systems Engineering Assessment Technology	27,054	17,365	21,156
Nuclear Survivability	9,385	22,162	14,973
Enhanced Surveillance	99,089	99,205	86,526
Microsystems and Engineering Sciences Applications (MESA) Other Project Costs (OPC)	4,564	4,667	4,613
Microsystems and Engineering Sciences Applications (MESA) Construction	85,816	64,908	6,920
Total, Engineering Campaign	**258,767**	**247,907**	**160,919**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Engineering Campaign				
Enhanced Surety	27,641	27,528	27,095	26,723
Weapons Systems Engineering Assessment Technology	21,944	21,907	21,594	21,346
Nuclear Survivability	9,202	9,075	8,881	8,696
Enhanced Surveillance	89,312	88,879	87,748	86,342
MESA OPCs	4,715	4,725	4,621	4,477
MESA Construction	16,198	0	0	0
Total, Engineering Campaign	**169,012**	**152,114**	**149,639**	**147,584**

Description

The goal of the Engineering Campaign is to provide validated engineering sciences and engineering modeling and simulation tools for design, qualification, and certification; improved surety technologies; radiation hardening design and modeling capabilities; microsystems and microtechnologies; component and material lifetime assessments; and predictive aging models and surveillance diagnostics.

The Campaign provides the Nuclear Weapons Complex with modern tools and capabilities in engineering sciences to ensure the safety, security, reliability and performance of the current and future United States (U.S.) nuclear weapons stockpile and a sustained engineering basis for stockpile certification and assessments throughout the lifecycle of each weapon. The focus is on assessment tools for new engineering phenomena introduced by changes to weapons; system-level assessment tools that leave large uncertainties or are no longer available (e.g., loss of underground testing or key experimental facilities); and advanced engineering assessment methodology that can be applied throughout the lifecycle of the weapon to improve responsiveness and effectiveness. Basic research and concept development are conducted in the Engineering Campaign, which includes scientific discovery, and understanding the underlying engineering phenomena that control performance. The best available

scientific understanding is then used to develop experimental tools, validated modeling capability, and analysis methodology for use by Directed Stockpile Work (DSW) in weaponization of new technologies and certification that modified designs meet requirements for specific tail numbers (e.g., DSW life extension programs (LEPs) or stockpile systems) or multiple weapon systems (e.g., DSW stockpile services).

The focused subprograms of the Engineering Campaign are:

Enhanced Surety - Provides validated surety (safety, security, and control) technology as options for the stockpile refurbishment/replacement program to assure that modern nuclear safety standards are fully met and a new level of use-denial performance is achieved.

Weapons 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 for the supporting R&D DSW needs to maintain the development capability of refurbishing weapons and transforming the stockpile, as required.

Nuclear Survivability – Provides the tools and technologies needed to design and qualify components and subsystems to meet requirements for radiation environments (e.g., intrinsic radiation, production and surveillance radiography), space environments, and 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 refurbishment decisions and develops advanced diagnostics and predictive capabilities for early identification and assessment of stockpile aging concerns.

Two central strategies in the prioritization of Engineering Campaign work are: (1) the proper balance between meeting near term needs of the stockpile, maintaining the technical foundations of nuclear weapons engineering; and developing engineering processes to enable transformation of the stockpile and complex; and (2) the phased deployment of laboratory demonstrations to qualified applications and products, in a timeframe consistent with DSW needs and Defense Programs (DP) priorities.

Benefits

Within the Engineering Campaign program, five subprograms (the Enhanced Surety, Weapons Systems Engineering Assessment Technology, Nuclear Survivability, Enhanced Surveillance, and Microsystems and Engineering Sciences Application (MESA) subprograms) each make unique contributions to Program Goal 01.29.00.00. The MESA Complex is being developed to incorporate modern, survivable, electrical, optical and mechanical control systems into the stockpile where required. The MESA facility will also allow the development and refinement of responsive processes that efficiently address engineering functions for the entire lifecycle of a weapon by bringing together designers, analysts, experimentalists, and theoreticians in the same workspace.

Major FY 2005 Achievements

- Completed an additional 20 percent (total of 65 percent) of MESA construction with the project continuing on/ahead of schedule and within budget.
- Completed an additional 10 percent (total of 60 percent) of progress towards developing all surety improvements for LEPs.

- Completed an additional 28 percent (total of 55 percent) of the data sets used in developing tools and technologies to validate structural and thermal models with well-defined ranges of applicability and qualified uncertainties.

- Completed an additional 4 percent (total of 24 percent) toward meeting the goals identified in the Nuclear Survivability portion of the Engineering Program Plan.

- Completed component aging assessment to support B61 LEP (Alt 357) certification, updated the lifetime assessment for predominant pit types, developed improved aging models for W80 components, and provided weapon aging evaluations to support Annual Assessment Reports.

- Delivered a modernized W88 system tester for surveillance at the Weapons Evaluation Test Laboratory, installed an improved non-destructive laser gas sampling system for Canned Sub-assembly surveillance, and demonstrated a prototype surveillance program for non-nuclear safety components.

- Developed new initiative to support future certification in the absence of the Sandia Pulse Reactor.

Major Outyear Considerations

The Engineering Campaign is designed to be the drive for the discovery, maturation, and application of the advanced engineering capabilities and tools required for maintaining and transforming the nuclear weapons stockpile under the Stockpile Stewardship Program. Programmatically, the Campaign contributes to engineering solutions associated with designing, manufacturing, certifying, maintaining, refurbishing, surveying, assessing, and dismantling the nuclear weapons stockpile. As such, the Engineering Campaign contributes technology development for the entire life cycle of a nuclear weapon and provides the technology to the Directed Stockpile Work (DSW) program at a pace to meet stockpile deliverables. The projected needs of DSW include engineering technology for future LEPs or replacement systems, such as Reliable Replacement Warhead (RRW), as well as maintenance of the engineering basis for continued confidence in the safety, security, reliability, and performance of the current stockpile systems. The outyear funding profile for the Engineering Campaign is structured to enable multi-year engineering R&D efforts and to provide a consistent level of support to DSW and the stockpile. The only major funding change is a decrease in FY 2009 after the Microsystems and Engineering Sciences Applications (MESA) construction project is completed.

Current and future needs of the Stockpile Stewardship Program include requirements and goals to improve performance (e.g., surety and reliability), understand aging and extend lifetimes, address still poorly understood phenomena (e.g., energy transport in complex systems), replace sunset technology, develop more responsive and cost-effective engineering assessment techniques, and certify designs without underground testing or other test facilities. A continuing, stable investment in advancing

weapon engineering through the Engineering Campaign is designed to meet these mission needs. The Campaign's work is focused in four technical areas, which are the subprograms of the Campaign – Weapons Systems Engineering Assessment Technology, Enhanced Surety, Enhanced Surveillance, and Nuclear Survivability. An additional Campaign element includes the major construction that supports Engineering Campaign objectives, currently the MESA construction project.

The Weapons Systems Engineering Assessment Technology subprogram is structured to provide DSW with the engineering tools necessary to improve the assessment and qualification processes for weapon systems and components. In particular, this subprogram will complete by FY 2009 the data sets required to validate thermal and structural engineering models being developed for use in stockpile certification and assessment. Advances in engineering science and continued development of experimental assessment techniques, advanced instrumentation, and related diagnostics is also expected in this timeframe to support the goal of reducing large uncertainties in weapon assessments for current and future stockpile systems.

Within the FY 2007 – FY 2011 timeframe, the Enhanced Surety subprogram is expected to provide the engineering technology development for improved surety systems for future LEPs and replacement systems, such as RRW, with engineering development activities beginning in the FY 2010 or shortly thereafter. The improved surety options developed by this subprogram include advanced initiation systems with improved safety and the next generation of use control. Technology for integrated surety options is also expected to be matured by this subprogram in this timeframe.

The Enhanced Surveillance funding profile in FY 2007 – FY 2011 is balanced to address near-term requirements for current stockpile aging assessment and surveillance, as well as the longer term development of stockpile evaluation technologies and predictive capabilities for stockpile transformation. The Enhanced Surveillance deliverables in the outyears are planned to support Reliable Replacement Warhead components assessment, embedded stockpile evaluation technology deployment, predictive modeling and experimental capability development, reduced uncertainties in pit lifetime assessment, and cost-effective surveillance transformation implementation.

The Nuclear Survivability subprogram is designed to provide the engineering technology and qualification tools needed to meet nuclear survivability requirements established for each weapon system by the Nuclear Weapons Council (NWC). This subprogram is integrated with the weapon-specific work within DSW to provide validated tools and technologies for the entire stockpile, including current and future LEPs and other systems such as RRW. Key deliverables expected in the FY 2007 – FY 2011 timeframe include engineering design and assessment tools to meet nuclear survivability requirements without test facilities that use special nuclear material and engineering assessment tools that better address radiation-induced phenomena such as system-generated electromagnetic pulse (SGEMP).

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of the Microsystems and Engineering Sciences Applications (MESA) facility project completed (total project cost), while maintaining a Cost Performance Index of 0.9-1.15 (Efficiency)	R: 22%	R: 45% T: 35%	R: 65% T: 50%	T: 65%	T: 75%	T: 90%	T: 100%	N/A	N/A	By 2009, complete the MESA project (total project cost), while maintaining a Cost Performance Index of 0.9-1.15.
Cumulative percentage of progress towards developing all improved surety improvements for the Life Extension Programs (LEPs) having Phase 6.3 beginning in 2010 or later, as documented in the Engineering Campaign Program Plan (Long-term Output)	R: 40%	R: 50% T: 50%	R: 60% T: 60%	T: 70%	T: 80%	T: 90%	T: 100%	N/A	N/A	By 2009, complete development of all improved surety tools for LEPs beginning Phase 6.3 in 2010 or later.
Cumulative percentage of delivery of lifetime assessments, predictive aging models, and surveillance diagnostics, as documented in the Engineering Campaign Program Plan (Long-term Output)	R: 7%	R: 14% T: 14%	R: 24% T: 24%	T: 32%	T: 40%	T: 48%	T: 55%	T: 63%	T: 71%	By 2015, deliver all lifetime assessments, predictive aging models, and surveillance diagnostics to support key stockpile stewardship decisions through the 2014 timeframe (Interim Target).
Cumulative percentage of completed data sets used in developing tools and technologies to validate structural and thermal models and improve the capability for weapon assessment and qualification, in accordance with the Engineering Campaign Program Plan (Long-term Output)	R: 10%	R: 27% T: 27%	R: 55% T: 55%	T: 68%	T: 78%	T: 93%	T: 100%	N/A	N/A	By 2009, complete 47 structural and thermal data sets to improve the capability for weapon component certification (Interim Target).
Cumulative percentage of progress towards development of the technologies and qualification tools needed to meet nuclear survivability requirements for non-nuclear components in the Life Extension Programs (LEPs), in accordance with the Engineering Campaign Program Plan (Long-term Output)	R: 10%	R: 20% T: 20%	R: 24% T: 24%	T: 27%	T: 30%	T: 33%	T: 35%	T: 37%	T: 39%	By 2015, complete 50% of the engineering technology and qualification tool development needed to meet Nuclear Survivability requirements for weapon activities (Interim Target).

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Enhanced Surety	**32,859**	**39,600**	**26,731**

A multi-technology approach is pursued by the Enhanced Surety subprogram to develop options for weapon system designers during potential LEPs, such as the B61 or W78. This approach will also address other refurbishments and stockpile improvement projects needed to meet future Department of Defense (DoD) requirements and will support studies such as the Reliable Replacement Warhead (RRW). Multi-technology development and integration opens the design space and offers opportunity for synergistic improvements in other weapon components.

In FY 2007, the multi-lab development of a laser-fired optical initiation system will continue with the maturation and integration of a direct optical initiation fireset and an optical detonator. The resulting advanced initiation system will offer significant improvements in nuclear detonation safety by eliminating the possibility of any naturally occurring stimuli, such as electrostatic discharge and lightning, from causing the weapon to initiate. Other advanced initiation work includes the development of high performance stronglinks, an insensitive high explosive booster for miniature high energy density components, and a replacement for sunset material used in thermal weak link. Approaches to integrated safety, security, and control will continue to be developed to provide enhanced area denial and to better address the design basis threat requirements and will include demonstration of the effectiveness of the technology in a realistic environment. Advances in the ability to synthesize responses from networks of security sensors and in the technology readiness of use control technologies such as advanced imbedded sensors and power management will also be pursued.

Weapons Systems Engineering Assessment Technology	**27,054**	**17,365**	**21,156**

The Weapons Systems Engineering Assessment Technology (WSEAT) subprogram uses engineering computational models in collaboration with the Advanced Simulation and Computing (ASC) campaign to predict weapon system response to three Stockpile-to-Target Sequence environments: normal, abnormal and hostile. The activity also supports manufacturing development of critical components and subsystems; e.g., neutron generators, gas transfer systems, and microsystems. The subprogram's 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 2007, the subprogram will focus on producing data sets for code validation in support of current LEPs. Combined effort between the ASC's Verification & Validation and Physics & Engineering Models programs remains 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 on non-intrusive instrumentation and telemetry systems development of the next-generation High Explosive Radio Telemetry (HERT III) package, the design and construction of a Phase I Fiber Optic Velocity Sensors

Instrument and performance of a planar explosive test to characterize the instrument, development of other fiber optic instrumentation, validation of diagnostics for fragmentation of thin shells, and high explosive structural properties measurements supporting model development for improved assessments of structural response and margins for insensitive high explosive main charge materials.

Nuclear Survivability **9,385** **22,162** **14,973**

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 to meet weapon requirements. The scope of the activity includes developing scientific models for understanding radiation effects phenomenology; 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. Stockpile deliverables for qualifying specific components and systems to nuclear survivability requirements are funded under the DSW weapon category requiring the deliverable. In the absence of underground testing and with the closure of specialized research reactors, the DSW activity relies increasingly on complex models and calculations supported by limited experimental evidence obtained on above ground radiation simulators and new analysis methodology, which are all provided by this subprogram. The subprogram also develops, in conjunction with the Department of Defense (DoD), the tools to calculate the output and performance of modern weapons, which are needed to define some of the most stressing prompt nuclear environments. This computational capability is critical to the DoD threat assessments as well as effectiveness assessments as required by the Atomic Energy Act.

FY 2007 planned activities include: tools and technologies to support a qualification alternative to the Sandia pulsed reactor (QASPR), which supports future strategic systems such as a RRW or W78 refurbishment; qualification methodology for assessment of radiation effects such as system generated electro magnetic pulse (SGEMP); components and systems in the future with an increased use of modeling and simulation; and continuing to develop and validate computational tools to evaluate or re-evaluate the weapon output and effectiveness of stockpile weapons, life extension warheads, or weapons such as the RRW.

Enhanced Surveillance **95,137** **94,785** **82,194**

The Enhanced Surveillance subprogram develops the aging models and technologies needed for early identification and assessment of stockpile aging concerns. The subprogram provides assessments on the new materials to be used in refurbished or replacement weapons to support age-aware design and increase longevity for a more sustainable stockpile. Enhanced Surveillance develops new diagnostics and methods, including non-destructive techniques, for the DSW program to transform surveillance to be more predictive in finding defects in weapons sampled from the stockpile. The subprogram develops embedded sensor and communication

architectures for the stockpile of the future to achieve timely, less invasive, and less costly surveillance. Finally, the subprogram contributes current weapon aging information for completing the Annual Assessment Reports, which certify to the President that the stockpile is safe and reliable.

In FY 2007, the subprogram will support the Annual Assessment Report process; conduct lifetime assessment studies; develop embedded stockpile evaluation sensor arrays for W76-1 test beds; continue prototyping of a non-nuclear component surveillance program for first use with W76-1 components; continue to modernize system testers at the Weapon Evaluations Testing Laboratory at Pantex; improve surveillance techniques for gas transfer systems; develop improved non-destructive radiographic methods and surface characterization for Canned Sub-Assemblies; deliver the advanced sensor and telemetry technology required for W76-1 certification and W87 surveillance flight tests; continue Pu aging studies to support improved pit lifetime estimates; continue research on aging mechanisms and develop predictive models and diagnostics for the earliest possible detection of aging changes that could impact weapon performance, reliability, and safety; and support the University Research Program in Robotics (URPR), which is required by the Consolidated Appropriations Act, 2005 (P.L. 108-447).

Congressionally Directed Activity **3,952** **4,420** **4,332**

The University Research Program in Robotics (URPR) was required in the Consolidated Appropriations Act, 2005 (P.L. 108-447), and continued funding for the program was included in the FY 2006 budget request for the Enhanced Surveillance subprogram. The Energy and Water Development Appropriations Act, 2006 (P.L. 109-103) did direct that the grant-funded URPR be continued using available funds from within the Engineering Campaign. In the FY 2007-2011 President's Budget, URPR will continue to be funded under the Enhanced Surveillance subprogram.

Microsystems and Engineering Sciences Applications (MESA) Other Project Costs **4,564** **4,667** **4,613**

Microsystems and Engineering Sciences Applications (MESA) is being developed to incorporate modern, survivable, electrical, optical and mechanical control systems into the stockpile where required. These control systems are critical for improving the safety, security, and reliability of the stockpile during the life extension program refurbishment activities. FY 2007 OPCs will include Decontamination and Demolition (D&D) of the Compound Semiconductor Research Lab, environmental, safety and health (ES&H) activities, and the safety assessment and operational support costs during construction.

Microsystems and Engineering Sciences Applications (MESA) Construction (01-D-108) **85,816** **64,908** **6,920**

The MESA Complex will provide for the design, integration, prototyping and fabrication, and qualification of microsystems into weapon components, subsystems and systems within the stockpile. The Performance Baseline for MESA was established on October 8, 2002. The additional appropriation of $37.8 million in FY 2005 was incorporated via a baseline change

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007

accelerating project completion by approximately two years. Additional information is provided in the MESA Construction Project Data Sheet.

Total, Engineering Campaign.....	**258,767**	**247,907**	**160,919**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Enhanced Surety	
The decrease in program funding is required to balance overall weapon activity priorities. The revised scope of enhanced surety technology development for stockpile activities focuses on the W76-1 and W80-3 LEPs.	**-12,869**
Weapons Systems Engineering Assessment Technology	
The increase is consistent with undertaking the activities required to understand and assess engineering phenomena associated with new technologies, such as Microsystems, targeted for use in future LEPs or systems such as RRW, while continuing high explosive structural property, system safety, and hostile response assessments.	**+3,791**
Nuclear Survivability	
The decrease reflects funding that is to be used to develop the required nuclear survivability engineering tools for first use by Directed Stockpile Work, including major deliverables to provide the ability to assess the affects of radiation on nuclear weapons and components without underground testing or test facilities using Category I or II special nuclear material.	**-7,189**
Enhanced Surveillance	
The decrease in funding reflects reduction or delay of experimental efforts to reduce pit lifetime uncertainties, development of embedded stockpile evaluation technologies for stockpile transformation, assessments to ensure sufficient longevity of materials chosen for Reliable Replacement Warhead, deployment of non-destructive or cost-saving diagnostics for surveillance, and development of the predictive capabilities needed for a responsive infrastructure and confidence in a smaller stockpile.	**-12,591**
Microsystems and Engineering Sciences Application (MESA) Other Project Costs	
Budget is consistent with MESA Project baseline established in May 2003, and supports ES&H, safety assessments and other operational costs.	**-54**
Microsystems and Engineering Sciences Application (MESA) Construction	
Decrease is consistent with planned appropriation schedule as shown in the Future Years Nuclear Security Plan and Construction Project Data Sheet 01-D-108.	**-57,988**

	FY 2007 vs. FY 2006 ($000)
Congressionally Directed Activity	
The University Research Program in Robotics (URPR) was required in the Consolidated Appropriations Act, 2005 (P.L. 108-447), and continued funding for the program was included in the FY 2006 budget request for the Enhanced Surveillance subprogram. The Energy and Water Development Appropriations Act, 2006 (P.L. 109-103) did direct that the grant-funded URPR be continued using available funds from within the Engineering Campaign. In the FY 2007-2011 President's Budget, URPR will continue to be funded under the Enhanced Surveillance subprogram.	**-88**
Total Funding Change, Engineering Campaign.....	**-86,988**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	FY 2005	FY 2006	FY 2007	Over Target Increment
General Plant Projects	1,172	1,207	1,243	0
Capital Equipment	8,665	8,925	9,192	0
Total, Capital Operating Expenses	**9,837**	**10,132**	**10,435**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Total, Capital Operating Expenses	**10,357**	**10,667**	**10,987**	**11,317**

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
Engineering Campaign: Microsystems and Engineering Sciences Application (MESA) Construction	460,616	271,769	85,816	64,908	6,920	31,203
Total, Construction			**85,816**	**64,908**	**6,920**	

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

01-D-108 Microsystems and Engineering Sciences Applications Project at the Sandia National Laboratories, New Mexico

1. Significant Changes

- The project baseline has been updated to align the schedule with the increased funding the project has received over the last three years. As a result, the project is scheduled for completion in 4Q of FY 2008, instead of 2Q of FY 2011.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	2Q FY 2001	1Q FY 2003	3Q FY 2003	3Q FY 2010	N/A	N/A
FY 2007	2Q FY 2001	1Q FY 2003	3Q FY 2003	2Q FY 2008[a]	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC[b]	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	462,469	56,000	N/A	518,469[c]	518,500	N/A
FY 2006	461,272	56,000	N/A	517,272[de]	518,500	N/A
FY 2007	460,616[f]	56,000	N/A	516,616[f]	518,500	N/A

[a] The shift in the funding profile and the increased FY 2004 appropriation, results in two-year schedule savings for the Weapons Integration Facility construction completion. The baseline of the project has been changed, the project anticipates an early completion in FY 2008. The increased FY 2005 funding will be used to support the schedule by purchasing the Microsystems Fabrication Facility Tools.

[b] $14.925 million was for design and was included in the PED 01-D-103.

[c] The PED portion of the project, which was funded under 01-D-103, was completed under budget by $30,827. The TEC and TPC for the project were reduced by this amount.

[d] The FY 2004 appropriated amount of $87,000,000 was reduced by a government-wide mandatory rescission of 0.59 percent (P.L. 108-199), which reduced the TEC and TPC by $513,328.

[e] The FY 2005 Appropriated amount of $86,500,000 was reduced by the rescission of 0.80 percent, included in the Consolidated Appropriations Act, 2005 (P.L 108-447). This reduced the TEC and TPC by $683,912, which combined with the FY 2004 rescission of $513,328, reduced the TEC and TPC by $1,197,240 from the FY 2005 enacted Budget level.

[f] The FY 2006 Appropriation of $65,564,000 was reduced by a government-wide mandatory rescission of 1.0 percent (P.L. 109-148), which reduced the TEC and TPC by $655,640.

4. Project Description, Justification, and Scope

Project Description:

The Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories (SNL) in Albuquerque, will be a state-of-the-art national complex that will provide for the design, integration, prototyping, and qualification of microsystems into weapon components, subsystems, and systems within the stockpile.

The cost, schedule and scope identified in this report are dependent on the funding profile included in the Integrated Construction Program Plan. Changes to annual appropriations will impact the project's scope, cost and or schedule contained in this report.

Project Justification:

The MESA Project will respond to mission needs by providing needed capabilities to:

- Enable integrated teams of weapon system designers, subsystem designers, analysts, and microsystems scientists and technologists to work effectively and efficiently to design, integrate, and qualify for weapon use microsystems-based components and weapons subsystems and ensure their incorporation into weapon systems assemblies;

- Provide facilities and tooling to support radiation-hardened integrated circuit production and qualification in the event the United States loses the last remaining vendor;

- Conduct Research and Development (R&D), rapid prototyping, pre-production fabrication and analysis, and a war reserve microsystem production capability "of last resort" for Department of Energy (DOE)/National Nuclear Security Administration (NNSA) and the Nuclear Weapons Complex;

- Develop and use predictive codes (characterized by high-performance, nonlinear, full-system, multi-physics models) for microscale physics and for the necessary integration with macroscale codes;

- Develop and use computational tools and capabilities (including visualization-design labs) to support microsystems design, simulation, and manufacturing; weapons performance assessments; renewal process analyses; and qualification of microsystems components, integrated subsystems, and the certification of the overall weapon system;

- Allow technology developers to contribute to both classified stewardship problems and unclassified R&D collaborations with partners in industry and academia; and

- Result in other secondary benefits including reduced utility costs.

Management of the stockpile focuses on the surveillance, maintenance, refurbishment, assessment, and certification activities necessary to extend the life of the current stockpile. As weapons approach, or exceed, their useful (warranted) lifetimes, their limited-life components require periodic refurbishment,

retrofit and remanufacture. These activities are driven by the Life Extension Program (LEP), an evaluation and prioritization framework for performing systematic, life-extension upgrades on, and replacements of, subsystems and components of nuclear weapons.

The MESA Project is critical to meet NNSA needs. It must deliver capabilities to meet the long term needs of Stockpile Stewardship for continual advances in technologies that improve nuclear weapon surety as well as the more immediate LEP needs of incorporating advanced technologies into upcoming weapon refurbishments, eliminating present safety exceptions in the annual certification process. The microsystems that will be developed in MESA will have the ability to sense, think, act, and communicate within a wide range of environments. They will employ a technology base that spans photonics, mechanics, and radiation-hardened microelectronics on size and integration scales that have not been previously achieved. MESA will radically advance the use of computational modeling and simulation technologies to develop modular design tools for microsystems that can concurrently optimize designs for performance, manufacturability, inspection, qualification, certification, procurement, and cost in the design process. It will create linked virtual prototyping environments in which a microsystem-based product and its manufacturing processes are designed concurrently. Ultimately, the integrated technologies of research, design, and production will contribute to a reduction in the overall part count in a weapon system. It is this reduction in part count that appears to be the most promising approach to achieve needed cost and schedule reductions within the Stockpile Stewardship Program, the Life Extension Program, and related weapon campaigns.

In order to meet stockpile refurbishment requirements, SNL has developed an integration effort focused on modernizing the non-nuclear components of nuclear weapons. Modern electrical, optical, and mechanical components are required to ensure the continuing safety, security, and reliability of the US nuclear deterrent. Achieving this objective requires integration of activities conducted within several of NNSA's campaigns, and it requires capital investment. To be able to provide modern components, outmoded equipment must be replaced and upgraded. Semiconductor processing equipment, in particular, is expensive and upgrades cost millions of dollars per tool. Commercial integrated circuit technology continues to advance in terms of performance and cost. As stated in the 1997 National Technology Roadmap for Semiconductors, the semiconductor industry has maintained its growth by achieving a 25-30% per-year cost reduction per function throughout its history. Key to this reduction has been a 30% reduction in feature size every three years. The reduction in feature size, and changes in fabrication technology and materials that accompany it, drives changes and consistent improvements in the capital equipment used to fabricate integrated circuits.

Existing SNL facilities are not adequate in size or function to support the development, prototyping, and use of advanced technologies. Such technologies are critical to support microsystems design, simulation, performance assessments; renewal process analyses; and qualification of microsystems components, integrated subsystems, and the certification of the overall weapon system. MESA will employ state-of-the-art visualization technologies in support of stockpile stewardship activities. In addition, the retooled, silicon-based production capability (currently located in the existing MDL) and the new compound semiconductor cleanroom, in combination with required new light laboratory and work spaces to replace the Compound Semiconductor Research Laboratory (CSRL), will allow MESA to conduct R&D, rapid prototyping, and analysis.

Project Scope:

Infrastructure Upgrades

The infrastructure upgrades portion of this project includes systems upgrades to the existing Microelectronics Development Laboratory (MDL) and utilities upgrades to reroute existing utilities to enable construction of the MESA Complex.

The systems upgrades to the MDL will repair and modify part of the existing building infrastructure including the acid exhaust system, specialty gas room, process chilled water, make-up air, de-ionized water plant and emergency power. These upgrades are necessary in order to prepare for the equipment retooling of the MDL.

The utilities upgrade' work reroutes existing communications, power, sewer, storm drain, steam, gas and water utilities and provides a utilities corridor for the proposed MESA building site.

Microelectronics Development Laboratory (MDL) Rad-hard Integrated Circuit (IC) Retooling & Critical Microsystems Tooling

This portion of the project supports the costs of partially retooling the Microelectronics Development Laboratory with the equipment that is required in order to produce radiation hardened integrated circuits as required in the event the US would loose commercial suppliers. As such, the MDL would be the "supplier of last resort" for silicon-based radiation-hardened integrated circuits. The MDL did not have the complete tool set needed to produce qualified war reserve products. The previous existing tool set was developmental in nature, was missing some key tools, and included critical one-of-a-kind tools with no backup. Many of MDL's fabrication tools were more than 10 years old and had exceeded their useful lives. Downtime was increasing, supplier support for tool maintenance was unavailable and spare parts were increasingly unavailable. More importantly, commercial vendors for radiation hardened integrated circuits may soon cease to exist, leaving SNL as the only supplier for these key weapons components. Therefore, refurbishment of the MDL fabrication toolset is a critical capability that the Department must have. The parts of the MESA project involving retooling of the MDL will play a substantial role in developing weapon refurbishment options. The MDL will be an enduring, critical part of the MESA Complex.

Remaining scope - MESA

- A new clean-room facility, light laboratories, and work spaces for personnel replacing the existing, but antiquated, CSRL;
- New capital equipment associated with the cleanroom facility and light labs;
- Light laboratories and work group and support spaces for researchers, scientists, and technology developers involved in computation, engineering sciences, microsystems, and weapons design who are focused on incorporating microsystems into planned weapon refurbishments;
- Special visualization facilities to enable full deployment of ASC and ADaPT modeling and simulation tools for application to microsystems and full weapon development;
- Advanced communications cabling and network electronics to support unclassified and classified ultra-high speed local computing and inter-connectivity to supercomputing resources; and
- Decontamination and decommissioning of the CSRL once vacated.

Specifically, the MESA facilities comprise approximately 391,000 gross square feet and will include:

Microsystems Fabrication (MicroFab): This facility provides cleanrooms that replace the Compound Semiconductor Research Laboratory, Building 893 (CSRL), and transition cleanroom space for prototyping new devices. Built in the late 1980s as an "interim facility" with a five-year lifetime, SNL scientists have literally "used up" the CSRL and it is no longer practical or cost effective to maintain this facility. Moreover, the mission of the CSRL has grown over time, and the current facility does not, and cannot, meet functional requirements. Therefore, this project will replace the CSRL with the MicroFab and retool approximately 80% of the existing tools used in this facility.

Microsystems Laboratory (MicroLab): This facility will house microsystems researchers and engineers and a small group of MESA external partners. It will accommodate chemical, electrical and laser light laboratories, workspaces to support approximately 274 personnel and a Design and Education Center. This new building will be used to conduct research and development critical to the development of microsystems components as well as rapid prototyping and testing of these components.

Weapons Integration Facility

Weapons Integration Facility – Classified (WIF-C). This portion of the WIF facility will house weapons designers, analysts and computational and engineering sciences (C&ES) staff. It will include a Visual Interactive Environment for Weapons Simulation (VIEWS) Corridor, visualization lab, primarily electrical and laser light laboratories and workspace to support approximately 274 personnel. This portion of the WIF buildings will facilitate design, system integration, and the qualification of weapons systems.

Weapons Integration Facility – Unclassified (WIF-U). This portion of the WIF facility will house C&ES staff and MESA partners. It will include an advanced scientific visualization laboratory, and workspaces to support approximately 100 personnel. This facility will enable collaboration and proximity between partners from industry and academia and SNL scientists and engineers. Workspaces will encourage and provide the environment necessary for process development and two-way information transfer.

Fiscal Year 2007 funding will be used to continue construction activities and purchase MicroFab Tools.

The project has been and will be conducted in accordance with the project management requirements in DOE Order 413.3 "Program and Project Management for the Acquisition of Capital Assets" and DOE Manual 413.3-1, "Project Management for the Acquisition of Capital Assets."

Compliance with Project Management Order:

- Critical Decision – 0: Approve Mission Need – 4Q FY 1999
- Critical Decision – 1: Approve Preliminary Baseline Range – 1Q FY 2001
- Critical Decision – 2: Approve Performance Baseline – 1Q FY 2003
- External Independent Review Final Report – 1Q FY 2002 (Validate Performance Baseline)
- External Independent Review Final Report – 2Q FY 2003 (Approve Start of Construction)
- Critical Decision – 3: Approve Start of Construction – 3Q FY 2003
- Critical Decision – 4: Approve Start of Operations – 3Q FY 2008
- Decontamination and Demolition of the CSRL Building – 4Q FY 2008

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2001	10,456	10,456	6,673
2002	4,469	4,469	7,426
2003	0	0	826
Construction			
2001	9,500	9,500	0
2002	63,500[b]	63,500	32,798
2003	112,282[c]	112,282	48,564
2004	86,487[d]	86,487	79,439
2005	85,816[e]	85,816	103,561
2006	64,908[f]	64,908	83,344
2007	6,920	6,920	61,985
2008	16,278	16,278	36,000
Total TEC	460,616	460,616	460,616

[a] Design funding was appropriated in 01-D-103, Project Engineering and Design.

[b] Original appropriation was $67,000,000; reduced by $3,500,000 as part of the Weapons Activities general reduction.

[c] Original appropriation was $113,000,000. This was reduced by $718,000 for a rescission and by $2,562,000 for the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI. The appropriation was increased by $2,562,000 by a reprogramming.

[d] Original appropriation was $87,000,000. This was reduced by $513,328 for a government-wide mandatory rescission of 0.59 percent enacted by P.L. 108-199.

[e] Original appropriation was $86,500,000. This was reduced by $683,912 for the rescission of 0.80 percent included in the Consolidated Appropriation Act, 2005 (P.L. 108-477)

[f] The original appropriation was $65,564,000. This was reduced by $655,640 by a government-wide mandatory rescission of 1.0 percent (P.L. 109-148), which reduced the TEC and TPC by 655,640.

6. Details of Project Cost Estimate

Total Estimated Costs[a]

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design[b] [c]	14,925	14,925
Construction Phase		
Buildings	170,000	170,000
Special Equipment	140,000	140,000
Utilities	4,300	4,300
Standard Equipment	7,600	7,600
Major Computer Items	16,900	16,900
Inspection, Design and project liaison, testing, checkout and acceptance	21,700	21,700
Construction Management	21,400	21,400
Project Management	12,700	12,700
Contingency	51,091	51,747
Total, Construction	445,691	446,347
Total, TEC[de]	460,616	461,272

[a] The shift in the funding profile and the increased FY 2004 appropriation, results in two-year schedule savings for the Weapons Integration Facility construction completion. The baseline of the project has been changed, the project anticipates an early completion in FY 2008. The increased FY 2005 funding will be used to support the schedule by purchasing the Microsystems Fabrication Facility Tools.

[b] Design funding was appropriated in 01-D-103, Project Engineering and Design (PED).

[c] The PED portion of the project, which was funded under 01-D-103, was completed under budget by $30,827. The TEC and TPC for the project have been reduced by this amount.

[d] The FY 2004 appropriated amount of $87,000,000 was reduced by a government-wide mandatory rescission of 0.59 percent (P.L. 108-199). The rescission lowered the MESA TEC and TPC by $513,328. The FY 2005 appropriation of $86,500,000 was reduced by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L.108-447), which reduced the TEC and TPC by an additional $683,912.

[e] The original appropriation was $65,564,000. This was reduced by $655,640 by a government-wide mandatory rescission of 1.0 percent (P.L. 109-148?), which reduced the TEC and TPC by 655,640.

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	56,000[a]	56,000
Start-up	N/A	N/A
D&D Phase		
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	56,000	56,000

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	14,925	0	0	0	0	0	0	14,925
TEC (Construction)	347,706	61,985	36,000	0	0	0	0	445,691
OPC Other than D&D	31,282	4,751	19,967	0	0	0	0	56,000
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	393,913	66,736	55,967	0	0	0	0	516,616

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2008
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	2,900	2,900	87,000	87,000
Maintenance	1,700	1,700	51,000	51,000
Total Related funding	4,600	4,600	138,000	138,000

9. Required D&D Information

N/A

[a] This includes the cost for Conceptual design costs, Decontamination & Decommissioning costs of CSRL Building, NEPA documentation costs, Other ES&H costs, and Other project-related costs.

10. Acquisition Approach

Project was and will continue to be accomplished via design-bid-build approach. Design services were obtained through competitively awarded contracts using firm fixed price. Construction was accomplished using a firm fixed price contracting approach.

Inertial Confinement Fusion Ignition and High Yield Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Inertial Confinement Fusion Ignition and High Yield Campaign			
Ignition	68,889	74,859	79,763
Support of Other Stockpile Programs	38,679	19,673	5,872
NIF Diagnostics, Cryogenics, and Experimental Support	48,635	42,578	45,959
Pulsed Power Inertial Confinement Fusion	10,992	10,902	10,603
University Grants/Other ICF Support	7,715	7,623	8,903
Facility Operations and Target Production[a]	62,557	63,977	43,021
Inertial Fusion Technology	33,731	47,520	0
NIF Demonstration Program	94,943	101,306	143,438
High-Energy Petawatt Laser Development	41,643	34,650	2,213
NIF Construction	128,972	140,494	111,419
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**536,756**	**543,582**	**451,191**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Inertial Confinement Fusion Ignition and High Yield Campaign				
Ignition	99,538	104,485	102,092	97,908
Support of Other Stockpile Programs	10,927	13,045	17,558	16,951
NIF Diagnostics, Cryogenics, and Experimental Support	70,793	68,730	72,829	70,420
Pulsed Power Inertial Confinement Fusion	11,001	11,387	12,554	12,608
University Grants/Other ICF Support	9,112	10,694	11,970	11,256
Facility Operations and Target Production [a]	72,846	152,182	197,820	190,870
NIF Demonstration Program	137,657	54,669	0	0
High-Energy Petawatt Laser Development	4,002	0	0	0
96-D-111, National Ignition Facility	10,139	0	0	0
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	426,035	415,222	414,823	400,013

Description

The goal of the Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign is to develop laboratory capabilities to create and measure extreme conditions of temperature, pressure, and radiation, including thermonuclear burn conditions, approaching those in a nuclear explosion, and conduct weapons-related research in these environments.

[a] Z operations are shifted to the RTBF Operations budget beginning in FY2007.

The ICF Campaign supports the National Nuclear Security Administration's (NNSA's) Stockpile Stewardship Program (SSP) by developing experimental capabilities and executing experiments to examine phenomena at physical conditions approaching those in a nuclear weapon. The Campaign has four strategic objectives related to the study of these high energy density physics (HEDP) conditions: (1) achieve ignition in the laboratory and develop it as a scientific tool for stockpile stewardship; (2) execute HEDP experiments necessary to provide advanced assessment capabilities for stockpile stewardship; (3) develop advanced technology capabilities that support the long-term needs of the SSP; and (4) maintain a robust national program infrastructure and scientific talent in HEDP.

The ICF Campaign is an integral part of the NNSA program to develop advanced assessment capabilities required to support the SSP. Development of advanced capabilities in HEDP and other key scientific areas is essential to developing the responsive infrastructure needed to support the evolving stockpile. Major interfaces and technical objectives are shared with three of the four SSP Science Campaign Subprograms (Primary Assessment Technologies, Dynamic Materials Properties, and Secondary Assessment Technologies), one Engineering Campaign Subprogram (Nuclear Survivability), the Advanced Simulation and Computing (ASC) Campaign, the Readiness in Technical Base and Facilities (RTBF) Program, and the Directed Stockpile Work (DSW) Program. Ignition and other experiments executed by the ICF Campaign support stockpile assessment via the quantification of margins and uncertainties methodology.

The NNSA Office of Inertial Confinement Fusion and the NIF Project manage the national-level ICF Ignition and High Yield Campaign. The Campaign has been executed by the three national nuclear weapons laboratories: Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), and Sandia National Laboratories (SNL), as well as the Laboratory for Laser Energetics at the University of Rochester (LLE) and General Atomics, Inc.

The demonstration of laboratory ignition is the highest priority goal of the ICF Campaign and a major goal for NNSA and the Department of Energy. Ignition provides a unique capability to access burning plasma conditions in the laboratory. Ignition will thus allow the SSP to effectively address weapon performance issues related to thermonuclear burn. Ignition experiments will also serve as stringent integrated tests of advanced simulation codes and attract top quality scientific talent to the national laboratories. The Defense Science Board reviewed the National Ignition Facility (NIF) technical program in FY 2004 and strongly endorsed the value of ignition to the weapons program, and a balanced national risk reduction effort executed at NIF, OMEGA, Z, and other facilities.

The National Ignition Campaign (NIC), an integrated national effort to demonstrate ignition at NIF, was formed in FY 2005. First ignition experiments at NIF are planned for FY 2010. NIF ignition will be managed as an "enhanced management" activity within the NNSA. Enhanced management is applied to an activity or effort that involves an NNSA commitment to complete the effort by a specific date and/or at a specific cost, and requires additional management rigor to ensure these requirements are met. Enhanced management activities perform to a multi-year (beginning-to-end) cost and schedule baseline under formal change control and documented in a formal Execution Plan. The execution plan for NIF ignition (the National Ignition Campaign Execution Plan) was signed by all participating sites (LLNL, LANL, SNL, University of Rochester, and General Atomics, Inc.) in June 2005. Earned value reporting for the National Ignition Campaign will commence in FY 2006.

The NIF Project was also rebaselined in FY 2005. The revised baseline results in Project completion in the second quarter in FY 2009 and supports the National Ignition Campaign. NIF Project performance is consistent with this revised baseline.

A revised plan to use NIF for ignition and other activities (the NIF Activation and Early Use Plan), along with external reviews of the National Ignition Campaign, the NIF Project, and a letter from the laboratory directors regarding the ignition program, were transmitted to Congress on June 30, 2005. The external reviews and laboratory director's letter were supportive of moving forward with the National Ignition Campaign as planned. This budget continues to support the execution of the first NIF ignition experiment in FY 2010. In particular, the budget supports the National Ignition Campaign at the full funding level contained in the National Ignition Campaign Execution Plan signed in June 2005.

The budget also maintains the planned cost and schedule for the OMEGA EP and (within RTBF) Z-refurbishment projects. Operational funding for Z/ZR has been shifted to RTBF; the refurbished Z will be used at approximately half of the regular single-shift rate following completion of the Z-refurbishment project in FY 2007. NNSA will ensure that Z/ZR experiments essential for the National Ignition Campaign are completed. The NNSA will continue to analyze various methods to gain efficiencies and increase the rate of use of the Z/ZR facility.

High Energy Density Physics (HEDP) diagnostics and other supporting experimental hardware required for NIF ignition and weapon physics experiments will be funded via the National Ignition Campaign. Due to the need to fund higher priority efforts, ICF activities at the Naval Research Laboratory as well as high average power laser development and related efforts are not funded in FY 2007.

HEDP has also been recognized as an important and emerging scientific field by an interagency working group, of which NNSA is a member. As an outgrowth of these interagency discussions, existing external user activities at various Defense Programs laser and pulsed power facilities will be organized into an integrated national user program managed by NNSA.

Benefits

Within the ICF Campaign, there are 10 subprograms, each of which makes a unique contribution to Program Goal 01.30.00.00.

The Ignition subprogram includes calculations, target design, and experimental activities on ICF facilities aimed at demonstrating thermonuclear fusion ignition in the laboratory in 2010 and assessing weapon performance issues related to thermonuclear burn. The Ignition subprogram relies on advanced computer simulations to design experiments and applies experimental results to validate computational capabilities that subsequently will be applied to weapons assessment and analysis.

The Support of Other Stockpile Programs subprogram encompasses experiments in high energy density weapon physics as well as the development of advanced diagnostic and target fabrication techniques. This ICF Campaign subprogram supports five other Stockpile Stewardship campaigns by validating simulation codes and developing new stockpile assessment capabilities. The NIF Diagnostics, Cryogenics, and Experimental Support subprogram includes operational support to the NIF experimental user community through the end of the NIF Project, target diagnostic engineering and construction, the systems for cryogenic targets, and beam conditioning optics. The Pulsed Power Inertial Confinement Fusion subprogram supports the assessment of z-pinches for demonstrating ignition and high yield. The

Facility Operations subprogram supports operations of OMEGA, Trident and other facilities, as well as activities at the target fabrication subcontractor. The subprogram for Inertial Fusion Technology supports the development of high repetition rate laser and pulsed power devices and associated technologies required to conduct experiments with these drivers. The subprogram for High-Energy Petawatt Laser Development includes construction of the OMEGA Extended Performance (OMEGA EP) laser project at the University of Rochester Laboratory of Laser Energetics. Assembly, activation, and initial operational qualification of the National Ignition Facility are funded within the NIF Construction, NIF Demonstration Program, and NIF Other Project Costs (OPC) categories. University activities and miscellaneous technical support for the campaign is funded via the University Grants/Other ICF Support category.

Major FY 2005 Achievements

- Completed the rebaselining of the NIF Project due to a directed change in the funding profile.
- Conducted an independent review of the NIF Project with a positive report outcome.
- Completed 46 out of 46 milestones for NIF as defined by the Transition Period Implementation Plan during the period while rebaselining was underway.
- Completed the production of all laser glass required for NIF (a Level 2 milestone).
- Completed a major upgrade of the NIF control system for bundle-based software.
- Completed the polishing and finishing of over 50 percent of the amplifier glass slabs for NIF.
- Assembled and installed first set of amplifier slab line replaceable units (LRUs) in the second bundle of NIF.
- Completed installation of all flashlamp cassettes in NIF Cluster 3 (48 beams).
- Completed two record-sized KDP boules- (330.0 kg and 347.8 kg) required for production of NIF third harmonic generating crystals.
- Completed delivery of Power Conditioning System modules for the first NIF cluster (Capacitor Bay 3).
- Completed propagation of a test laser shot through 8 beams of the main NIF laser chain.
- Completed Main Laser Operational Qualification of one bundle (8 beams) with combined infrared output from the eight beams totaling 136.5 Kilojoules, surpassing the milestone requirement of 80 Kilojoules.
- Completed over 4.4 million hours without a lost work-day accident.
- Completed and submitted to Congress a revised NIF Activation and Early Use Plan.

- Established the National Ignition Campaign within the ICF Campaign, and produced a National Ignition Campaign Execution Plan signed by all participating sites.

- Completed a JASON review of the National Ignition Campaign.

- Obtained 9-keV backlit images using the Z-Beamlet Laser diagnostic.

- Validated specific computational models of weapon behavior using experiments at Z.

- Executed experiments at OMEGA to optimize behavior of beryllium NIF ignition targets.

- Conducted experiments on the Z facility to quantify effects of composition, shell thickness, and radius on performance of fusion capsules to validate computational models of capsule performance.

- Provided 210 operational days for experiments on the Z facility in FY 2005 and, after 2-1/2-years of continuous improvement, received ISO 9000 certification for processes related to the operation and maintenance of Z.

- Completed the first series of system-generated electromagnetic pulse experiments on the Z facility; these experiments are used to assess vulnerabilities of weapons' electrical systems.

- Satisfactorily completed a readiness review to allow the commencement of cryogenic tritium target operations on OMEGA.

- Demonstrated simultaneous optical shock wave velocity and x-ray radiography measurements to obtain shock timing and absolute equation-of-state at experiments on OMEGA.

- Experimentally validated improved polar direct-drive illumination uniformity on OMEGA.

Major Outyear Considerations

The outyear budget for the ICF Campaign supports the execution of the first NIF ignition experiment in FY 2010 per the NIF Activation and Early Use Plan submitted to Congress on June 30, 2005. The outyear budget for the National Ignition Campaign is identical (except for impacts of the FY 2006 appropriation) to that contained in the National Ignition Campaign Execution Plan, signed by all sites and NNSA in June 2005.

Operation of the Z facility in FY 2007 will be at half the single shift rate following completion of the Z-refurbishment Project. Z facility operations funding is shifted to the RTBF Operations budget beginning in FY 2007. NIF operations are funded in the Facility Operations and Target Production category in FY 2009 and beyond following completion of the NIF project.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured

framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2005, the OMB evaluated the ICF Campaign using the PART. The OMB gave the ICF Campaign scores of 100 percent on the Purpose and Design Section, 90 percent on the Strategic Planning Section, 89 percent on the Program Management Section, and 60 percent on the Results Section. Overall, the OMB rated the ICF Campaign 77 percent, its second highest category of "Moderately Effective." The OMB assessment found that the program appears to be better managed than it was several years ago. Additionally, the OMB assessment found that clear and succinct performance measures were difficult to articulate for the program. In addition, the OMB encouraged frequent monitoring by independent evaluators, to include those retained by the Department of Defense (DoD). In response to the OMB findings and Congressional direction, the NNSA arranged for and conducted a Defense Science Board review of NIF in FY 2004 and a JASON Committee Review and an Independent Review of the NIF Project by the DOE Office of Science in FY 2005. The NNSA will continue to refine these performance measures during the FY 2007 NNSA Planning, Programming, Budgeting, and Evaluation process and continuing frequent monitoring by independent evaluators, including the DoD.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
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: 55%	R: 62% T : 63%	R : 65% T: 67%	T: 73%	T: 80%	T: 86%	T: 93%	T: 100%	N/A	By 2010, complete first attempt to demonstrate ignition on the NIF.
Cumulative percentage of construction completed on the 192-laser beam NIF (Long-term Output)	R: 65%	R: 76% T: 74%	R: 81% T: 81%	T: 87%	T: 94%	T: 98%	T: 100%	N/A	N/A	By 2009, complete NIF construction.
Cumulative percentage of equipment fabricated to support ignition experiments at NIF (Long-term Output)	R: 7%	R: 12% T: 16%	R: 21% T: 26%	T: 45%	T: 63%	T: 82%	T: 95%	100%	N/A	By 2010, complete fabrication of cryogenics and diagnostics equipment to support ignition experiments on the NIF.
Annual number of days available to conduct stockpile stewardship experiments, totaled for all ICF facilities (Annual Output)*	R: 580	R: 700 T: 500	R: 700 T: 500	T: 400	T: 270	T : 240	T: 200	T: 260	T: 290	By 2011, increase ICF facility availability to 290 total days per year.
Annual average hours per experiment required by the operational crew to prepare the Z facility for an experiment (Efficiency)**	N/A	R: 9	R: 10.8 T: 9	T:11	T: 11	T: 11	T: 9	T: 9	T: 9	By 2009, reduce the operational crew preparation time per Z facility experiment to 9 hours. (2004 Baseline equivalent of 11 hours/experiment)

*Fluctuations in numbers result from some reduced funding, termination of Nike Operations at NRL in 2007, commissioning of ZR at SNL in 2007 with reduced operations, and availability of NIF beginning in 2010.

**Additional radiation safety procedures required revision of annual and endpoint targets by +2 hours in 2006.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Ignition	**68,889**	**74,859**	**79,763**

Supports research and development and experimental activities aimed at risk reduction and development of physics basis for indirect- and direct-drive inertial confinement fusion ignition. Applies ASC-derived capabilities to target design calculations. Includes research and development for ignition target fabrication, exploration of target diagnostic techniques, and computer code and modeling improvements essential to ignition efforts.

This budget supports execution of the first NIF ignition experiment in FY 2010. In FY 2007, emphasis will continue on critical path activities required to achieve indirect-drive ignition, development and demonstration of ignition target fabrication techniques, and defining the physics basis for direct-drive ignition on NIF. Experiments in support of the ignition goal will be carried out at a variety of facilities including OMEGA, Z/ZR, Trident (LANL), and Jupiter (LLNL). A key activity for FY 2007 will be specifications of requirements for the first ignition experiments. Scientific prototypes for fill-tube capsules will be demonstrated. Design of an x-ray shield for the NIF Cryogenic Target System will be completed. Experiments will be carried out to study diagnostic techniques required for measurements of capsule symmetry, shock timing and hohlraum radiation drive. Experiments will also be performed to investigate ablator performance and other aspects of target behavior. Facility requirements for FY 2010 ignition experiments will be placed under configuration management. An important milestone for direct drive will occur in FY 2007 at OMEGA, where the properties of cryogenically cooled deuterium-tritium required for ignition will be demonstrated.

Support of Other Stockpile Programs	**38,679**	**19,673**	**5,872**

Funds HEDP experiments on the Z facility for the Stockpile Stewardship Program (SSP). Develops experimental capabilities and analytic tools for other SSP campaigns and programs to obtain specific data and validate ASC simulations.

In FY 2007, additional weapon physics capabilities at Z will be demonstrated, particularly in the areas of dynamic materials properties and radiation flow. High energy density weapon physics experiments, particularly those at OMEGA, will be supported through the Science Campaigns.

Congressionally Directed Activity	**0**	**10,000**	**0**

Congress provided additional funding for experiments on Z and OMEGA to validate computer models.

NIF Diagnostics, Cryogenics and Experimental Support	**48,635**	**42,578**	**45,959**

Supports technologies needed for the ignition demonstration and execution of HEDP experiments on NIF. Includes engineering and fabrication of NIF diagnostics, design and construction of the NIF cryogenic target system, fabrication of beam conditioning optics for NIF experiments, and integration and experimental commissioning of the NIF target area.

(dollars in thousands)		
FY 2005	FY 2006	FY 2007

During FY 2007, the major emphasis will be placed on support of NIF ignition experiments, including design and demonstration of cryogenic target support systems and technology, and development and engineering of diagnostic systems. Manufacturing of the continuous phase plates needed to produce the NIF laser focal spot for ignition will begin. Title II design for the cryogenic target system and the final design review for neutron imaging system diagnostic will be completed. The Personnel and Environmental Protection Systems Title I design will be finalized.

Pulsed Power Inertial Confinement Fusion **10,992** **10,902** **10,603**

Funds computational target design, experiments, and experimental infrastructure to assess z-pinches as a driver for ignition and high yield fusion.

The focus of the limited experiments planned for FY 2007 will be initial experiments to test the performance of the refurbished Z facility and prepare it for routine experimental use. X-ray power, energy and x-ray spectrum data on ZR will also be compared to that predicted based on past performance at Z.

Congressionally Directed Activity **0** **901** **0**

Congress provided additional funding for pulsed power ICF to assess Z pinches as drivers for ignition and high yield fusion.

University Grants/Other ICF Support..... **7,715** **7,623** **8,903**

Provides university grants and research programs in the high-energy-density science portion of Stewardship Sciences Academic Alliances, National Laser User Facility activities on OMEGA, and technical support for the Campaign at NNSA. In FY 2007, one third of the existing grants as well as both of the high-energy-density physics centers will be re-solicited and existing external user programs at a variety of laser and pulsed power facilities will be organized into an integrated national program.

Congressionally Directed Activity **0** **5,000** **0**

Congress earmarked funding for University of Nevada – Nevada Terawatt Facility for research in strongly magnetized high energy density matter ($3 million) and the construction of high energy, short-pulsed laser system ($2 million).

Facility Operations and Target Production **62,557** **63,977** **43,021**

Supports operation of ICF facilities, including OMEGA, in a safe, secure manner. Includes funding for ICF target production and delivery at target fabrication support contractor, data collection and archiving, routine facility maintenance and engineering support, and support for facility-supplied diagnostics. Includes funding for beginning procurement of long-lead time operational inventories for NIF operations. Target development activities will largely be focused on the National Ignition Campaign, particularly the FY 2008 goal of demonstrating an engineering prototype ignition target.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Congressionally Directed Activity	**0**	**10,000**	**0**

Congress provided additional funding to accelerate target fabrication.

Inertial Fusion Technology	**33,731**	**47,520**	**0**

Funds Nike program at the Naval Research Laboratory, and develops technology options for inertial fusion and stockpile stewardship using high average power lasers and z-pinches.

Congressionally Directed Activity	**0**	**47,250**	**0**

The Congress provided additional funding for continued development of High Average Power Lasers ($25 million); the Naval Research Laboratory ($15 million); extended operations of the Z facility ($6 million) and for Ohio State University for the high density matter laser ($2 million).

NIF Demonstration Program	**94,943**	**101,306**	**143,438**

This funding element supports the activities associated with integration, planning, assembly, installation, and activation of the NIF. The NIF Demonstration Program will provide the staffing, training, and procedures for NIF operations.

The NIF is 80 percent complete and approximately 90 percent of the contracts have been placed. The first four beams of NIF have been installed and activated and have been used for experiments. The remaining effort on the project (FY 2005 – mid-FY 2009) will be focused on assembly, installation, and activation of the remaining beamlines, with all 192 beamlines installed and activated in FY 2009.

The majority of work remaining to complete NIF involves the assembly, installation, and activation of line replaceable units (LRUs). LRUs are the modular assemblies containing the large optics that are inserted into the NIF beamlines. The planned installation rate of LRUs increases over the course of the project to meet activation milestones. Rigorous production planning has and will continue to be performed in preparation for this increase. FY2007 will be the year of peak production of line-replaceable units.

This activity will be renamed "NIF Assembly and Installation" starting in FY 2008.

High-Energy Petawatt Laser Development	**41,643**	**34,650**	**2,213**

This subprogram supports development of high-energy petawatt (HEPW) short-pulse laser technology, including compression gratings, for the major ICF facilities. OMEGA EP is now being built as a four-beam facility and will be completed in FY 2008. Funding provided in this category supports the planned four-beam OMEGA EP baseline. A separate data sheet describing planned OMEGA EP project activities and funding levels is included with this budget submission.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Congressionally Directed Activity	**0**	**32,000**	**0**

The Congress provided additional funding for the following activities: accelerate the OMEGA EP project ($22 million); OMEGA operations in support of additional shots supporting ignition ($4 million); University of Texas to continue development of petawatt laser ($2 million); University of Nevada to continue collaboration with Sandia National Laboratories on highly diagnosed studies of exploding wire arrays and implosion dynamics ($2 million); and support of the Z-Petawatt Consortium ($2 million).

NIF Construction	**128,972**	**140,494**	**111,419**

96-D-111, National Ignition Facility, LLNL. Supports construction of the NIF per the baseline schedule approved in June 2005. A separate data sheet for the NIF Project is included with this submission.

Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**536,756**	**543,582**	**451,191**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Ignition	
Funding increase supports ramp up in program effort required to support the execution of the first ignition experiments in FY 2010. Additional funds will be primarily applied to fabrication of targets, development of ignition target diagnostics, and target design.	**+4,904**
Support of Other Stockpile Programs	
Decrease reflects reduced high energy density physics and the transfer of the majority of weapon-specific work on radiation transport, hydrodynamics, and materials experiments to the Science Campaign.	**-13,801**
NIF Diagnostics, Cryogenics and Experimental Support	
Funding increase supports ramp up in program effort required to support execution of the first ignition experiment in FY 2010. Additional funds will be primarily applied to ignition diagnostics and cryogenic target system development.	**+3,381**
Pulsed Power Inertial Confinement Fusion	
Reflects need to support high priority National Ignition Campaign activities.	**-299**
University Grants/Other ICF Support	
Increase reflects full funding for university programs over FY 2006 level, advisory committee costs, and support for external user programs.	**+1,280**
Facility Operations and Target Production	
Decrease reflects the shift to RTBF for all operations at the Z facility (with an effective reduction of $15.722M) and reduced target fabrication activities compared to the FY 2006 enacted level, offset by commencing procurement of long-lead time operational inventories for NIF operations.	**-20,956**
Inertial Fusion Energy Technology	
The decrease reflects ending the Nike laser program at the Naval Reactors Laboratory, the high average power laser program at the Naval Research Laboratory and Lawrence Livermore National Laboratory, the z-pinch inertial fusion energy program at Sandia National Laboratories.	**-47,520**
NIF Demonstration Program	
Increase supports an accelerated rate of laser component assembly, installation, testing and commissioning required for project completion and compensates for FY 2006 reductions.	**+42,132**

	FY 2007 vs. FY 2006 ($000)
High-Energy Petawatt Laser Development	
Funding decrease reflects planned profile to complete the four-beam OMEGA EP Project in FY 2008.	**-32,437**
Construction	
Funding decrease reflects ramp down of construction work as the project nears completion.	**-29,075**
Total Funding Change, Inertial Confinement Fusion Ignition and High Yield Campaign	**-92,391**

Overview

NIF Activation and Early Use Plan
(including NIF Ignition Plan)

Introduction

The National Ignition Facility's (NIF's) primary mission is high-energy-density physics (HEDP) in support of SSP, including demonstrating ignition and develop it as a tool for stewardship. NIF will also provide a unique capability for research in a wide range of scientific areas of interest, including material science and astrophysics. The NIF Activation and Early Use Plan (AEUP), which defines the activities to be undertaken on NIF between FY 2005 and FY 2011, is consistent with the Future Years Nuclear Security Plan (FYNSP) funding through FY 2011.

Components of the NIF Activation and Early Use Plan

Major Components of the NIF AEUP include the following:

NIF Project Completion – The AEUP includes a summary of the plan to complete NIF and the schedule by which NIF components will be installed and activated. Key parameters include the balance of facility time available between laser activation and user experiments, and various facility specifications such as the available energy vs. time.

National Ignition Campaign – The National Ignition Campaign (NIC) is a national effort that incorporates all effort required to execute initial ignition experiments in FY 2010 and follow-on ignition campaigns. The NIC also supports activities in the FY 2007 – FY 2011 timeframe required to facilitize NIF for execution of high energy density weapon physics, basic sciences, and other experiments planned for 2010 and beyond.

These activities are described in further detail in the NIF Activation and Early Use Plan submitted to Congress on June 28, 2005.

Milestones

The National Ignition Campaign activities will be managed as an "Enhanced Management Program" as specified in the Defense Programs Management Manual. FY 2007 milestones for the NIF Project are contained in the NIF Project data sheet, attached separately to this submission. Major milestones

regarding NIF ignition and NIF use are contained in the National Ignition Campaign Execution Plan. Level 1 milestones and FY 2007 level 2 milestones for the National Ignition Campaign are as follows:

NIC Milestones – Level 0, Level 1 and FY07 Level 2		
Level	**Milestone**	**Date**
0	Begin first integrated Ignition experiments	4Q FY 2010
1	Ready for 1 million joule operations	4Q FY 2009
1	Begin FY 2010 target performance experiments	1Q FY 2010
1	Ready for 1.8 million joule operations	2Q FY 2011
2	Facility requirements for FY 2010 Ignition experiments under CM (Configuration Management)	4Q FY 2007
2	Specify laser irradiance requirements	2Q FY 2007
2	Issue report on target material characterization	4Q FY 2007
2	Demonstrate scientific prototype capsules with fill tubes	3Q FY 2007
2	Complete cryogenic target system Title II design	4Q FY 2007
2	Begin continuous phase plate imprinting	3Q FY 2007
2	Complete PEPS Title I design	4Q FY 2007

The table below summarizes the baseline budget for the National Ignition Campaign, and is identical (except for impacts of the FY 2006 appropriation) to that contained in the National Ignition Campaign Execution Plan, signed by all sites and NNSA in June 2005.

National Ignition Campaign Funding Profile - Including NIF Project						
		FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
NIF Construction						
	NIF Total Project Costs	111,419	10,139			
	NIF Demonstration Program	143,438	136,912	54,281		
	Total NIF Construction	254,857	147,051	54,281		
National Ignition Campaign						
	Ignition	79,763	98,968	103,644	103,457	102,632
	Experimental Support Technologies	45,959	70,441	68,248	70,041	73,902
	Facility Operations/Target Production	41,988	69,091	149,926	199,955	201,333
	Total National Ignition Campaign	167,710	238,500	321,818	377,453	377,867
NIF Activation and Early Use	**Grand Total**	422,567	385,551	376,099	377,453	377,867

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	Over Target Increment
General Plant Projects	685	706	727	0
Capital Equipment	3,588	36,959	38,068	0
Total, Capital Operating Expenses	**36,568**	**37,665**	**38,795**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Total, Capital Operating Expenses	**39,210**	**40,387**	**41,598**	**42,846**

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
96-D-111, National Ignition Facility ..	2,094,897	1,703,873	128,972	140,494	111,419	10,139
Total, Construction			**128,972**	**140,494**	**111,419**	

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

96-D-111, National Ignition Facility (NIF), Lawrence Livermore National Laboratory, Livermore, California

1. Significant Changes

- Congress appropriated $241.801 million in FY 2006 for the NIF Project, i.e., the combined NIF Total Project Cost (TPC) and NIF Demonstration Program (NDP), which is $12.442 million less than the amount requested.
  - The FY 2006 TPC funding was reduced $1.419 million by the rescission of 1.0 percent included in the FY 2006 Defense Appropriations Bill.
  - The FY 2006 NDP funding was reduced $10.000 million and also reduced an additional $1.023 million by the FY 2006 rescission for a total of $11.023 million.

- The reduced FY 2006 funding has impacted the NIF Project cost and schedule baseline that was approved by the Secretary of Energy and certified to Congress in September 2000. Responding to this reduction required a change in the detailed plan for completing the NIF Project but will not change the NIF Project Completion criteria or the Project baseline schedule completion date (i.e., Critical Decision 4, Approval to Start Operations).

- The FY 2006 funding reduction and resulting new implementation plan do not change the NIF Project baseline Total Project Cost (TPC), or the NIF Demonstration Program (NDP) baseline.

- These directed changes are a "Programmatic Baseline Change" in accordance with DOE Order 413.3. A revised internal plan will be developed to re-sequence the remaining work necessary to complete the NIF Project on March 30, 2009 within the Total Project and Related Costs baselines.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 1996 Budget Request *(Preliminary Request)*	1Q FY 1996	1Q FY 1998	3Q FY 1997	3Q FY 2002	N/A	N/A
FY 1998 Budget Request *(Title I Baseline)*	1Q FY 1996	1Q FY 1998	3Q FY 1997	3Q FY 2003	N/A	N/A
FY 2000 Budget Request	1Q FY 1996	2Q FY 1998	3Q FY 1997	3Q FY 2003	N/A	N/A
FY 2001 Budget Request	1Q FY 1996	2Q FY 1998	3Q FY 1997	3Q FY 2003	N/A	N/A
FY 2001 Amended Budget Request	1Q FY 1996	2Q FY 1998	3Q FY 1997	4Q FY 2008	N/A	N/A
FY 2006 Budget Request *(Current Baseline)*	1Q FY 1996	2Q FY 1998	3Q FY 1997	4Q FY 2008	N/A	N/A
FY 2006 Re-baseline Request (BCP05-001)	1Q FY 1996	2Q FY 1998	3Q FY 1997	2Q FY 2009	N/A	N/A
FY 2007 Re-baseline Directed Change (BCP06-001)	1Q FY 1996	2Q FY 1998	3Q FY 1997	2Q FY 2009	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Other Related[a] Costs, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 1996 Budget Request *(Preliminary Request)*	842,600	231,000	N/A	N/A	1,073,600		
FY 1998 Budget Request *(Title I Baseline)*	1,045,700	153,200	N/A	N/A	1,198,900		
FY 2000 Budget Request	1,045,700	153,200	N/A	N/A	1,198,900		
FY 2001 Budget Request	1,045,700	153,200	N/A	N/A	1,198,900		
FY 2001 Amended Budget Request	2,094,897	153,200	1,200,000	N/A	3,448,097		
FY 2006 Budget Request *(Current Baseline)*	2,094,897	153,200	1,200,000	N/A	3,448,097		
FY 2006 Re-Baseline Request (BCP05-001)	2,094,897	153,200	1,254,281	N/A	3,502,378		
FY 2007 Re-Baseline Directed Change (BCP05-001)	2,094,897	153,200	1,254,281	N/A	3,502,378		

4. Project Description, Justification, and Scope

The Project provides for the design, procurement, construction, assembly, and acceptance testing of the NIF. The NIF is an experimental Inertial Confinement Fusion (ICF) facility intended to enable the ICF Program to achieve controlled thermonuclear fusion in the laboratory by using 192 laser beams to implode a small capsule containing a mixture of the hydrogen isotopes deuterium and tritium. NIF will also create conditions of extreme energy density in materials using the lasers to drive materials to high

[a] NIF Demonstration Program (NDP) funding was requested and appropriated in the Inertial Confinement Fusion Program prior to FY 2001. Beginning in FY 2001, $1.2 B for NDP was specifically identified within the ICF Campaign to maintain the Project baseline.

temperatures, pressures, and densities. The NIF is being constructed at LLNL, Livermore, California, as determined by the Record of Decision made on December 19, 1996, as a part of the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (SSM PEIS).

The National Nuclear Security Administration (NNSA) ICF and weapons primary and secondary campaigns carry out many of the high energy density physics (HEDP) experiments required for the success of the Stockpile Stewardship Program (SSP). The demonstration of fusion ignition in the laboratory is an important component of the SSP Program and a major goal of NIF and the ICF Program. The NIF is designed to provide the laser architecture and system capability required for the ICF Program to achieve propagating fusion burn and moderate (1–10) energy gain within 2–3 years of full operation, with the goal of ignition in 2010, and to conduct a variety of high-energy-density experiments, both utilizing fusion ignition and through direct application of the high laser energy onto targets without ignition. Technical capabilities provided by the ICF program also contribute to other Department of Energy (DOE) and NNSA missions, including nuclear weapons effects testing and the investigation of inertial fusion energy for future power production. Ignition and other goals for NIF were identified in the NIF Justification of Mission Need, which was endorsed by the Secretary of Energy. Identification of target ignition as the next important step in ICF development for both defense and non-defense applications is consistent with the earlier (1990) recommendation of DOE's Fusion Policy Advisory Committee, and the National Academy of Sciences Inertial Fusion Review Group. In 1995, the DOE's Inertial Confinement Fusion Advisory Committee affirmed the program's readiness for an ignition experiment. A review by the JASONs in 1996 affirmed the value of the NIF for stockpile stewardship.

The NIF project supports the DOE and NNSA mandate to maintain nuclear weapons science expertise required for stewardship of the stockpile. After the United States announcement of a moratorium on underground nuclear tests in 1992, the Department established the SSP to ensure the preservation of the core intellectual and technical competencies in nuclear weapons. The NIF is one of the most vital facilities in that Program. The NIF will provide a 192-beam laser system and a 10-meter diameter target chamber with a capacity to hold user-supplied diagnostics, along with target alignment and positioning systems and computer control systems. The Stockpile Stewardship Program will provide support to the ICF, HEDP and other users that will use NIF’s capability to conduct repeatable, controlled laboratory experiments to address the high energy density and fusion aspects that are important to both primaries and secondaries in stockpile weapons.

Without the NIF, the Nation's computational capabilities and scientific knowledge are inadequate to ascertain all of the performance and safety impacts from changes in the nuclear warhead physics packages due to aging, remanufacturing, or engineering and design alterations. Such changes are inevitable if the warheads in the stockpile are retained for the foreseeable future. In the past, the impacts of such changes were evaluated through underground nuclear weapon tests. Without full-scale underground testing, we will require better, more accurate computational capabilities to assure the reliability and safety of the nuclear weapons stockpile for the indefinite future.

To achieve the required level of confidence in our predictive capability, it is essential that we have access to conditions in laboratory experiments that approach those occurring in nuclear weapons. The importance of ensuring our nuclear weapons deterrent for national security requires such confidence. NIF will be a principal laboratory experimental physics facility for secondaries and for some aspects of primary performance. NIF remains the only currently planned stockpile stewardship facility that

provides the experimental capability to achieve thermonuclear fusion burn – a key part of the operation of our nuclear weapons stockpile.

The most significant potential commercial application of ICF in the long term is the generation of electric power. Consistent with the recommendations of the Fusion Policy Advisory Committee, the unique NIF laser and its facility-based systems will be used by researchers supported by DOE's Office of Fusion Energy Sciences and other energy research programs to address critical elements of inertial fusion energy physics. The Inertial Fusion Energy Program will explore moderate (1-10) energy gain target designs, establishing requirements for driver energy and target illumination for high gain targets, and developing materials and technologies useful for civilian inertial fusion power reactors.
The ignition of an inertial fusion capsule in the laboratory will produce extremely high temperatures and densities in matter. Thus, the NIF will also become a unique and valuable laboratory for experiments relevant to a number of areas of basic science and technology (e.g., stellar phenomena). NNSA Defense Programs, DOE Office of Science and other organizations are initiating programs to support the basic science use of NIF by universities, private industry, and other organizations.

The NIF Project will provide an experimental fusion facility consisting of a laser and target area building (LTAB), and associated assembly and refurbishment capability, control rooms, and a diagnostic building for housing experimenters and their equipment. The laser will be capable of providing laser pulses to targets with an energy of up to 1.8 megajoules (MJ) and an output pulse power of up to 500 terawatts (TW) at a wavelength of 0.35 micrometers (μm) and with specified symmetry, beam balance and pulse shape. The NIF experimental facility houses a 192-beam, flashlamp pumped neodymium (Nd) glass laser capable of generating and delivering the pulses to a 10-meter diameter target chamber. The NIF Project provides other supporting hardware in the target chamber, such as a positioning and alignment systems for precisely centering ICF and HEDP targets at the center of the target chamber.

The NIF LTAB provides an optically stable and clean environment. The LTAB was constructed to provide the structure for a shielded enclosure for radiation confinement around the target chamber and is designed as a radiological, low-hazard facility capable of withstanding the natural phenomena specified for the LLNL site. The baseline facility is for one target chamber, and the design shall not preclude future upgrade for additional target chambers. The facility is designed to allow both classified and unclassified experiments.

The NIF Project consists of both conventional and special facilities.

- Site and Conventional Facilities include the land improvements (e.g., grading, roads) and utilities (electricity, heating gas, water), as well as the laser building, which has an approximately 20,300 square meters footprint and 38,000 square meters in total area. It is a reinforced concrete and structural steel building that provides the vibration-free, shielded, and clean space for the installation of the laser, target area, and integrated control system. The laser building consists of two laser bays, each 31 meters (m) by 135 m long, and a central target area--a heavily shielded (1.8 m thick concrete) cylinder 32 m in diameter and 32 m high. The laser bays, optical switchyards, target area and diagnostic building include security systems, control rooms, supporting utilities, fire protection, monitoring, and decontamination and waste handling areas. Optics assembly and refurbishment capability is provided for by incorporation of an Optics

Assembly Building attached to the laser building and modifications of other existing site facilities.

Special facilities include the Laser System, Target Area, Integrated Computer Control System, and Optics.

- The laser system is designed to generate and deliver high energy and high power optical pulses to the target chamber. The system consists of 192 laser beams configured to illuminate the target surface with a specified symmetry, uniformity, and temporal pulse shape. The laser pulse originates in the injection laser system. This precisely formatted low energy pulse is amplified in the preamplifier and in the main laser system in the power amplifier and main amplifier sections. To minimize intensity fluctuation, each beam is passed through a pinhole in a spatial filter on each of the four passes through the amplifier and through a transport spatial filter. The beam transport directs each high power laser beam to an array of laser entry ports distributed around the target chamber where the wavelength of the laser light is converted to the higher harmonics of the primary laser wavelength, spatially modified and focused on the target. Systems are provided for control of alignment and characterization of laser beams and targets.

- The target area includes a 10-m-diameter, low-activation (i.e., activated from radiation) aluminum vacuum chamber located in the LTAB. Within this chamber, the user-provided target will be precisely located using target alignment and positioning systems. The chamber and building structure are designed to shield radiation and confine radioactivity with the addition of user-provided shielded entry and exit doors when programmatically necessary. Structural, utility and other support systems necessary for safe operation and maintenance will also be provided in the Target Area. The target chamber, the target diagnostics, and staging areas will be capable of conducting experiments with user-provided cryogenic targets and cryogenic target support systems. The Experimental Plan indicates that cryogenic target experiments for ignition will begin after Project completion with a goal of ignition in 2010. The baseline configuration for NIF's laser architecture on the target chamber is for indirectly driven ignition targets. An option for future modifications to permit directly driven targets is not precluded in the design.

- The integrated computer control system includes the computer systems (note: no individual computer will cost over $100,000) required to control the laser and target systems. The system will provide the hardware and software necessary to support initial NIF acceptance and operations checkout. Also included is an integrated timing system for experimental control of laser and diagnostic operations, safety interlocks, and personnel access control.

- Thousands of optical components are required for the 192-beam NIF. These components include laser glass, lenses, mirrors, polarizers, deuterated potassium dihydrogen phosphate crystals, potassium dihydrogen phosphate crystals, pulse generation optics, main debris shields and windows, and the required optics coatings. The optics portion of the Project includes quality control equipment to receive, inspect, characterize, and refurbish the optical elements. Other user-provided optics to support user experiments may include special use crystals for polarization smoothing, continuous phase plates for beam spot

tailoring, focusing lenses for multiple color operation, and other laser front end modifications.

Project Milestones:

The Project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision 0: Approve Mission Need – 2Q FY 1993
- Critical Decision 1: Approve Preliminary Baseline Range – NA
- Critical Decision 2: Approve Performance Baseline – 1Q FY 1994
- External Independent Review Final Report: May 2000
- Critical Decision 3: Approve Start of Construction – 2Q FY 1997
- Critical Decision 4: Approve Start of Operations – 2Q FY 2009

Major Milestones

- Title I Initiated – 2Q FY 1996
- NEPA Record of Decision – 1Q FY 1997
- Optics Facilitization Complete – 4Q FY 1999
- End Conventional Construction – 4Q FY 2001
- First Light to Target Chamber Center – 2Q FY 2003
- Complete Performance Qualification[a] of a Single Bundle at TCC – 1Q FY 2009
- Complete Operational Qualification[b] of 96 Beams (Two Clusters) at TCC – 2Q FY 2009
- Complete Installation Qualification[c] of all LRUs – 2Q FY 2009

Project Milestones for FY 2005:

- Laser Glass Melting Complete – 1Q (completed 1Q FY 2005)
- Deliver LB Automated Bundle Shot Controls – 4Q (completed 4Q FY 2005)

Project Milestones for FY 2006:

- Deliver 80 kJ to switchyard calorimeters (Single Bundle) – 1Q
- Deliver LB Multi-Bundle Controls – 4Q

Project Milestones for FY2007:

- Complete Single Bundle Performance Qualification[1] in PDS – 2Q

[a] One bundle has been operated at energy and power levels consistent with the single bundle Project Completion Criteria. This bundle is referred to as being performance qualified (PQ'd).

[b] Twelve bundles have been operated at energy and power levels consistent with the 96 beam Project Completion Criteria. These bundles are referred to as being operationally qualified (OQ'd).

[c] Twenty-four bundles are installed, aligned, and under ICCS control. These bundles are referred to as being installation qualified (IQ'd).

- Complete LB1 Flashlamp Firing MPR – 2Q

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
1996	N/A	N/A	33,991
1997	N/A	N/A	62,208
1998	N/A	N/A	46,844
1999	N/A	N/A	29,755
2000	N/A	N/A	95,245
2001	N/A	N/A	35,128
2002	N/A	N/A	8,872
2003	N/A	N/A	13,434
2004	N/A	N/A	12,318
2005	N/A	N/A	8,750
2006	N/A	N/A	500
2007	N/A	N/A	0
2008	N/A	N/A	0
Total Design	N/A	N/A	347,045
Construction			
1996	N/A	N/A	0
1997	N/A	N/A	12,085
1998	N/A	N/A	118,545
1999	N/A	N/A	221,721
2000	N/A	N/A	157,522
2001	N/A	N/A	219,597
2002	N/A	N/A	273,281
2003	N/A	N/A	201,626
2004	N/A	N/A	118,800
2005	N/A	N/A	140,649
2006	N/A	N/A	143,323
2007	N/A	N/A	118,745
2008	N/A	N/A	21,958
Total Construction	N/A	N/A	1,747,852
Total Estimated Cost (TEC)			
1996	37,400	37,400	33,991
1997	131,900	131,900	74,293
1998	197,800	197,800	165,389
1999	284,200	284,200	251,476
2000	247,158	247,158	252,767
2001	197,255	197,255	254,725
2002	245,000	245,000	282,153
2003	214,045	214,045	215,060
2004	149,115	149,115	131,118
2005	128,972	128,972	149,399
2006	140,494	140,494	143,823
2007	111,419	111,419	118,745
2008	10,139	10,139	21,958
Total TEC (96-D-111)	2,094,897	2,094,897	2,094,897

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Design Phase		
Preliminary and Final Design	346,545	333,950
Contingency	500	4,727
Total Design	347,045	338,677
Construction Phase		
Site Preparation	1,800	1,800
Equipment	1,300,940	1,271,859
All other construction	406,844	404,180
Contingency	38,268	78,381
Total, Construction	1,747,852	1,756,220
Total, TEC	2,094,897	2,094,897

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	12,300	12,300
Start-up	134,900	134,900
Offsetting D&D		
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with “one-for-one” requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	6,000	6,000
Total, OPC	153,200	153,200

Other Related Operations and Maintenance Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
NIF Demonstration Program (NDP)	1,158,881	1,092,975
Contingency	95,400	107,025
Total NDP	1,254,281	1,200,000

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Outyears	Total
TEC (Design)	346,545	500	0	0	0	0	0	347,045
TEC (Construction)	1,463,826	143,323	118,745	21,958	0	0	0	1,747,852
OPC (Other than D&D)	148,142	1,341	1,708	2,009	0	0	0	153,200
TPC (Other than D&D)	1,958,513	145,164	120,453	23,967	0	0	0	2,248,097
NDP (Other than D&D)	816,585	100,335	140,437	142,248	54,676	0	0	1,254,281
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total- Project and Related Costs	2,775,098	245,499	260,890	166,215	54,676	0	0	3,502,378

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	3Q 2009
Expected Useful Life (number of years)	30
Expected Future Start of D&D for New Construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs[a]		Life Cycle Costs	
	Current Estimate[b]	Prior Estimate[c]	Current Estimate	Prior Estimate
Operations[d]	60,052	58,645	1,801,574	1,759,350
Maintenance	76,891	75,089	2,306,734	2,252,670
Total Related Funding[d]	136,943	133,734	4,108,308	4,012,020

[a] Annual costs are presented as an average value over the facility life cycle. Costs vary over time; for example they will be greater than the average during the early years when the facility is establishing its inventory of operating spares.

[b] In FY 2007 dollars.

[c] In FY 2006 dollars.

[d] Programmatic operating expenses directly related to utilizing the facility (e.g. experiment design, data analysis) are not included here; refer to the specific Campaign budgets.

9. Required D&D Information

N/A

10. Acquisition Approach

The NIF Project has included participation from LLNL, Los Alamos National Laboratory (LANL), Sandia National Laboratories (SNL), Bechtel Nevada, Honeywell Kansas City, and University of Rochester Laboratory for Laser Energetics (UR/LLE) and has been supported by competitively-selected contracts with Architect Engineering firms, an integration management and installation contractor, equipment and material vendors, and various construction firms. Participants prepare the design, procure equipment and materials, and perform conventional construction, equipment installation, safety, system analysis, and qualification tests. DOE/NNSA maintains oversight and coordination through the NNSA Office of the NIF Project. All activities are integrated through the guiding principles and five core functions of the DOE ISM system (DOE P450.4).

10.1 NIF Execution

10.1.1 Conceptual and Advanced Conceptual Design

The conceptual design was completed in May 1994 by the staff of the participating laboratories. Keller and Gannon contractors provided designs of the conventional facilities and equipment.

Design requirements were developed through a Work Smart Standards (WSS)-Like Process approved by the Manager of the DOE Oakland Operations Office. New requirements have been defined since the original WSS were placed in the DOE-University of California (UC) Contract ENG-48 in 1997. Prior to the completion of the NIF Project, the LLNL Work Smart Standards will be applied.

The Conceptual Design Report was subjected to an Independent Cost Estimate (ICE) Review by Foster Wheeler USA under contract to the DOE. The advanced conceptual design phase further developed the design, and is the phase in which all the criteria documents that govern Title I Design were reviewed and updated.

10.1.2 Title I Design

In fiscal year 1996, Title I Design began with the contract award for the Architect/Engineers (RM Parsons and AC Martin) and a Construction Management firm (Sverdrup) for the design and the constructability reviews of the (1) NIF LTAB and (2) Optics Assembly Building. Title I Design included developing advanced design details to finalize the building and the equipment arrangements and the service and utility requirements, reviewing Project cost estimates and integrated schedule, preparing procurement plans, conducting design reviews, completing the Preliminary Safety Analysis Report and National Environmental Protection Act documentation, and planning for and conducting the constructability reviews.

Title I Design was completed in November 1996 and was followed by an Independent Cost Estimate Review.

10.1.3 Title II Design

The participants in Title II (final design) include LLNL, LANL, SNL, RM Parsons, AC Martin, and Jacobs/Sverdrup (constructability reviews). The Title II Design provides construction subcontract packages and equipment procurement packages, construction cost estimates and schedules, test procedures and the acceptability criteria for tested components (e.g., pumps, power conditioning, special equipment), and environmental permits and plans for construction (e.g., Storm Water Pollution Prevention Plan).

10.1.4 Title III Field Engineering

Title III engineering represents the engineering necessary to support the construction and equipment installation, including inspection and field engineering. The Title III engineering is conducted by all participants. The main activities are to perform the engineering necessary to resolve issues that may arise during construction (e.g., fit problems, interferences, etc.). Title III engineering will result in the as-built drawings that represent the NIF configuration.

10.1.5 Construction and Equipment Procurement, Installation, and Qualification

Based on the March 7, 1997, Critical Decision 3, construction began with site preparation and excavation of the LTAB forming the initial critical-path activities. The NIF Construction Safety Program, superseded by the NIF Project Basic Site Safety Program, was approved and sets forth the safety requirements at the construction site for all LLNL and non-LLNL (including contractor) personnel. There was sufficient Title II Design completed to support bid of the major construction and equipment procurements. The conventional facilities were designed as construction subcontract bid packages and competitively bid as firm fixed price procurements. The initial critical-path construction activities included both the LTAB and the Optics Assembly Building. In addition, the site support infrastructure needed to support construction of conventional facility, beampath infrastructure installation, and line replaceable equipment and optics staging were put in place. At the same time, procurements on the critical path (e.g., target chamber) began following the established NIF Project Acquisition Plan.

The next major critical path activity was the assembly and installation of the Beampath Infrastructure Systems. These are the structural systems required to support the line replaceable units. The management and installation of the Beampath Infrastructure System was contracted to an Integration Management and Installation Contractor. This was done to fully involve industry in the construction of NIF as directed in the Secretary of Energy's 6-Point Plan and recommended by the Secretary of Energy Advisory Board interim report in January 2000. During the period of Beampath Infrastructure System installation, line replaceable unit and optics procurements continued.

The line replaceable unit equipment will be delivered, staged, and installed consistent with the overall construction and installation schedule for the LTAB. The construction, equipment installation, and qualification will be supported by Title III inspection and field engineering, which will include resolving construction and installation issues and preparing the final as-built drawings.

10.1.6 Operational Testing and Commissioning

After installation, the facility and equipment will be qualified prior to the phased turnover to the commissioning organization. The NIF Demonstration Program funds all activities associated with installing and qualifying all 192-beams of the laser system. The NIF Demonstration Program also funds the final optics assemblies on the target chamber, which are expected to become activated/contaminated during facility operation as well as the commissioning activities required for the Project to demonstrate it has met the Project completion criteria. As NIF systems are qualified, the Project will ensure, through appropriate testing and review, that systems meet their functional, operational, and safety requirements. Further, the NIF Demonstration Program will provide the staff, staff training, and the procedural foundation for NIF operations after Project completion.

Management Prestart Reviews (MPRs) are performed when a significant new risk will be introduced. The MPR process employs an independent team to evaluate readiness and recommends proceeding with introduction of the new risk. Any transfer of responsibility for Integrated Safety Management Systems (ISMS) Work Authorization associated with transition of a system is approved by the NIF Project Manager. An MPR may be used as the independent review process prior to turnover of systems to operations.

The integrated system qualification will begin with the installation qualification of selected systems and components. In specific cases (Laser Bay 1 Flash Lamp Firing, Laser Bay 1 Laser Light, and 3ω Cluster 3 Operational Qualifications), an MPR will be conducted and the DOE/NNSA Federal Project Director will concur in the review. These reviews will culminate in a Readiness Assessment conducted prior to the initiation of NIF 96-beam operation. The Readiness Assessment will be conducted by LLNL, and the results will be validated by the DOE/NNSA Office of the NIF. The 96-beam Readiness Assessment results are a key input for Critical Decision 4 (Approve Start of Operations or Project Closeout) by the Acquisition Executive.

10.1.7 Project Completion

The NIF Project Completion Criteria included in the NIF Project Execution Plan represent the system status and performance required at Project completion for Critical Decision 4. The complete set of NIF Performance criteria is contained in the *NIF Functional Requirements and Primary Criteria* as part of the NIF Project Execution Plan. These are the criteria that NIF is required to meet when ramped up to full power operation following Project completion (Critical Decision 4).

10.1.8 NIF Diagnostics, Cryogenics, and Experimental Support and User-Supplied Systems

The NIF Project will provide a laser system, target area, and experimental support areas that can meet the NIF Functional Requirements and Primary Criteria and Project Completion Criteria. NIF Diagnostics, Cryogenics, user optics, and Experimental Support Technology, a Major Technical Effort of the ICF Campaign, will provide the construction of facility capabilities to support user experiments. In addition, users of NIF will need to provide additional specialized equipment, including targets, computational modeling, and personnel to plan and perform Stockpile Stewardship ICF and HEDP experiments, inertial fusion

energy science, basic science, and nuclear weapons effects tests. Further details are provided in the ICF and High-Yield Section of the NNSA budget narrative.

Examples of NIF Diagnostics, Cryogenics, and Experimental Support equipment include experiment diagnostics such as neutron diagnostics that will be used to make accurate measurements of ICF implosions and high-energy x-ray diagnostics for HEDP target experiments. In addition to facility diagnostics development, commissioning, and calibration, a variety of additional experimental support technologies will be provided to support user experiments. These include the NIF Cryogenic Target System (NCTS), special user optics such as phase plates for beam spot tailoring, Potassium Dihydrogen Phosphate (KDP) crystals for optimal multi-color operation and beam smoothing, disposable debris shields, and cryogenic target systems for indirect and direct drive inertial fusion experiments for ignition and non-ignition targets. The users will also provide for appropriate storage of their special optics and other unique experimental equipment.

Additional facility capabilities that will be supplied by NIF Diagnostics, Cryogenics, and Experimental Support Technology to meet programmatic needs include shielding doors for radiation protection during ignition shots, equipment to perform classified experiments, including classified computer systems and classified diagnostic support systems, special handling equipment and procedures for fielding targets containing beryllium, tritium, etc., and the facilitization that is required to enable these capabilities (Personnel and Environmental Protection Systems).

Individual users are responsible for target fabrication, characterization, and for any non-facility diagnostics or other individual experiment support needs. The NCTS provides for ignition target transport and handling. Non-ignition HED, ICF, basic science, etc., Experimenters are responsible for transport and handling up to insertion in the Target Positioner.

10.2 Security

The operation of the NIF may generate classified data requiring safeguarding; the Project itself represents a large investment of government funds in assets that must be protected. The Functional Requirements and the System Design Requirements identify security-system design requirements. A NIF Security Plan will be prepared and submitted for Livermore Site Office (LSO) Safeguards and Security Division Director approval prior to the first classified experimental operations. The plan will describe the NNSA requirements and compliance of the NIF design (e.g., access control, vaults, secure transfer lines, etc.) and administrative procedures that implement them. It will also describe the site security organization and interface to the NIF Project security team. Issues related to transparency of experimentation by the user community and international collaboration will be addressed in the final NIF Security Plan to be approved by the LSO Safeguards and Security Division Director before Critical Decision 4.

OMEGA Extended Performance (EP) Project, University of Rochester / Laboratory for Laser Energetics (LLE), Rochester, New York

1. Significant Changes

Based on Congressional direction in the 2006 Energy and Water Appropriations Act, P.L. 109-103, the project baseline scope has been changed to include completion of an additional two long-pulse beamlines, and the project completion date has been changed from September, 2007 to April, 2008.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2005 Budget Request *(Estimate)*	1Q FY 2003	2Q FY 2004	2Q FY 2004	4Q FY 2004	N/A	N/A
FY 2006 Budget Request *(Performance Baseline)*	1Q FY 2003	2Q FY 2004	2Q FY 2004	4Q FY 2007	N/A	N/A
FY 2007	1Q FY 2003	4Q FY 2004	4Q FY 2004	3Q FY 2008	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	Total Estimated Cost (TEC)	Other Project Costs (OPC), except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005 Budget Request *(Estimate)*	67,000	10,700	N/A	77,700		77,700 [a]
FY 2006 Budget Request *(Performance Baseline)*	67,000	9,500	N/A	76,500	76,500	
FY 2007	89,000	9,500	N/A	98,500	98,500	

[a] The FY 2005 congressional data sheet mistakenly reflected this line as National Environmental Policy Act (NEPA) costs. It should have been Research and Development (R&D) related to Petawatt Technology.

4. Project Description, Justification, and Scope

Project Description

The OMEGA EP project is the design, manufacture, assembly, and testing of four laser beams each having a long pulse capability and two also having a short pulse pettawatt capability to complement the existing capability of the OMEGA laser system. The four beamlines are to be built in a new building that was funded by the University of Rochester. Many aspects of the NIF and the OMEGA architectures will be used to produce the high-energy beams. The intended use of the system is to backlight events created by the OMEGA laser for greater understanding of implosion events and to conduct fast ignition and high intensity laser matter interaction research in the new OMEGA EP target chamber. The project is broken down into six primary technical areas:

Laser Sources - The laser sources provide the pulses to be input into a NIF-like beamline.

Laser Amplifiers – Mechanical systems that adapt the Multi-Segment-Amplifier of the NIF to a Single-Segment-Amplifier as required by the OMEGA EP architecture.

Power Conditioning – Energy storage system to energize the flash lamps of the laser amplifiers

Opto-Mechanical Beamlines – All lenses, mirrors, deformable mirrors, diffraction gratings, Plasma-Electrode-Pockels-Cells, frequency conversion to the UV, and laser diagnostics to transport the energy from the laser sources through the amplifiers and to the target.

Experimental, Vacuum Systems, and Structures – The structures, vacuum vessels and interfaces to the Opto-Mechanical systems required for beamline support.

Control Systems – The hardware and software necessary to control the laser through all of the component elements. Remote control from a centralized control room will be provided.

Justification

The OMEGA laser at the University of Rochester's LLE is a critical facility needed to support ICF goals. The OMEGA EP project will provide advanced radiographic capabilities that currently do not exist. This technology will facilitate the longer-term goal of demonstrating ignition and future Stockpile Stewardship Program (SSP) experiments on the National Ignition Facility (NIF). Specifically, OMEGA EP will provide the following:

- high-energy, short-pulse backlighters necessary for imaging direct-drive ignition implosions along two axes,
- capability to develop weapons science applications of petawatt lasers in areas such as high-energy x-ray backlighting and the production of matter under extreme conditions of temperature and density,
- a unique means for evaluating the fast-ignition concept, which could increase the likelihood of achieving ignition and high gain on the NIF,
- a new capability for exploring basic science through ultrahigh-intensity lasers,

- an important facility upgrade to maintain the vitality of the scientific program at the Laboratory for Laser Energetics, consistent with the recommendation of the recent National Research Council report on High-Energy-Density Physics,
- an important capability to probe matter under extreme astrophysical conditions, consistent with recommendations contained in the recent National Research Council report on the Physics of the Universe, and
- enhanced viability of LLE to support National Nuclear Security Administration (NNSA) and attract new talent into the SSP.

Project Scope

The scope of the project includes all of the design, development, and installation of the laser systems. At the conclusion of the project, the primary functional requirements will be met and performance verified by an independent panel. Subsequently, the laser will be available to conduct the ICF missions specified above under separate funding.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – 3Q FY 2003
- Critical Decision – 1: Approve Preliminary Baseline Range – 4Q FY 2003
- Critical Decision – 2: Approve Performance Baseline – 3Q FY 2004
- External Independent Review Final Report – July 2004
- Critical Decision – 3: Approve Start of Construction – 3Q FY 2004
- Critical Decision – 4: Approve Start of Operations – 3Q FY 2008

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2003	N/A	N/A	N/A
2004	N/A	N/A	N/A
Total, Design (OMEGA EP Project)	N/A	N/A	N/A
Construction			
2003	13,000[a]	13,000	13,000
2004	20,000[b]	20,000	20,000
2005	29,000[c]	29,000	29,000
2006	24,750[d]	24,750	24,750
2007	2,250	2,250	2,250
Total, Construction	89,000	89,000	89,000
Total TEC	89,000	89,000	89,000

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	0	0
Construction Phase		
Site Preparation	0	0
Equipment	62,150	39,324
All other construction (project office)	24,500	15,958
Contingency	2,350	11,718
Total, Construction	89,000	67,000
Total, TEC	89,000	67,000

[a] Initial Congressional O&M funding was provided in the FY 2003 Energy and Water Development Appropriations Act (P.L. 108-7).

[b] Funding was provided in the FY 2004 Energy and Water Development Appropriations Act (P.L. 108-137).

[c] Funding was provided in the Consolidated Appropriations Act, 2005 (P.L. 108-447). $25,000,000 of the increase of $28,000,000 over the budget request was used for the EP project and $3,000,000 was used for other HEPW R&D in support of stockpile stewardship. The FY 2005 congressional data sheet indicated $6,000,000, of which $4,000,000 was for the EP project and $2,000,000 was for HEPW R&D ancillary to the project.

[d] Funding was provided in the FY 2006 Energy and Water Development Appropriations Act (P.L. 109-103), an increase of $22,000,000 above the FY 2006 Congressional Budget Request of $3,000,000. FY 2006 funding of $24,750,000 reflects government-wide rescission of 1.0 percent enacted by P.L. 109-148.

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	2,000	2,000
Start-up (R&D related to Petawatt Technology)	7,500	7,500
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	0	0
Total, OPC	9,500	9,500

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)								
TEC (Construction)	86,750	2,250	0	0	0	0	0	89,000
OPC Other than D&D	9,500	0	0	0	0	0	0	9,500
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total, Project Costs	96,250	2,250	0	0	0	0	0	98,500

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	3Q FY 2008
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	10,000	5,000	300,000	150,000
Maintenance	0	0	0	0
Total Related funding	10,000	5,000	300,000	150,000

9. Required D&D Information

N/A

10. Acquisition Approach

N/A

Advanced Simulation and Computing Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Advanced Simulation and Computing Campaign[a]			
Integrated Codes	180,832	153,754	155,247
Physics and Engineering Models	70,130	65,242	66,566
Verification and Validation	53,979	49,747	52,138
Computational Systems and Software Environment	234,146	172,376	178,445
Facility Operations and User Support	155,907	158,653	165,559
Construction Projects	3,202	0	0
Total, Advanced Simulation and Computing Campaign	**698,196**	**599,772**	**617,955**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Simulation and Computing Campaign				
Integrated Codes	156,843	153,463	150,080	146,163
Physics and Engineering Models	67,416	67,568	66,738	66,112
Verification and Validation	52,931	53,050	52,398	52,163
Computational Systems and Software Environment	227,863	223,576	216,983	210,680
Facility Operations and User Support	127,042	124,286	121,547	118,643
Construction Projects	0	0	0	0
Total, Advanced Simulation and Computing Campaign	**632,095**	**619,204**	**607,746**	**593,761**

Description

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, platforms, and computer facilities.

The ASC Campaign enables Stockpile Stewardship by: delivering validated weapons simulation tools with more accurate physical models and better numerical approximations; integrating the ASC tools into a Quantification of Margins and Uncertainties (QMU) certification and assessment methodology; developing the ability to quantify confidence bounds on the uncertainty in our results; and providing the necessary computing capability to code users, in collaboration with industrial partners, academia and government agencies. As the computational surrogate for nuclear testing, ASC plays an important role in Reliable Replacement Warhead (RRW) development and supports a Responsive Infrastructure; the

[a] NNSA has included funding in the Advanced Simulation and Computing Campaign to continue the University Research Program in Robotics (URPR) initiated by Congress in previous years. This activity is not included in the FY 2006 or FY 2007 plans.

ASC tools simulate device performance to ensure that systems in the stockpile meet all performance and surety requirements, as well as stockpile-to-target sequence and the entire weapons lifecycle.

ASC is not only a massive scientific undertaking, but also a major management challenge to focus and apply resources effectively and efficiently while maintaining scientific creativity and nurturing innovation, which are keys to success. *The ASC Strategy* articulates principles and high-level goals that guide the program's directions and emphases for the next ten years. Advocacy, transparency, integration and effective federal management are the touchstones of the new *ASC Business Model*. It is product-oriented, identifying programmatic interfaces and customer-supplier relationships to enable more effective use of people, technology and scientific resources in the service of nuclear national security.

Any future transformation of the stockpile will rely heavily on ASC simulation codes, computational infrastructure and platforms. Only through ASC simulations can National Nuclear Security Administration (NNSA) determine the effects of changes to current systems as well as margins and uncertainties in future and untested systems, such as the RRW. Growth in computing capacity under ASC increases the efficiency, robustness and flexibility of the RRW design process.

The ASC is transitioning its business model from one that was very successful in delivering an initial capability to one that is integrated and focused on requirements-driven products and responses to fundamental technical questions that are necessary to move toward an enhanced predictive capability in simulation tools. This transition includes a reengineered work breakdown structure that uses different major technical efforts than prior-year submissions.

	New Business Model Structure					
Old Business Model Structure	**Integrated Codes**	**Physics and Engineering Models**	**V&V**	**Computational Systems and Software Environment**	**Facility Operations and User Support**	**($ in K) Total**
Advanced Applications Development	125,204	336	734	1,723	769	128,766
Verification and Validation			51,404			51,404
Physics and Material Models	684	66,230			432	67,346
PSE	1,189			37,726	31	38,946
DISCOM				1,180	11,939	13,119
Pathforward				2,298		2,298
Data & Visualization Sciences				35,924	908	36,832
Physics Infrastructure and Platforms				66,253		66,253
Computational Systems				18,732	61,633	80,365
Simulation Support				7,711	57,094	64,805
Advanced Architectures				3,106		3,106
Alliances	20,194					20,194
Institutes	5,192			3,792	22,223	31,207
Fellowships (CSGF/Krell)	2,019				362	2,381
1 Program/3 Labs	765				10,168	10,933
Total	155,247	66,566	52,138	178,445	165,559	617,955

Federal Leadership of ASC

In addition to the ASC Strategy and Business Model, there have been significant strides during the past two years to reengineer ASC. As part of the Business Model, a national work breakdown structure was instituted to increase visibility into laboratory projects. A Predictive Science Panel was chartered to assess on a regular basis the Program's progress toward an enhanced predictive capability. A siting

capability study was initiated to evaluate cost-effective strategies for siting NNSA capability platforms. A Software Quality Audit was conducted to evaluate the weapons codes at the laboratories. A JASON study of the Verification and Validation subprogram was commissioned to clarify metrics that measure code accuracy.

Benefits

ASC contributes to Program Goal 01.31.00.00 by providing leading edge, high-end simulation capabilities through investments made in five subprograms that support activities in the areas of weapon codes, weapon science, computational infrastructure, and computing center operations.

Major FY 2005 Achievements

Direct Stockpile Support (Certification, LEPs, SFI), Dismantlement, National Security

- Major advance, supported by ASC modeling, in the understanding of key weapons phenomenological factor.
- Modern ASC code baseline comparisons to nuclear test data significantly advanced for the W76, W88, W80, B83, W87, W62, B61.
- ASC 3D calculations played a key role in developing and confirming engineering solutions in W80 LEP process resulting in large cost savings at Kansas City plant.
- Several SFIs resolved by application of ASC codes, in peer reviewed, two lab efforts.
- Modern ASC safety analysis supported significant weapons dismantlement work.
- Applied ASC codes to the development and analysis of NIF Early Light experiments.
- 3D ASC codes used to predict and interpret DARHT hydro shot for W76-1 LEP.
- Successful assessment of W-76 x-ray output using modern ASC codes.
- ASC increasing contributions to nuclear event attribution and NEST capabilities.
- Major improvement in transport implemented for modern primaries, secondaries, and output.
- Latest release of modern Primary code instrumental in certifying W76-1 LEP.

Stockpile Supporting Science

- Modern ASC codes used to predict and interpret Z pulsed power experiments in regimes of interest to the stockpile.
- 3D modern ASC codes applied to the development prediction and analysis of OMEGA laser experiments at extreme temperatures and pressures relevant to ICF and the stockpile.
- Major ASC multi-month simulation to answer an important stockpile issue underway.

- Initial BlueGene/simulations for materials aging issues related to stockpile assessments underway; largest ever molecular dynamics simulation achieved at over 2 billion atoms, enabling studies of key materials issues.

- Significant improvements in materials models, including high explosive chemistry, plutonium equation of state, and radiation opacity, needed for primary and secondary performance.

- Important Plutonium diagnostic cross section, determined from LANSCE experiment and theory prediction, now constraining baseline stockpile models.

- Material damage model implemented in simulation codes that provides tool needed to certify W76-1 LEP and W88 Major Assembly Release (MAR).

Stockpile Science Supporting Infrastructure

- Delivery of Blue Gene/L supercomputer (#1 of the world's top 500 computers), demonstrating a low power, small footprint technology.

- External review of Stockpile Stewardship requirements that drive large-scale platform acquisitions.

- New ASC national program work breakdown structure established and published.

- Advances in methodology for quantification of stockpile margins and uncertainties, and hierarchical V&V assessment completed.

- JASON review of ASC Verification and Validation subprogram held.

- Cave Automatic Virtual Environment (CAVE) immersive visualization environment at LANL in active operation for use by design community.

- Los Alamos National Laboratory (LANL) "Lightning" capacity platform made available for use in secure partition.

Major Outyear Considerations

During the period FY 2007-2011, the ASC Campaign will make significant progress toward a predictive simulation capability as articulated in the ASC Strategy and Roadmap. The work in this time frame will enable in later years the eventual outcomes that include: reducing closure times for Significant Finding Investigations, resolving several major simulation uncertainties resulting from phenomenology in the codes, creating new baselines with reduced errors for the enduring and transforming stockpile, building capabilities for Reliable Replacement Warhead certification, and building a key enabling technology for a Responsive Infrastructure.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART Tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured

framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome-and output- oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2004, the OMB evaluated the ASC Campaign, using the PART. The OMB gave the ASC Campaign scores of 83 percent on the Purpose and Design Section, 100 percent on the Strategic Planning Section, 91 percent on the Program Management Section, and 85 percent on the Results Section. Overall, the OMB rated the ASC Campaign 87 percent, its highest category of "Effective." The OMB found that the program has a clear purpose, is well managed, and has clear and measurable goals. In addition, the OMB believed the program makes a unique contribution but must focus its resources such that redundancy does not occur in the three NNSA laboratories. In response to these recommendations, the NNSA management is guiding the program to meet weapons stockpile requirements without developing unneeded redundancy. As the ASC Campaign transitions to its new strategy and business model, it is a fitting time to transition to a series of new performance measures that better evaluate progress toward predictive capability and the associated computing environment.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Perform a prototype calculation of a full weapon system with three-dimensional engineering features. (MET GOAL)	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Peer-reviewed progress in completing milestones, according to a schedule in the Advanced Simulation and Computing Campaign Program Plan, in the development and implementation of improved models and methods into integrated weapon codes and deployment to their users (Long-term Output)	N/A	R: High Fidelity Primary Code T: High Fidelity Primary Code	R: Initial baseline Primary Code T: Initial baseline Primary Code	T: Initial baseline Second-ary Code	T: W76 code baseline	T: W80 code baseline	T: Modern baseline all enduring stockpile systems	T: Quantify margins and uncertain-ties of existing baseline simula-tions	T: Phase II to quantify margins and uncertain-ties of existing baseline simula-tions	By 2015, accomplish full transition from legacy design codes to modern ASC codes with documented quantification of margins and uncertainties of simulation solutions.
Cumulative percentage of the 31 weapon system components, primary/secondary/ engineering system, analyzed using ASC codes, as part of annual assessments and certifications (Long-term Output)	R: 22%	R: 32% T: 32%	R: 38% T: 38%	T: 51%	T: 67%	T: 87%	T: 96%	T: 100%	N/A	By 2010, analyze 100% of 31 weapon system components using ASC codes, as part of annual assessments and certifications (interim target).
Annual maximum individual platform computing capability delivered, measured in trillions of operations per second (teraflops) (Annual Output)	R: 20	R: 20* T: 40	R: 94 T: 100	T: 100	T: 100	T: 150	T: 150	T: 350	T: 350	By 2010, deliver a maximum individual platform computing capability of 350 teraflops.
Cumulative capacity of ASC production platforms attained, measured in teraflops, taking into consideration procurements and retirements of systems (Long-term Output)	R: 41	R: 75 T: 75	R: 163 T: 172	T: 160	T: 160	T: 310	T: 420	T: 930	T: 930	By 2010, attain a total production platform capacity of 930 teraflops.
Annual average cost per teraflops of delivering, operating, and managing all Stockpile Stewardship Program (SSP) production systems (Efficiency)	R: $11.64M	R: $8.30M* T: $8.15M	R: $5.70M T: $5.70M	T: $3.99M	T: $2.79M	T: $1.96M	T: $1.37M	T: $0.96M	T: $0.96M	By 2010, attain an average cost of $0.96 M per teraflops of delivering, operating, and managing all SSP production systems. (2003 baseline $11.64M)

* Delivery of new equipment delayed to 2Q 2005 by manufacturer.

Detailed Justification

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Integrated Codes	**180,832**	**153,754**	**155,247**

This subprogram involves lab physics, engineering and specialized code projects that develop and improve the weapons simulation tools. This subprogram primarily addresses the improvement of weapons system simulations, to predict with reduced uncertainties the behavior of devices in the stockpile, and to begin the analysis and design for a RRW. The products of this subprogram are the large-scale integrated simulation codes that are needed for Stockpile Stewardship Program (SSP) maintenance, the LEP, addressing and closing Significant Findings, and a host of related requirements, including supporting the dismantlement processes and informing future modifications. 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 includes university partnerships that foster continued collaborations such as the ASC Alliances and Computational Science Graduate Fellowships. This subprogram's functional and performance requirements are established by designers, analysts, code developers and the requirements of the Quantification of Margins and Uncertainties (QMU). 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 subprogram in assessing the degree of reliability and level of uncertainty associated with the outputs from the codes.

The FY 2007 activities include the following: Develop coupled multi-physics models for device simulation, based on fundamental understanding and realistic, scientifically-based representation of device behavior, with a reduced reliance on calibration to underground test data. Produce integrated physics models with 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 as well as to analyze various Stockpile-to-Target Sequence and modifications to ensure nuclear surety. 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 Program in computer science, scientific computing, and computational mathematics. Continue support of the Computational Science Graduate Fellowship.

Physics and Engineering Models	**70,130**	**65,242**	**66,566**

This subprogram develops microscopic and macroscopic models of physics and material properties, improved numerical approximations of transport for particles and x-rays, and the behavior of other critical phenomena. This subprogram is charged with the development, the initial validation and the 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 Stockpile Stewardship Program, mostly funded and led through the Science Campaigns; of particular importance are the Dynamic Materials Properties and the Engineering Campaigns. Functional requirements for this subprogram are established by designers and analysts.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

The FY 2007 activities include the following: Develop and implement equation of state and constitutive models for materials within nuclear devices, improved understanding of phase diagrams and the dynamic response of materials. Continue physics-based modeling representing the altered properties of plutonium as it ages, partly as a result of self-irradiation. Explore fundamental chemistry models of high explosives, including thermal, mechanical, and constitutive properties of unreacted explosives and explosive products, decomposition kinetics, detonation performance, and response in abnormal environments. Improve representation of corrosion, polymer degradation, and thermal-mechanical fatigue of weapons electronics. Develop more representative models of melting and decomposition of foams and polymers in safety-critical components. Support of the Stockpile to Target Sequence requirements by providing better models of microelectronic and photonic materials under hostile environments.

Verification and Validation (V&V)..... **53,979** **49,747** **52,138**

Based on the functional and operational requirements established by designers, analysts and code developers for greater fidelity of codes and models, this subprogram establishes a technically rigorous foundation for the credibility of code results. This subprogram interfaces with the Integrated Code subprogram to obtain regular, official code releases from the code projects. Verification activities assess code precision in implementing numerical approximations and assess the accuracy of these numerical approximations. Validation activities aid in the understanding and assessment of a model's accuracy by comparing model predictions with experimental data. Quantification methodologies provide measures of the uncertainties associated with the simulations. Sound software quality engineering practices are used to ensure robust, efficient, and well-documented software releases of the ASC codes. This subprogram collaborates with the Science, Engineering, and Inertial Confinement Fusion Ignition and High Yield campaigns and Directed Stockpile Work to obtain experimental data for validation purposes. Final V&V assessment reports contain the standard deliverables of this subprogram.

The FY 2007 activities include the following: Define and document methodologies for quantification of results to provide the basis by which computational uncertainties vital to QMU are assessed and evaluated. Focus efforts on developing common verification and validation test suites to examine the adequacy and correctness of the ASC models and codes. Identify requirements and perform comparison calculations against experimental validation data obtained through the experimental campaigns. Develop and maintain repositories of V&V outputs, including data, test results, and analyses, to be accessible to the Stockpile community. Implement software quality standards stemming from customer or regulatory requirements and improved software engineering tools and practices for application to ASC simulations.

Computational Systems and Software Environment..... **234,146** **172,376** **178,445**

This subprogram provides ASC users a stable, seamless computing environment for all ASC deployed platforms, including capability, capacity and advanced systems. It is responsible for delivering and deploying the ASC computational systems and user environments via technology development and integration at the Defense Programs National Laboratories, in addition to partnerships with industry

and academia. The scope of the subprogram includes strategic planning, research, development, procurement, maintenance, testing, integration and deployment, and quality and reliability activities for all ASC computational systems and software environments. Functional and operational computational requirements for this subprogram are established by the weapons designers, analysts and code developers. This subprogram identifies computer science and system development opportunities in emerging technologies based on market surveys, vendor discussions, and inter-agency and academic collaborations.

The FY 2007 activities include the following: Procure and integrate high-performance scalable units for capacity computing to meet growing demands especially in the area of modern (QMU-based) weapons certification and assessment. Create a common, usable, and robust application-development and execution environment for ASC-scale applications and platforms to meet the computational needs of weapons scientists and engineers. Produce an end-to-end, high-performance Input/Output, networking-and-storage archive infrastructure encompassing ASC platforms and operating systems, large-scale simulations, and data-exploration capabilities to enable efficient ASC-scale computational analysis. Provide a reliable, available, and secure environment for distance computing, through system monitoring and analysis, modeling and simulation, and technology infusion. Develop and deploy high-performance tools and technologies to support visual and interactive exploration of massive, complex data; effective data management, extraction, delivery, and archiving, as well as an efficient remote or collaborative scientific data exploitation. Develop and deploy scalable data manipulation and rendering systems that leverage inexpensive, high performance commodity graphics hardware. Deploy and provide system management of the ASC computers and their necessary networks and archival storage systems. Stimulating research and development efforts through advanced architectures that explore alternative computer designs, promising dramatic improvements in performance, scalability, reliability, packaging, and cost.

Facility Operations and User Support **143,407** **136,653** **165,559**

This subprogram provides necessary physical facility and operational support for reliable production computing and storage environments as well as providing users with a suite of services enabling effective use of ASC Tri-Lab computing resources. The scope of the facility operations includes planning, integration and deployment, continuing product support, software license and maintenance fees, procurement of operational equipment and media, quality and reliability activities and collaborations. The designers, analysts and code developers of the nuclear weapon complex provide functional and operational computational requirements. 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.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007

The FY 2007 activities include the following: Maintain continuous and reliable operation and support of production computing systems and all required infrastructure to operate these systems on a 24 hours a day, 7 days a week basis, with an emphasis on providing efficient production quality stable systems. Ensure that the physical plant has sufficient resources, such as space, power, and cooling, to support future computing systems. Provide the authentication and authorization services used by applications for the purposes of remote access and data movement across ASC sites. Develop and maintain a wide-area infrastructure (e.g., links and services) that enables distant users to operate on remote computing resources as if they were local to the extent possible. Enable remote access to ASC applications, data, and computing resources, to support computational needs at the plants. Operate laboratory ASC computers and support integration of new systems. Provide analysis and software environment development and support for laboratory ASC computers. Provide user services and helpdesks for laboratory ASC computers.

Congressionally Directed Activity	**12,500**	**22,000**	**0**

In FY 2006 report language, ASC was directed to fund a total of $22 million Congressionally-directed activities. Due to the single-year nature of appropriation authority, ASC is not planning for any congressional earmarks in the outyears.

ASC Construction	**3,202**	**0**	**0**

Construction is completed.

Total, Advanced Simulation and Computing Campaign	**698,196**	**599,722**	**617,955**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Integrated Codes	
The increase enables the ASC campaign to meet the development of minimum, core code development needs of ASC simulation tools for the current Stockpile Stewardship Program Commitment.	**+1,493**
Physics and Engineering Models	
The increase reflects the limited replacement of nuclear-test calibrated models with more predictive capabilities. Some risk is incurred by constraining the design space that can be credibly analyzed for weapons performance.	**+1,324**
Verification and Validation (V&V)	
The increase maintains the development time of methodologies for verification and validation of complex multi-scale, multi-physics weapons codes at the labs and in collaboration with strategic academic partners. These investments affect the portfolio of available validated simulation tools needed for weapon performance and surety.	**+2,391**
Computational Systems and Software Environment	
Increase is consistent with the ASC strategy for procuring additional capacity computing. This decreases the risk in implementing uncertainty analysis in QMU-based weapons certification and assessment, by matching planned workload with planned computing resources.	**+6,069**
Facility Operations and User Support	
ASC Red Storm, Purple and BlueGene/L reach general availability status for Stockpile Stewardship Program-wide use. Support at this level enables the program to maintain effort development of more predictive simulation tools, to meet increasing power demands and to provide the most critical infrastructure.	**+28,906**
ASC Construction	
Construction concluded in FY 2005 in accordance with the approved Project Execution Plans.	**0**
Congressionally Directed Activity	
In FY 2006 appropriation language, ASC was directed to fund a total of $22 million Congressionally approved activities. Due to the single-year nature of appropriation authority, ASC is not planning for any congressional earmarks in the outyears.	**-22,000**
Total Funding Change, Advanced Simulation and Computing Campaign	**+18,183**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	Over Target Increment
General Plant Projects	88	91	94	0
Capital Equipment	68,150	70,194	72,300	0
Total, Capital Operating Expenses	**68,150**	**70,194**	**72,394**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Total, Capital Operating Expenses	**74,565**	**76,802**	**79,107**	**81,480**

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	PriorYear Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
00-D-103, Terascale Simulation Facility (TSF)	90,927	24,852	3,202	0	0	
00-D-101, Distributed Information Systems Laboratory, (DISL)	36,143	12,227	0	0	0	
Total, Construction	**127,070**	**37,079**	**3,202**	**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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

Pit Manufacturing and Certification Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Pit Manufacturing and Certification Campaign			
Pit Manufacturing	123,147	119,717	147,658
Pit Certification	71,292	61,276	56,605
Pit Manufacturing Capability	13,732	22,840	33,335
Modern Pit Facility	6,606	0	0
Pit Campaign Support Activities at NTS	48,793	34,830	0
Total, Pit Manufacturing and Certification Campaign	263,570	238,663	237,598

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Pit Manufacturing and Certification Campaign				
Pit Manufacturing	155,061	152,499	166,635	164,861
Pit Certification	47,889	43,005	35,400	34,400
Pit Manufacturing Capability	46,638	56,670	58,061	56,571
Modern Pit Facility	0	0	0	0
Pit Campaign Support Activities at NTS	0	0	0	0
Total, Pit Manufacturing and Certification Campaign	249,588	252,174	260,096	255,832

Description

The goal of the Pit Manufacturing and Certification Campaign is to restore the capability and some limited capacity to manufacture pits of all types required for the nuclear weapons stockpile.

Benefits

Within the Pit Manufacturing and Certification Campaign, three subprograms make unique contributions to achieve Program Goal 1.32.00.00. The Pit Manufacturing subprogram objective is to manufacture limited quantities of pits that meet all quality requirements for entry into the stockpile and to develop a limited pit manufacturing capability at existing Los Alamos National Laboratory (LANL) facilities. The Pit Certification subprogram objective is to confirm the nuclear performance of a W88 warhead with a LANL-manufactured pit by the end of FY 2007 without nuclear testing and to establish a basis for certification processes for future replacement pits. The Pit Manufacturing Capability subprogram objective is to establish the capability to manufacture replacement pits, other than the W88, by developing and demonstrating processes applicable to either existing LANL facilities or a long-term pit manufacturing facility. The Pit Campaign Support Activities at the Nevada Test Site (NTS) which provides support in fielding subcritical experiments essential to pit certification will complete activities by the end of FY 2006. Both the Pit Manufacturing Capability and Pit Manufacturing subprograms contribute to the goals of Responsive Infrastructure (RI) by improving the technical capability and capacity of pit manufacturing at LANL.

The National Nuclear Security Agency (NNSA) Pit Project Office reviews project performance and associated earned value data on specific project elements monthly. Based on these reviews, NNSA management adjusts project scope and budget as required to meet goals. Earned value performance for other elements of the pit campaign are also monitored.

Major FY 2005 Achievements

- Manufactured 6 W88 pits, as required to support the FY 2007 certification objective.

- Completed major milestones, documented in the June 2005 Pit Manufacturing and Certification Program Plan to remain, on or ahead of schedule to meet FY 2007 W88 certification. This included the successful completion of confirmatory experiments for both of the upcoming subcritical experiments (SCEs), construction and site development for both SCEs planned to be performed at the NTS in FY 2006, analysis of the Armando experimental data, completion of 3 destructive tests in support of a Qualification Engineering Release in FY 2007, and over 25 dynamic tests performed on material samples from pits.

- Completed major milestones, documented in the Pit Manufacturing and Certification Program Plan, on or ahead of schedule toward restoration of capability to manufacture the pit types in the enduring stockpile by the end of FY 2009 and subsequent engineering development units (EDUs) beyond FY 2009. This included completion of the first phase of an advanced foundry design and completion of B61 characterization studies.

- Completed alternative analysis on specific facility configuration for a pit manufacturing facility and completed 10 System Design Description documents establishing facility requirements, and several key safety and security guidance and requirements documents.

- Completed all Nevada Test Site (NTS) milestones, documented in the June 2005 Pit Manufacturing and Certification Program Plan, on or ahead of schedule toward execution of LANL major subcritical experiment activities in support of the Pit Campaign.

Major Outyear Considerations

The outyear funding for Pit Manufacturing provides a base of ~$120 million to maintain the pit manufacturing infrastructure at LANL and complete W88 pit manufacturing requirements. Starting in FY 2008, with expected completion in FY 2012, the NNSA plans to increase LANL pit capacity from 10 pits per year to 30-40 pits per year within FYNSP funding. Limited pit manufacturing capacity will also be provided at LANL to support other pit manufacturing requirements (e.g., RRW).

Additionally, realignment of prior Modern Pit Facility funding starting in FY 2007 will support NNSA planning to increase pit manufacturing capacity at LANL. The outyear funding for Pit Certification will complete planned engineering and physics experiments and analysis to increase confidence in the certification (Major Assembly Release-MAR) of the W88 warhead with a LANL-manufactured pit and to demonstrate stockpile stewardship without nuclear testing. These experiments could be applied to the certification of an RRW as well as W88 post-MAR confidence testing. This certification may include a DynEx test using the DARHT facility, a neutron hardness test using the Annual Core Research Reactor at the Sandia National Laboratories, shock and vibration testing to assure robustness of the system under specific STS conditions, and follow-up subcritical experiments, e.g., Unicorn-type tests. Funding also

supports development of a pit related certification approach for the RRW. Physics and engineering testing, as well as the development of a computational simulation capability, will be required to ensure that other stockpile warheads with replacement pits (e.g., RRW) will perform as expected without nuclear testing. The evolution of this certification strategy will establish a certification approach for other pit types.

The outyear funding for pit manufacturing capability will demonstrate, with a goal of 2009, the manufacturing processes necessary to manufacture other stockpile pits, including RRW. By 2012, the program will manufacture other RRW pits using improved equipment and processes. Outyear funding will ensure the development of pit manufacturing processes and equipment that can be used to increase capacity at LANL or at a long-term pit manufacturing facility.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of major milestones completed toward establishing a limited capability of 10 W88 pits/year at Los Alamos National Laboratory (LANL) (Long-term Output)	N/A	R: 10%	R: 30% T: 30%	T: 60%	T: 100%	N/A	N/A	N/A	N/A	By 2007, establish capability to manufacture 10 W88 pits/year.
Annual number of certified W88 pits manufactured at LANL (Annual Output)	N/A	N/A	N/A	N/A	N/A	T: 10	T: 10	T: 10	T: 10	Annually, produce 10 certified W88 pits until required number has been manufactured (currently 2014).
Cumulative percentage of major milestones, documented in the Pit Manufacturing and Certification Campaign Program Plan, completed toward W88 Pit Certification (Long-term Output)	N/A	R: 20% T: 25%*	R: 50% T: 50%	T: 70%	T: 100%	N/A	N/A	N/A	N/A	By 2007, issue a major assembly release (MAR) for the W88 warhead using a LANL-manufactured W88 pit.
Cumulative percentage of major milestones, documented in the Pit Manufacturing and Certification Campaign Program Plan, completed toward restoration of manufacturing capability for all pit types in the enduring stockpile (Long-term Output)	N/A	R: 5% T: 5%	R: 20% T: 20%	T: 35%	T: 55%	T: 75%	T: 100%	N/A	N/A	By 2009, establish manufacturing process capability for all pit types.
Cumulative percentage of major milestones, documented in the Pit Manufacturing and Certification Campaign Program Plan, completed toward the manufacture of engineering demonstration units (EDUs) for reliable replacement pits (Long-term Output)	N/A	N/A	N/A	N/A	N/A	N/A	T: 10%	T: 20%	T: 45%	By 2012, manufacture initial pit EDUs for reliable replacement pits.
Annual cost, in millions of dollars, per pit capacity to maintain a pit manufacturing capability. (Efficiency)	N/A	N/A	N/A	N/A	N/A	T: $12M	T: $12M	T: $12M	T: $12M	By 2013, reduce the cost to maintain a pit manufacturing capability from $12M per pit capacity in 2008 to $5M.

* Target was changed to 20% in program rebaselining caused by FY 2004 reprogramming; program met rebaselined target.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Pit Manufacturing	**123,147**	**119,717**	**147,658**

The Pit Manufacturing subprogram objective is to manufacture pits in limited quantities and to establish an interim pit manufacturing capability at existing LANL facilities. In FY 2006, LANL will manufacture certifiable W88 pits to support a FY 2007 W88 certification goal.

FY 2007 activities will focus on the manufacture of production qualified W88 pits as surveillance replacements for W88 pits in the stockpile and further efficiency increases to the manufacturing infrastructure. This subprogram is essential for a multi-year effort by the NNSA to reorganize activities and process lines at the TA-55 plutonium facility and to purchase and install new and/or backup equipment necessary to achieve a reliable capability to manufacture ten W88 pits per year by the end of FY 2007. FY 2007 will initiate an acceleration of increasing pit manufacturing capacity at LANL. Additional personnel will be hired and additional equipment procured to support manufacture of existing pit types (or a RRW pit).

Pit Certification	**71,292**	**61,276**	**56,605**

The Pit Certification subprogram objective is to confirm the nuclear performance of a W88 warhead with a Los Alamos National Laboratory (LANL) manufactured pit by the end of FY 2007 and to establish certification processes for future replacement pits. To confirm nuclear performance of the W88 pit without underground nuclear testing, LANL has specified a set of engineering tests and physics experiments, in addition to a comprehensive analytical effort to develop a computational baseline that will provide confidence in future simulation capabilities. These tests, experiments, and analyses are essential to complete a Major Assembly Release (MAR) for the W88 warhead with a LANL-manufactured pit in FY 2007, indicating confidence for use in the stockpile.

The major focus of FY 2007 activities is completion of the data analysis and post-shot reports for the Unicorn and Krakatau and small-scale experiments, assessment of the performance of the LANL-manufactured W88 pit as compared with the revised W88 simulation baseline using Advanced Simulation and Computing (ASC) codes with improved material damage models, acceptance of the final destructive test on a qualification pit, and completion of engineering evaluations required to issue a Qualification Engineering Release. In addition, LANL and Lawrence Livermore National Laboratory (LLNL) will continue planning and development of integral experiments in FY 2007 in support of certification of reliable replacement warhead pits. A major item of equipment (MIE), Assembly Chamber and Ancillary Infrastructure, is underway in FY 2007 to support the DynEx experiment. Additional details on this MIE are included in the "Major Items of Equipment" table that follows.

Pit Manufacturing Capability	**13,732**	**22,840**	**33,335**

The Pit Manufacturing Capability subprogram objective is to establish the capability to manufacture replacement pits other than the W88 pit and to improve manufacturing processes used to manufacture W88 pits. The processes and technologies being developed support NNSA goals that include producing less waste, lowering radiation dose to facility operators, and reducing the unit

(dollars in thousands)

FY 2005	FY 2006	FY 2007

costs of manufacturing pits. The pit manufacturing process development effort in this subprogram objective supports both short and long-term pit manufacturing goals.

FY 2007 funding will be used to ensure progress in development of manufacturing processes for replacement pits currently in the stockpile or replacement pits with the manufacture of engineering demonstration units by the end of FY 2012. By 2010, manufacture certifiable RRW pits using the necessary equipment and processes being developed.

Modern Pit Facility (MPF)	**6,606**	**0**	**0**

Funding for this subprogram is zero for FY 2006 and beyond.

Pit Campaign Support Activities at NTS	**48,793**	**34,830**	**0**

The Pit Campaign Support Activities at NTS provide support in fielding subcritical experiments essential to pit certification with completion of activities at the end of FY 2006. There is no funding provided for these activities in FY 2007.

All subcritical experiment activities in support of the LANL-manufactured W88 pit certification effort will be completed in FY 2006.

Total, Pit Manufacturing and Certification Campaign	**263,570**	**238,663**	**237,598**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Pit Manufacturing	
The funding increase will provide plutonium test samples and pits required for W88 pit certification and provide W88 pits for the stockpile. Installation of additional pit manufacturing equipment and removal of old equipment will enable the LANL plutonium facility at TA-55 to achieve a sustained manufacturing rate of 10 W88 pits/year by the end of FY 2007. Funding also allows the continuation of manufacturing and quality infrastructure improvements to sustain consistency of pits for the stockpile. Additional funding of $13,222 initiates work to increase pit manufacturing capacity to support existing pit types (or RRW pit).	**+27,941**
Pit Certification	
The decrease in funding is due to the completion of a Major Assembly Release (MAR) for the W88 warhead with a LANL manufactured pit in FY 2007, which will provide a significant validation of the Stockpile Stewardship Program.	**-4,671**
Pit Manufacturing Capability	
The funding increase supports development of pit manufacturing processes necessary to establish the capability to manufacture stockpile pits in FY 2009. Activities include: selection and procurement of advanced machining equipment, start construction and testing of an in-line low energy radiography system; plutonium cleaning feasibility studies; purchase and installation of continuous wave laser welding equipment to support pit manufacturing; and procurement and glovebox design for an improved plutonium casting foundry module. Technology development activities are focused on sustaining interim manufacturing at LANL, achieving a flexible, long-term capability to manufacture pits other than the W88, and addressing the manufacturing process requirements for RRW pits.	**+10,495**
Pit Campaign Support Activities at NTS	
The funding decrease is consistent with the cessation of subcritical experiment activities in support of pit manufacturing and certification. There is no funding provided for Major Technical Effort (MTE) 5, Pit Manufacturing and Certification Campaign support activities at NTS, in FY 2007. All subcritical experiment activities in support of the LANL-manufactured W88 pit certification effort are expected to be completed in FY 2006.	**-34,830**
Total Funding Change, Pit Manufacturing and Certification Campaign.....	**- 1,065**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007	Over Target Increment
General Plant Projects	3,100	3,193	3,289	0
Capital Equipment	20,175	20,781	21,404	0
Total, Capital Operating Expenses	**23,275**	**23,974**	**24,963**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Total, Capital Operating Expenses	**25,434**	**26,197**	**26,983**	**27,792**

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

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Completion Date
Assembly Chamber and ancillary infrastructure at LANL	7,573	7,573	0	3,000	1,100	3,473	
Total, Major Items of Equipment	**7,573**	**7,573**	**0**	**3,000**	**1,100**	**3,473**	

The assembly chamber will provide an environment in which the DynEx experiment can be safely assembled, radiographed and inserted into a confinement vessel for transport to DARHT. The purpose of this vessel is to mitigate the consequences of an accident where high explosives and special nuclear material are collocated, and to ensure the postulated potential release of hazardous materials is contained well below the DOE evaluation guidelines.

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

Readiness Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Readiness Campaign			
Stockpile Readiness	45,450	31,086	17,576
High Explosives and Weapon Operations	29,349	16,926	17,188
Nonnuclear Readiness	32,696	28,344	31,171
Tritium Readiness	58,386	62,067	86,385
Tritium Readiness Construction	20,834	24,645	0
Advanced Design and Production Technologies	78,757	53,499	53,645
Total, Readiness Campaign	**265,472**	**216,567**	**205,965**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Readiness Campaign				
Stockpile Readiness	25,645	24,832	22,446	21,377
High Explosives and Weapon Operations	16,676	16,705	15,066	14,616
Nonnuclear Readiness	27,736	26,463	25,412	24,626
Tritium Readiness	78,231	82,265	82,621	79,619
Tritium Readiness Construction	0	0	0	0
Advanced Design and Production Technologies	54,348	47,825	46,856	47,421
Total, Readiness Campaign	**202,636**	**198,090**	**192,401**	**187,659**

Description

The goal of the Readiness Campaign is to develop and deliver design-to-manufacturing capabilities to meet the evolving and urgent needs of the stockpile and support the transformation of the Nuclear Weapons Complex into an agile and more responsive enterprise with shorter cycle times and lower operating costs.

As part of this goal, the Readiness Campaign serves its customer base with technology that contributes to faster implementation of new requirements, reduction in cycle times, less waste, leaner manufacturing (fewer components or processing steps), and an enabled workforce. A key element of this goal is to ensure that the operating costs of the production complex can be optimized to meet customer needs as well as achieve greater efficiencies in operating the production complex to meet these needs.

Today, and in the future, national defense faces significant challenges some of which are posed by new forms of warfare, which in turn create new needs that require rapid response while assuring the safety and the reliability of the stockpile. The Readiness Campaign provides design-to-manufacturing and technological readiness capabilities that address current needs and have applications to respond to future viable contingencies that may arise. Readiness Campaign achievements have improved, and will continue to improve, the capability of the nuclear weapons complex and its technology base to respond

to special national defense needs in a timely manner. Such improvements enhance the nuclear weapons complex manufacturing capability with state-of-the-art equipment designs combined with cutting-edge applications, which enable the nuclear weapons complex to quickly modify and enhance products, tools and processes to respond to emerging threats; thus the Readiness Campaign contributes to establishing technological solutions that help attain responsive infrastructure goals. A substantial proportion of Readiness Campaign projects support the completion of two or more Life Extension Programs (LEPs) first production units (FPUs), and initial production runs, and seek to address base workload capability and future nuclear weapons complex requirements.

Examples of projects funded through the Readiness Campaign include the development of testing capability for neutron generators; development of production capability for weapon components containing uranium materials and associated subassemblies; and detonators; development of production capability for high explosive components and the technologies to qualify weapon components for reuse; and production of arming, firing, and fuzing (AF&F) components and similar electrical, mechanical, and electronic components. Clearly, future nuclear complex needs require fundamentally different capabilities than those used to build the existing stockpile and the Readiness Campaign goal is to identify and develop certain capabilities that support how the complex and its operations will be modernized to establish flexible, agile, lean, and efficient design-to-production capabilities that will enable the complex to meet future requirements.

Because of the synergy of the Readiness Campaign goals and the responsive infrastructure initiative, collaboration is maintained between these elements. In deploying capabilities to meet urgent needs for Directed Stockpile Work (DSW) and for Research in Technical Base and Facilities, gains are often made in cycle time reduction, improved in-process measurements, and improved manufacturing techniques and business practices. These improvements and efficiencies assist in improving the overall responsiveness of the nuclear weapons complex.

The Readiness Campaign performance targets reflect the need to both meet immediate needs to ensure weapons safety and reliability and the long term need to modernize the manufacturing complex to reduce cycle times and improve efficiency. The Readiness Campaign has the ability to move forward to develop science-based applications, models-based projects, and enterprise integration capabilities and integrates its efforts as is feasible to do that and meet immediate and urgent needs with the currently allocated resources. The Campaign focuses on limits investment to projects that meet immediate needs, deferring initiatives to insert technology that would mitigate the risk of rework and schedule slippages in the LEPs and base workload schedules.

Benefits

Within the Readiness Campaign, there are five subprograms: Stockpile Readiness, High Explosives and Weapon Operations (HEWO), Nonnuclear Readiness, Tritium Readiness, and Advanced Design and Production Technologies (ADAPT), each of which make unique contributions to the Program Goal 01.33.00.00, stockpile, and nuclear weapons complex. Stockpile Readiness is replacing or restoring production capability and revitalizing aging processes necessary for current and future stockpile needs. HEWO ensures that adequate capability is available to requalify nuclear assembly components; to manufacture and assemble high explosive components; and to assemble, disassemble, and perform surveillance on War Reserve nuclear weapons. Nonnuclear Readiness provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. Tritium Readiness establishes and operates the Commercial Light-Water Reactor (CLWR) Tritium Production System to produce

tritium, maintaining the national inventory of tritium to support the nuclear weapons stockpile. ADAPT integrates and systematically develops new technologies and enhanced capabilities to improve the effectiveness of the production complex and to deliver qualified refurbishment products upon demand.

Major FY 2005 Achievements

- Successfully completed the first irradiation cycle of 240 tritium-producing rods in the Watts Bar reactor to maintain the national inventory of tritium to support the nuclear weapons stockpile.
- Completed the first uranium casting utilizing microwave metal melting technology, which provides additional flexibility over conventional casting techniques due to the range of temperatures achievable and the variety of casting chamber configurations possible. This leading edge technology has the potential to improve worker safety, improve product quality, and minimize subsequent manufacturing operations.
- Re-established manufacturing capability to support a June 2006 FPU and steady production for the B61 Alt 357 LEP. Numerous new and upgraded equipment items were supplied to production operations that will be useful to subsequent LEPs and base workload.
- Established capabilities for Science and Model-Based Manufacturing to support the B61 Alt 357 LEP. The new model-based product realization standards have enabled the move to model-based and automated robust manufacturing from traditional paper drawing-based manufacturing.
- Procured and installed agile machining capabilities for tooling and LEP applications resulting in a two- to five- times increase in machining speed while maintaining acceptable tolerances, and product quality.
- Completed the Nuclear Explosive Safety Study (NESS) Master Study for Interactive Electronic Procedures forming the NESS basis for all weapon operations use. This effort improves safety through reduction of procedure non-compliance in nuclear weapon operations, improves the quality of weapons data collection (20 percent over manual data entry from paper), and improves productivity in manufacturing and engineering operations by around 25 percent.
- Qualified the commercial source for conventional explosive (HMX) to support Plastic Bonded Explosive (PBX) 9501 main charge production, reducing the cost of this material to the complex by obviating the need for the more expensive internal synthesis and formulation.
- Recapitalized Base Workload Production Testing to provide modern replacements for critical testers needed by DSW.
- Maintained production test capability that ensures weapons complex capability to reliably meet neutron generator delivery requirements by replacing 25- to 35-year old testers with modern, modular equipment required to condition and test all neutron tubes.
- Developed, demonstrated, and transitioned to DSW gas transfer systems for tritium reservoirs to meet LEP production schedules.
- Developed and demonstrated enhancement of existing capabilities by optimizing packaging options and manufacturing processes for production of W76-1 MK4A AF&F development hardware, reducing size and increasing capability at a lower cost.
- Implemented an Integrated Design and Production Reference (IDPR) tool to support the correlation of weapon design and production information necessary for weapon certification.

- Developed white-light interferometry system, laser optical metrology system for the integrated Pit Inspection Station providing new technology for non-contact measurement and verification of pit dimensions.
- Developed processes for producing higher energy density thermal batteries, higher energy density capacitors via gel-impregnation and processes to support AF&F Flight test hardware.

Major Outyear Considerations

The outyear funding for the Readiness Campaign reflects the gradual transition of Program focus from capability development and deployment for base workload and Life Extension Program requirements to targeted development and deployment of design-to-manufacturing capabilities to meet the evolving needs of the stockpile and support the transformation of the Nuclear Weapons Complex into an agile and more responsive enterprise with shorter cycle times and lower operating costs. Applying specific acceptance criteria to work that will be funded through the Campaign, including multi-site focused projects and defined post-deployment performance measurement criteria, will likely mean a slight decrease in compliant project proposals while the transition takes place. As the criteria are established and embraced at the sites and capability performance is proved, the program anticipates an upswing in compliant and responsive proposals toward the end of the period. This expectation is reflected in the planned funding profile with a decrease in investment of $18.5 million through FY 2010 and a slight increase in investment of $2.4 million in FY 2011.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented a tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2007, the OMB evaluated the Readiness Campaign using the PART. The OMB gave the Readiness Campaign scores of 100 percent on the Purpose and Design, and Strategic Planning Sections; 89 percent on the Program Management Section, and 78 percent on the Results Section. Overall, the OMB rated the Readiness Campaign 87 percent, its highest rating of "Effective." The OMB assessment found that the program has demonstrated progress in achieving annual and long-term goals; has a clear and unique purpose; is well managed; and has clear and measurable performance metrics to cover a portion of the program. In addition, the OMB found that it is difficult to measure the impact the program has on optimizing nuclear weapons stewardship activities, such as lowered costs and reduced cycle times. The OMB also noted that the program must coordinate closely with other NNSA programs give its purpose. In response to the OMB findings, the NNSA is investigating performance measures that better assess the program's impact on reducing cost/time. The program is also improving the coordination of priorities and initiatives across multiple NNSA programs.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results.
Meet the FY 2002 milestones in the production readiness campaigns to address issues associated with high explosives, materials, and non-nuclear technologies. (MIXED RESULTS)	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative number of critical capabilities deployed to support our Directed Stockpile Work (DSW) customer's immediate and urgent nuclear weapon refurbishment needs derived from the Production Readiness Assessment Plan (Long-term Output)	N/A	R: 6	R: 12	T: 15	T: 20	T: 23	T: 26	T: 28	T: 31	By 2017, deploy 38 critical immediate and urgent capabilities to support DSW nuclear weapons refurbishment deliverables.
Annual number of capabilities deployed to stockpile programs that will reduce cycle times at least by 35% (against baselined agility and efficiency) (Annual Outcome)	N/A	N/A	N/A	N/A	T: 1	T: 1	T: 1	T: 1	T: 1	Annually deploy at least 1 capability to a Stockpile program that reduces cycle time by at least 35%.
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)	N/A	N/A	R: 240 T: 240	T: 240	T: 480	T: 720	T: 720	T: 960	T: 1,200	By 2011, complete irradiation of 1,200 tritium-producing rods (Interim Target).
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: 64%	R: 80% T: 80%	R: 87% T: 87%	T: 96%	T: 100%	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 construction completed in 2005.)

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Stockpile Readiness (SR)	**45,450**	**31,086**	**17,576**

Within this subprogram, efforts are directed toward replacing, improving, or restoring production capability and revitalizing aging processes to reestablish manufacturing, inspection and other capabilities. These efforts are required to meet current mission requirements for the B-61 and W-76 LEPs and DSW, as well as support future weapon programs in a responsive, efficient, and cost effective manner and provide capabilities for the future needs of the stockpile. The Stockpile Readiness Subprogram deploys related technology developed by the ADAPT Subprogram as well as other technology programs.

In FY 2007 Stockpile Readiness Subprogram activities will include deploying an electron beam weld inspection capability to allow nondestructive evaluation of welds; deploying a Coordinate Measuring Machine; deploying a 9-MeV Linac; and deploying an Agile Machine Tool (further details on this equipment are provided in the Major Item of Equipment table). Ongoing activities include developing technologies for enriched uranium handling modernization, and procuring and installing a multi-axis machining capability.

High Explosives and Weapon Operations (HEWO)	**29,349**	**16,926**	**17,188**

The HEWO Subprogram ensures the capability to requalify nuclear assembly components; to manufacture and assemble high explosive components including main charge and small energetics; and to assemble, disassemble, and perform surveillance on nuclear weapons necessary to meet the current and projected needs of the nation's nuclear weapon stockpile. HEWO is planned and structured to address the capability, infrastructure, workforce and facility issues that must be resolved and will serve as the vehicle to implement technologies demonstrated by other programs and construction projects. This subprogram is charged with appropriately deploying related technology developed by the ADAPT subprogram and other technology programs that improve efficiency and flexibility and will therefore increase responsiveness

In FY 2007, the HEWO subprogram plans to deliver: the PBX 9501 main charge manufacturing capability and pit requalification capability to produce a Process Prove In build of the nuclear explosive package for the W76-1/Mk 4 rebuild requirements; and the capability to requalify components in accordance with the W80-2/3 rebuild requirements. In FY 2007, the HEWO Subprogram ongoing activities will focus on pit characterization, refurbishment, reacceptance capabilities deployment; transition of high explosive chemistry to production capability; and completion of interactive electronic procedure deployment.

Nonnuclear Readiness (NNR)	**32,696**	**28,344**	**31,171**

The Nonnuclear Readiness Subprogram provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. This subprogram 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. The Nonnuclear Readiness Subprogram has three major functions: (1) eliminate gaps in product development and production capabilities required to perform the authorized base workload, (2) eliminate gaps in product development and production capabilities required to perform authorized LEPs, and (3) achieve operational readiness of all product development and production capabilities as required by the known and anticipated requirements of the Stockpile Stewardship Program. In addition to the major weapon program planning documents, other inputs, such as the Applied Technology Roadmap, are incorporated into Nonnuclear Readiness Subprogram planning.

In FY 2007, the Nonnuclear Readiness Subprogram planned deliverables include an improved producibility of lightening arrestor connectors at the commercial supplier. Ongoing efforts will focus on deploying assembly processes that incorporate mistake-proofing for strong-links and other mechanical devices; continued development of neutron generator testing capability; improving readiness for assembly/disassembly capability; and electronic component and assembly miniaturization.

Tritium Readiness (TR)..... **58,386** **62,067** **86,385**

The Tritium Readiness subprogram re-establishes and operates the Department's capability for producing tritium to maintain the national inventory in support of the nuclear weapons stockpile. Irradiation of tritium-producing rods in the Tennessee Valley Authority's (TVA) Watts Bar reactor began in October 2003. The TVA's Sequoyah reactors are also capable of tritium production, and the capability is maintained in stand-by until needed to meet tritium production requirements specified by the Nuclear Posture Review and the Nuclear Weapons Stockpile Plan submitted to Congress in June 2004. The first Watts Bar cycle was completed in mid-FY 2005. Irradiated rods were removed and transported to a temporary storage location at the Savannah River Site awaiting completion of the Tritium Extraction Facility (TEF). The Watts Barr system will continue to produce tritium during subsequent reactor irradiation cycles. The second cycle, begun in mid-FY 2005, will continue through FY 2006.

Major activities in FY 2007 include: redesign activities to improve performance of the Tritium Producing Burnable Absorber Rod (TPBARs); fabrication of TPBARs; initiation of the third irradiation cycle (this includes the incremental reactor fuel costs); handling and transportation of irradiated tritium-producing rods; delivery of irradiated rods to the TEF; complete system testing of the TEF using the irradiated rods; obtaining Critical Decision 4 permission for start of the TEF; and operation of the TEF.

Tritium Readiness Construction **20,834** **24,645** **0**

Project 98-D-125, TEF includes two major buildings: (1) a 15,250-square-foot (approx) Remote Handling Building (RHB) and (2) a 26,500-square-foot (approx) Tritium Processing Building (TPB). Major processes and operations systems included within the TEF will be: (1) the Receiving, Handling, and Storage System that will support all functions related to the receipt, handling, preparation, and storage of incoming TPBAR and outgoing radioactive waste materials; (2) the Tritium Extraction System that will perform initial cleanup of extracted gasses; (3) the Tritium Process Systems that will separate process gasses from the irradiated TPBARs; (4) the Tritium Analysis and Accountability Systems that will support monitoring and tritium accountability; (5) the Solid Waste Management System that will receive solid waste generated by TEF for management and storage prior to disposal in

the E-Area vaults, which will be upgraded by TEF to accommodate that disposal; and (6) the Heating, Ventilation, and Air Conditioning System that would provide and distribute conditioned supply air to the underground Remote Handling Area (RHA) and the above-ground tritium processing area and also discharge exhaust air to the environment via a 100-foot stack. By 2007, the TEF is expected to be operational and the cost of facility operation is incorporated in the Tritium Readiness Subprogram budget.

Advanced Design and Production Technologies (ADAPT)	**78,757**	**53,499**	**53,465**

The ADAPT Subprogram integrates and develops new technologies and enhanced capabilities to improve the effectiveness of the nuclear weapons complex design-to-manufacturing capabilities and to deliver qualified refurbishment products upon demand. This is achieved by providing agile manufacturing capabilities that can quickly respond to emerging stockpile requirements. At the laboratories and plants, ADAPT activities focus on fast-turn-around engineering solutions through virtual prototypes and implementing modern product data management and collaboration tools. Additionally, ADAPT activities identify, develop and integrate essential applied technology capabilities to achieve rapid product realization meeting Nuclear Weapons Complex requirements and related national security needs in addition to developing qualified manufacturing processes and capabilities for delivery to other weapon activities to support directed production schedules or life extension programs.

In FY 2007, the ADAPT Subprogram planned deliverables include development and demonstration of replacement of commercially obsolete organic materials to support LEP; development and deployment of flexible, innovative, and efficient machine tools for precision part production; development of fabrication, assembly, and packaging processes for advanced and miniature electronic assemblies; demonstration of electronic neutron generator related process technologies; development of methodology to produce near-net shape objects; instituting advanced capabilities for metal recycling and purification, for manufacturing and qualifying explosives to meet main charge requirements for existing stockpile, and for alternate detonator systems for firing site use.

Total, Readiness Campaign	**265,472**	**216,567**	**205,965**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Stockpile Readiness	
The decrease delays the following: development of paperless part production; and secure automated information system.	**-13,510**
High Explosives (HE) and Weapon Operations	
Reflects the planned increases in ongoing projects to complete deployment of main charge manufacturing, pit requalification, and interactive electronic procedures.	**+262**
Nonnuclear Readiness	
Reflects new deployment of plastics process technology and agile machining capabilities and planned increases for ongoing work including reservoir production readiness and neutron generator testing.	**+2,827**
Tritium Readiness	
Supports the redesign of the TPBARs to improve performance in the production of tritium; design analysis for TPBAR performance including modeling and testing activities; continued irradiation cycles to demonstrate the TPBAR ability to produce tritium in quantities consistent with stockpile needs; start up activities to bring on line the Sequoyah Unit 1 reactor for demonstration of tritium permeation results and support tritium production; monitoring of baseline tritium levels at the Sequoyah reactors; licensing activities; fuel price increases; additional transportation and consolidation redesign activities; and, other risk mitigation activities to address program uncertainties ($20M). This increase also funds the start-up and operation of the TEF: additional runs; and waste container redesign activities ($5M).	**+24,318**
Tritium Readiness Construction	
The decrease is consistent with the final year of funding for project 98-D-125, Tritium Extraction Facility, Savannah River Site.	**-24,645**
Advanced Design & Production Technologies	
Funds projects deferred in previous budget years due to higher priorities.	**+146**
Total Funding Change, Readiness Campaign	**-10,602**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	0	0	0
Capital Equipment	40,875	42,102	43,365
Total, Capital Operating Expenses	**40,875**	**42,102**	**43,365**

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
98-D-125, Tritium Extraction Facility	407,899	74,558	20,834	24,645	0	0
Total, Construction			**20,834**	**24,645**	**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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

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 Appro-priations	FY 2005	FY 2006	FY 2007	Completion Date
Coordinate Measuring Machine #1, Y-12 National Security Complex	7,991	7,641	6,441	1,200	0	0	FY 2005
Coordinate Measuring Machine #2, Y-12 National Security Complex	2,305	2,065	2,065	0	0	0	FY 2007
Coordinate Measuring Machine #3, Y-12 National Security Complex	6,000	5,700	0	5,700	0	0	FY 2007
Hydroforming Unit, Y-12 National Security Complex....	1,695	1,545	1,545	0	0	0	FY 2006
Vacuum Annealing Equipment, Y-12 National Security Complex	3,293	3,000	2,158	842	143	0	FY 2006
Low-Energy X-Ray Machine, Y-12 National Security Complex	4,943	4,493	1,643	2,850	0	0	FY 2006
Scanning Electron Microscope, Y-12 National Security Complex	5,100	5,100	5,100	2,000	3,000	0	FY 2008
Electro Polisher, Y-12 National Security Complex	1,653	1,503	600	903	0	0	FY 2006
Electron Beam Weld Inspection, Y-12 National Security Complex	2,644	2,494	385	2,109	0	0	FY 2007
9-MeV Linac, Y-12 National Security Complex....	4,210	3,350	0	2,000	1,350	0	FY 2007
Microwave Deployment, Y-12 National Security Complex	7,587	6,587	0	547	3,150	2,890	FY 2008
Computer Numerical Controller Lathe and Glovebox, Y-12 National Security Complex	6,870	5,870	475	3,395	2,000	0	FY 2008
Multi – axis Orbital machining Center, Y-12 National Security Complex....	3,500	2,500	0	0	500	1,323	FY 2008
Agile Machine Tool, Y-12 National Security Complex ...	4,222	3,222	0	0	3,222	0	FY 2007

(dollars in thousands)

Major Item of Equipment	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2005	FY 2006	FY 2007	Completion Date
Total, Major Items of Equipment.....				21,546	13,365	4,213	

Readiness in Technical Base and Facilities

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Readiness in Technical Base and Facilities			
Operations of Facilities	1,114,182	1,166,151	1,203,786
Program Readiness	105,315	104,681	75,167
Special Projects	38,331	0	0
Material Recycle and Recovery	83,667	72,003	69,982
Containers	22,487	17,074	20,130
Storage	21,494	24,970	35,285
Subtotal, Operations and Maintenance	**1,385,476**	**1,384,879**	**1,404,350**
Construction	272,236	259,876	281,422
Total, Readiness in Technical Base and Facilities	**1,657,712**	**1,644,755**	**1,685,772**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Target Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Readiness in Technical Base and Facilities				
Operations of Facilities	1,214,407	1,256,152	1,289,433	1,361,954
Program Readiness	83,400	90,178	98,211	101,579
Special Projects	0	0	0	0
Material Recycle and Recovery	73,193	78,297	80,471	83,336
Containers	14,712	15,251	15,572	15,957
Storage	36,770	27,810	28,621	29,874
Subtotal, Operations and Maintenance	1,422,482	1,467,688	1,512,308	1,592,700
Construction	345,104	366,125	395,202	416,241
Total, Readiness in Technical Base and Facilities	**1,767,586**	**1,833,813**	**1,907,510**	**2,008,941**

Description

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 to plan, prioritize, and construct state-of-the-art facilities, infrastructure, and scientific tools that are not directly attributable to Directed Stockpile Work (DSW) or a campaign, within approved baseline costs and schedule.

The RTBF Program achieves this goal so that NNSA program facilities are operationally ready to execute nuclear weapons stockpile stewardship tasks on time, as identified by 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 containers sufficient to support the requirements of the nuclear weapons stockpile.

To accomplish the RTBF mission, the NNSA must reverse the deterioration of its nuclear weapons infrastructure, restore lost production capabilities, and modernize selected facilities in order to conduct scheduled refurbishments. The NNSA must also become more responsive to current and future national security challenges, which requires revitalizing the nuclear weapons infrastructure. As highlighted by the Department of Defense Nuclear Posture Review, a highly responsive infrastructure itself can become part of a credible deterrent to our adversaries. RTBF plays a central role in this effort, and must continue to invest in improving the efficiency of the NNSA facilities and strengthening the technical base.

The RTBF Construction Program plays a critical role in revitalizing the Nuclear Weapons Manufacturing and Research and Development infrastructure. Investments from this program will design and construct facilities that support the nuclear weapons complex, improving the responsiveness and/or functionality of the infrastructure and its technology base. Before advancing to capitalized design efforts, conceptual designs for the projects are usually prepared using operating funds. The conceptual design for a particular project might exceed $3.0 million based on the size, complexity, or other factors. In accordance with 50 United States Code (USC), Section 2746, which requires identification of projects whose conceptual designs exceed the $3.0 million threshold, the following are projects that might or will exceed this threshold: the Uranium Processing Facility (06-D-140) at Y-12, the TA-55 Reinvestment Project at LANL, and the Component Evaluation Facility at Pantex (05-D-140).

The RTBF Program partners with two other major elements within Weapons Activities with a focus on the overall nuclear weapons complex. Those two elements are the Facilities and Infrastructure Recapitalization Program and Responsive Infrastructure. The RTBF Program partners with the Facilities and Infrastructure Recapitalization Program (FIRP) to restore the facilities and infrastructure of the nuclear weapons complex and maintain them in appropriate condition to support the mission. The RTBF funds maintenance of the complex and makes capital investments to sustain the complex into the future. This ensures that facilities necessary for immediate programmatic workload are maintained sufficiently to support that workload. The FIRP is a capital renewal and sustainability program that was established principally to reduce the large backlog of deferred maintenance that had developed during the 1990s to an appropriate level, consistent with industry best practices. The FIRP funding reduces deferred maintenance, recapitalizes the infrastructure, and reduces the maintenance base by eliminating excess real property. From now until completion of the FIRP program, the NNSA will institutionalize responsible and accountable facility management practices and provide funding levels needed to sustain the complex at industry standard best practice levels or better.

The RTBF Program is also partnering with Responsive Infrastructure efforts within Directed Stockpile Work. The objective of Responsive Infrastructure implementation is to ensure the NNSA infrastructure is capable of maintaining the required stockpile size and composition and provides capabilities to achieve specified objectives. The RTBF program is involved in the decisions supporting the improved governance of the complex by maintaining inventory of existing infrastructure capabilities, supporting decisions to right-size the complex, and consolidation of materials to assist in footprint reduction thereby reducing costs associated with long-term security requirements.

External Independent Reviews (EIRs)
Beginning in FY 2005, the cost of conducting External Independent Reviews (EIRs) for Capital Asset Projects greater than $5 million within the RTBF Program has been funded by this program. EIRs are required by the Department of Energy (DOE) Manual 413.3-1, *Project Management for the Acquisition of Capital Assets,"* and DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets. 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 CD-3. These funds, which are managed by the Office of Engineering and Construction Management, are exclusively used for EIRs directly related to these projects funded within the RTBF Program. Beginning in FY 2007, the EIR business line will be financed via the Working Capital Fund to achieve parity on how EIRs are funded and to standardize the administration of these activities.

The House of Representatives (HR) Energy and Water Development Appropriation Committee Report Accompanying HR Report 4614, stated: "*The Committee considers compliance, by all parts of the Department, with Project Management Order 413.3 to be essential. The Committee also expects that all elements of the Department, including the NNSA, will comply with the requirements of Project Management Manual 413.3-1 for capital asset acquisition….* In FY 2007, the following Projects will be subject to EIR:

1. Test Capabilities Revitalization Project, Phase II, at the SNL;
2. TA-55 Radiography Facility project at the LANL and,
3. Radioactive Liquid Waste Treatment Facility Replacement Project at the LANL.

Benefits
Within the RTBF Program, six subprograms provide unique contributions:

- *Operations of Facilities* operates and maintains NNSA-owned programmatic capabilities in a state of readiness, ensuring that each capability (including both workforce and facilities) is operationally ready to execute programmatic tasks identified by the campaigns and DSW. This activity funds maintenance of the complex and makes capital investments to sustain the complex into the future.

- *Program Readiness* involves selected activities that support more than one facility, campaign, or DSW activity, and are essential to achieving the objectives of the Stockpile Stewardship Program.

- *Material Recycle and Recovery* is responsible for the recycling and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement operations in support of weapons and components.

- *Containers* responds to the needs of the nuclear weapons complex by providing directive-approved 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 for nuclear materials and components.

- *Storage* enhances national security by providing effective storage and management of surplus pits, highly enriched uranium (HEU), and other weapons and nuclear materials in compliance with DOE/NNSA requirements.

- *Construction* is a capital acquisition subprogram composed of independent Line Item Construction projects that are created to address specific needs. These needs include replacement of aging facilities, incorporation of modern safety, security, and environmental protection standards, reconfiguration and consolidation to improve the efficiency of the nuclear weapon complex, and incorporation of new technology to provide infrastructure that is responsive to the future needs of the program. Each line item project is independently reviewed and funded by Congress based on the mission need identified in the Construction Project Data Sheet (CPDS) submitted to Congress. A table of RTBF Construction projects is provided in the Capital Operating Expenses and Construction Summary section.

Major FY 2005 Accomplishments – RTBF

- Exceeded corporate facility availability goals to support DSW and campaign activities as mission-essential facilities were available 98.8 percent of scheduled days.

- Attained a safety total recordable case rate of 1.9 accidents per 200,000 hours of work, well below the Bureau of Labor Statistics Standard national average of 6.4 accidents.

- Attained NNSA complex-wide aggregate Facility Condition Index (FCI) of deferred maintenance per replacement plant value of 7.4 percent for all mission-essential facilities and infrastructure.

- Completed External Review of RTBF – O&M as recommended in OMB FY 2005 PART evaluation.

- Increased funding profiles for stabilizing, repackaging, and disposing of Inactive Actinides.

- Completed NNSA Operational Readiness Review, secured authorization to restart, and began initial operations of the Oxide Conversion Facility at the Y-12 National Security Site (Y-12). This represents completion of the last restart activity associated with the enriched uranium chemical recovery processes.

- Completed Quality Assurance Plan commitments and approved Site Offices' Quality Assurance programs. Completed Safety Software Quality Assurance Implementation Plan commitments for FY 2005.

- Completed repackaging of surplus pits at the Pantex Plant into the Sealed Insert containers.

- Continued efforts to effectively incorporate Integrated Safety Management into activity-level work planning and control process.
- Completed all scheduled shipments of special nuclear materials from Los Alamos National Laboratory (LANL) TA-18 to the Nevada Test Site (NTS) Device Assembly Facility (DAF) and Y-12 in support of the Secretarial Security Initiative de-inventory goals of 10 shipments.

- Designed, fabricated, and issued a National Security Exemption for the Jemima Plate Specialty Package to support the TA-18 Early Move project in a very compressed, 6-month timeframe.

- Issued an Off-site Transportation Certificate for the DPP-2 container for subcritical experiment contents. This was the initial certification of the DPP-2 container.

- Initiated designs (attained Critical Decision (CD)-1) for 2 projects (Test Capabilities Revitalization, Phase 2 at SNL and Component Evaluation Facility at Pantex and cancelled 1 project (DX High Explosive Characterization Facility at LANL).

- Initiated construction (attained CD-3) for 2 projects, Building 12-44 Production Cells Upgrades at the Pantex plant and National Security Sciences Building at LANL.

- Completed Stockpile Management Restructuring Initiative project at the Pantex Plant (PX) in 3rd Quarter FY 2005.

- Completed Sewage Treatment Quality Upgrade project at the Pantex Plant in 3rd Quarter FY 2005.
- Completed Sensitive Compartmented Information Facility project at Lawrence Livermore National Laboratory (LLNL) in 1st Quarter FY 2005.

- Completed Storm Drain, Sanitary Sewer, and Domestic Water System Modernization project at SNL in 1st Quarter FY 2005.

- Completed Electrical Power Systems Safety, Communications, and Bus Upgrade project at NTS in 4th Quarter FY 2005.

- Completed Test Capabilities Revitalization Project, Phase I, at SNL in 4th Quarter FY 2005.

Major Outyear Considerations

The major goal of the Readiness in Technical Base and Facilities Program is to operate and maintain the NNSA program facilities in a safe, secure, efficient, reliable and compliant condition within the resources available. The RTBF Program continues to be challenged by the continued aging of the NNSA complex and the escalating requirements and costs associated with nuclear facility safety and compliance. The future will be more challenging as the NNSA continues to become more responsive to current and future national security challenges, which require revitalization of the nuclear weapons infrastructure. In order to address these challenges, RTBF will realize efficiencies through the use of activity based costing principles for selected key facilities, and standardized accounting with a more detailed national Work Breakdown Structure. In addition, RTBF intends to manage available infrastructure support resources to prioritize and fund selected projects that will consolidate program activities, reduce program footprint, and refurbish scientific process equipment as needed to support priority program work.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2005, The OMB evaluated the RTBF Program using the PART. The OMB gave the RTBF program scores of 100 percent on the Purpose and Design, and Strategic Planning Sections; 88 percent on the Program Management Section; and 56 percent on the Results Section. Overall, the OMB rated the program as 75 percent, its second highest rating of "Moderately Effective." The OMB assessment found the program has recently developed long-term performance goals against which it can measure its success; integration with the FIRP is beginning; and independent evaluations of the program trended toward showing improvements. The OMB concluded that the program does not yet have an established track record against those goals that would support a higher rating. In response to the OMB findings, NNSA management is developing mechanisms to provide more oversight of contractors; actively monitoring performance against goals and targets through the Planning, Programming, Budgeting, and Execution/Evaluation (PPBE) process; integrating a broader-scope program with the FIRP; and standardizing RTBF program management across the complex.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Meet established facility operating plans and construction schedules to ensure the physical infrastructure and facilities are operational, safe, secure, and compliant, and that a defined state of readiness is sustained at all needed facilities. This includes addressing safety issues to allow restart of the Y-12 enriched uranium reduction process. (MET GOAL)	Meet established facility operating plans and construction schedules to ensure the physical infrastructure and facilities are operational, safe, secure, and compliant, and that a defined state of readiness is sustained at all needed facilities. (MET GOAL)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Annual percentage of scheduled days that mission-essential facilities are available (Annual Output)	R: 96.5%	R: 96% T: 90%	R: 98.8% T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	Annually, mission-essential facilities are available at least 90% of scheduled days.
Annual number of Reportable Accidents per 200,000 hours of work [vs. Bureau of Labor Statistics (BLS) standard average] (Annual Output)	R: 2.2	R: 1.9 T: <6.4	R: 1.9 T: <6.4	T: <5.0	T: <5.0	T: <5.0	T: <5.0	T: <5.0	T: <5.0	Annually, reportable accidents are below Bureau of Labor Statistics (BLS) national standard average
Annual NNSA complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance per replacement plant value, for all mission-essential facilities and infrastructure (the industry standard is below 5%) (Efficiency)	N/A	R: 7.2% T: 10%	R: 7.4% T: 9%	T: 7.4%	T: 6.8%	T: 6.4%	T: 6.1%	T: 5.6%	T: 5.5%	Return the condition of mission essential facilities and infrastructure to industry standards by the end of FY 2009. (Note: FCI Targets based on the latest NNSA Ten Year Comprehensive Site Plans (TYCSP) indicate that the 2009 endpoint target will not be achieved).
Annual percentage of baselined construction projects with total estimated cost (TEC) greater than $20M with actual schedule performance index (SPI) of 0.9-1.15 and cost performance index (CPI) of 0.9-1.15, as measured against approved baseline definitions (Annual Output)	N/A	N/A	R: 71%	T: 75%	T: 80%	T: 85%	T: 90%	T: 90%	T: 90%	By 2009, 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.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Operations of Facilities	**1,114,182**	**1,166,151**	**1,203,786**

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 10 CFR 830. 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; the Stockpile Management Restructuring Initiative, which includes operating support costs related to production facility downsizing, such as component rebuilds, process transfer and downsizing, qualification and process prove-in, and facility shutdown; and facility startup, standby, and Decommissioning & Decontamination (D&D), which includes costs associated with maintaining facilities in a standby status for possible further use or D&D. The funds also include support for the TA-18 Early Move of Special Nuclear Material to other locations.

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.

- **Kansas City Plant** **98,793** **87,193** **98,057**

  Operates and maintains the Kansas City Plant (KCP) in a state of readiness, prepared to execute programmatic tasks identified in the DSW and Campaigns programs. Operation of the KCP provides infrastructure support to manufacturing and engineering activities for a broad array of Directed Stockpile Work, Life Extension Programs (LEPs) and Stockpile Systems products, the associated weapon programs, and technology development and deployment activities. Operations of Facilities include costs for -- Facilities Management, Maintenance, Utilities, ES&H, Capital Equipment, General Plant Projects (GPP), and Expense-funded projects.

  Congressionally Directed Activity **5,000** **15,000** **0**

  The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $15 million for the Kansas City Plant. Base workload at the site will be displaced in FY 2006 to fund this earmark.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
▪ **Lawrence Livermore National Laboratory**	**62,540**	**73,008**	**96,906**

Funds fixed operational costs and keeps the facilities and capabilities in a safe, secure, reliable, and "ready for operations" state of readiness. Activities include, but are not limited to, building and building system maintenance; utilities; maintenance of programmatic equipment; ES&H; actions to address the safety issues, and implementation of rules, such as the Safety Basis Rule 10CFR830, Nuclear Safety Management. Infrastructure support (Facilities Support) is also included in Operations of Facilities, and funds Other Project Costs (OPC) for the RTBF line item construction projects contained in the Integrated Construction Program Plan, TA-18 Early Move, and Offsite Assignees (at NNSA Headquarters), in addition to other minor RTBF activities not specifically allocated to a facility or facility group. Starting in FY 2006, RTBF Operations of Facilities is funding Newly Generated Waste activities at $25 million; and $25 million in FY 2007 Newly Generated Waste activities are at $25.1 million.

Congressionally Directed Activity	**0**	**4,000**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $4 million for the Lawrence Livermore National Laboratory in support of the following activities: rapid prototyping activities at the Special Technology Laboratory ($2 million) and establish a public-private partnership to test and evaluate water filtration technology ($2 million). Base workload at the site will be displaced in FY 2006 to fund this earmark.

▪ **Los Alamos National Laboratory**.....	**325,279**	**227,541**	**306,258**

Funds implementation of the technologies and methods necessary to make construction, operation, and maintenance of Defense Programs (DP) facilities safe, secure, compliant, and cost effective. The goal is to ensure that mission-essential capabilities in critical nuclear facilities and other DP facilities and infrastructure are available to conduct the scientific, computational, engineering, and manufacturing activities of the Stockpile Stewardship Program. The LANL RTBF program maintains facilities and technologies in an appropriate condition, to enable the accomplishment of the DP mission.

Funds fixed operational costs and keeps the facilities and capabilities in a safe, secure, reliable, and "ready for operations" state of readiness. Funds the principal structures, equipment, systems, materials, procedures, and personnel necessary to balance the program and provide program sponsors with a facility that is safe, secure, reliable, and compliant for operations. DP direct-funded facilities include the Engineering, Manufacturing Systems and Methods Shops, Tritium, Dynamic Experimentation, Los Alamos Neutron Science Center (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. Operations of Facilities also funds infrastructure support: Line Item Other Project Costs, GPP Construction, Seismic Studies, Authorization Basis, Beryllium Rule, TA-18 Early Move and Program Management.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Congressionally Directed Activity	**0**	**46,250**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $46.25 million for the Los Alamos National Laboratory in support of the following activities: National Museum for Nuclear Science and History ($1.75 million), Arrowhead Center at New Mexico State University ($2 million), establish a National Nanotechnology Enterprise Development Center ($7.5 million), and acquire additional advanced computing capacity ($35 million). Base workload at the site will be displaced in FY 2006 to fund this earmark.

- **Nevada Test Site** **56,727** **39,951** **67,687**

Funds fixed operational costs and keeps the facilities and capabilities in a safe, secure, reliable, and "ready for operations" state of readiness. Provides essential physical and operational infrastructure to nine facilities – six located at NTS, and one each at North Las Vegas, Livermore California, and Los Alamos New Mexico. Facilities include the Device Assembly Facility, U1a Complex, Joint Actinide Shock Physics Experimental Research (JASPER), High Explosive (HE) Facility, and ATLAS Pulse Power Facility, Control Point Complex, North Las Vegas Complex, Livermore Technical Facility, and the Los Alamos Technical Facility. These unique, specialized facilities handle and test special nuclear material, and are designated RTBF mission critical. The Atlas will be maintained in "cold standby". Operations of facilities also funds line item other project costs and TA-18 Early Move activities.

Congressionally Directed Activity	**8,500**	**31,000**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $31 million for the Nevada Test Site (NTS) in support of the following activities: the operation and recapitalization of facilities ($7.5 million), University of Nevada at Las Vegas (UNLV) Research Foundation to support ongoing programs of the Institute for Security Studies ($2.5 million), Advanced Monitoring Systems Initiative ($3 million), improve and upgrade existing roads at the NTS ($7.5 million), purchase and install a Geographic Information Center ($1 million), install a fiber optic link between the NTS and Indian Springs Air Force Base ($4 million), upgrade the Emergency Operations Center within the Nevada Support Facility ($4.5 million), and continue the ongoing administration support grant for the UNLV Research Foundation ($1 million). Base workload at the site will be displaced in FY 2006 to fund this earmark.

Congressionally Directed Activity	**0**	**4,000**	**0**

The Conference Report, 109,275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), provided $4 million for two new water tanks in Area 6 of the NTS.

- **Pantex Plant** **81,523** **81,987** **96,124**

Funds facilities management and support, which includes costs associated with facilities and their ability to function effectively, such as plant and maintenance engineering, facility utilization analysis, modification and upgrade analysis, facilities planning and condition determinations, and rental of buildings and land. Maintenance activities sustain property, plant, and equipment in a condition suitable to fulfill the mission safely and reliably, including preventative, predictive,

corrective, and general maintenance. Utilities costs include the utilities management program, utility-related engineering, an energy-savings program, and operation and distribution of utility services. Work includes collection and treatment of wastewater; steam distribution and condensate return; electrical distribution; natural gas distribution; compressed air; and water production, treatment, and distribution to support domestic, industrial, and fire protection needs. Environmental protection, waste management, and waste minimization activities are performed. Safety and health activities consist of a large set of functional activities working together to achieve a safe work place. Functions include Authorization Basis documentation, emergency management, fire protection, and safety and health assurance, including Radiation Safety, Nuclear Explosive Safety, Occupational Medicine, Industrial Hygiene, and Industrial Safety. 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.

Congressionally Directed Activity **45,000** **51,000** **0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $51 million for the Pantex Plant. Base workload at the site will be displaced in FY 2006 to fund this earmark.

- **Sandia National Laboratories** **151,938** **94,812** **163,627**

Funds fixed operational costs and keeps the facilities and capabilities in a safe, secure, reliable, and "ready for operations" state of readiness. The dominant cost driver for these capabilities/facilities is the staff (SNL and contract labor) required to keep the capability operational. The capabilities and associated facilities funded by RTBF Operations of Facilities are Tech Area III Full Scale Test, Microelectronics Development Laboratory, Experimental Aerodynamics (Wind Tunnel), Tech Area IV Accelerators, Tech Area V Nuclear Reactors, Tonopah Test Range, Z operations and refurbishment, Nanosciences Labs, Electromagnetic Test Facilities, Materials Characterization Laboratories, Environmental Test Facilities at SNL and Livermore, Neutron Generator Production Facility, Primary Standards Laboratory, and Waste Management Activities. The Microsystems and Engineering Sciences Applications (MESA) and Z refurbishment facilities come on-line in FY 2007. In FY 2007, the operational support for the Z facility has been transferred from the ICF Campaign; however, it is operated at half the single-shift rate following completion of Z refurbishment.

Congressionally Directed Activity **13,000** **31,500** **0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $31.5 million for the Sandia National Laboratories (SNL) in support of the following activities: modification of the Z-Beamlet laser at the Z Pinch ($11 million), MESA operations ($12 million), establish a National Nanotechnology Enterprise Development Center ($7.5 million), and Advanced Engineering Environment ($1 million). Base workload at the site will be displaced in FY 2006 to fund this earmark.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **Savannah River Site (SRS)**	**96,673**	**88,899**	**100,013**

Funds facilities management and support activities that maintain the facilities and infrastructure in a state of readiness for mission operations. Preventive, predictive, and corrective maintenance of process and infrastructure equipment and facilities is performed. Environmental, safety, and health activities are conducted to ensure the well being of SRS workers, the public, and the environment. Contracted costs of providing utilities to the Tritium Facility are included, as well. 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. In FY 2007, ongoing projects will upgrade Alternative Acorn reservoir production capacity needed for future production schedules.

▪ **Y-12 National Security Complex**.....	**73,882**	**169,686**	**191,092**

Funds operation and maintenance of mission-essential facilities in a state of readiness, in which each facility is operationally ready to execute programmatic tasks within multiple DP mission elements. Provides for the management of the thirteen production and production support facilities and related facility systems. These facilities are operated to ensure compliance with ES&H requirements and DOE orders, and to ensure the availability of the facilities for all DP programmatic objectives. An 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. Also included are limited deactivation activities in Building 9206 and common site support activities.

Starting in FY 2006, RTBF Operations of Facilities will also fund Newly Generated Waste activities at $22.0 million; in FY 2007 activities are at $20.6 million.

Congressionally Directed Activity	**57,000**	**45,750**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $45.750 million for the Y-12 National Security Complex in support of the following activities: Plasma Separation Process High Energy Storage Isotope Research ($3.750 million), Secure Wireless Technologies ($2 million), and designated site support ($40 million). Base workload at the site will be displaced in FY 2006 to fund this earmark.

▪ **Institutional Site Support**.....	**31,077**	**56,924**	**84,022**

Supports corporate activities across the nuclear material complex including: re-packaging and disposition of inactive actinide materials, 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. Examples of assessments and reviews include analyses of evolving production requirements, forecasting of nuclear material supply and demand, and external independent reviews of line item construction projects. Funding is also provided for additional maintenance of programmatic equipment and real property, preparation of non-process contaminated facilities for demolition, consolidation activities and other activities supporting footprint reduction.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Includes support of $4.2 million for Landlord costs associated with the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo and support of $2.6 million for pension liabilities at former Defense Programs sites.

Congressionally Directed Activity..... **7,250** **17,650** **0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103), earmarked $17.650 million for Institutional Site Support activities in support of the following activities: not-for-profit Technology Ventures Corporation for technology transfer and commercialization efforts at the National Laboratories and Nevada Test Site ($3.5 million), risk-based data management within the state of Oklahoma ($1.150 million), robotics repetitive system technology ($2 million), multi-platform dosimeter radiation detection devices within the state of Washington ($1.5 million), airborne particulate threat assessment within the state of Pennsylvania ($2 million), command and control of Vulnerable Materials Security System within the states of Pennsylvania and New Jersey ($2 million), Consortium on Terrorism and Fire Science at University of Nevada at Reno ($3 million), continue operations and security at the Atomic Testing History Institute ($.50 million), and radio-analytical services laboratory at the UNLV Research Foundation ($2 million). Base workload at the site will be displaced in FY 2006 to fund this earmark.

Program Readiness..... **105,315** **104,681** **75,167**

Supports selected activities that rely on more than one facility, Campaign, or DSW activity, and are essential to achieving the objectives of the Stockpile Stewardship Program.

- At KCP, Program Readiness supports the training, development, and technical apprenticeship of new associates for critical skills and the technical resource pipeline required to sustain critical production and engineering capabilities in support of DSW.

- At NTS, Program Readiness activities include logistical support for laboratory staff permanently located in Nevada, including facilities, equipment, and administrative and technical support. Efforts related to offsite monitoring, weather, cultural resources, hydrology, and geology are also supported. Legacy environmental compliance issues that resulted from years of nuclear testing activities in Nevada are addressed, as well as regulatory requirements and efforts to avoid potential compliance orders. The Federal Facility Agreement and Consent Order and the Legacy Rehabilitation projects continue to be supported in FY 2007, along with historical archiving and seismic monitoring activities. The Borehole Management Program will continue to close the remaining NTS legacy boreholes in accordance with the approved site execution plan to comply with state environmental regulations. The NTS Equipment Revitalization Program will continue to replace and modernize NTS equipment that is obsolete in accordance with NTS's Comprehensive Capital Equipment Plan.

- At Pantex Plant, Program Readiness activities include operational quality assurance, production assurance, critical skills, and program readiness program management. Production assurance provides management and oversight capabilities to integrate program readiness across all program areas.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

- At SNL, Program Readiness includes Microsystems, Infrastructure Readiness (MIR) Materials Science, and the Sandia team that supports NTS test readiness activities. SNL Program Readiness also supports the Knowledge Management program for transitioning new engineers into the weapons program, and Russian Program that support unclassified exchange with Russian institutes under the auspices of Weapons Safety and Security Exchange.

- At Y-12 Plant, program readiness activities include the Chronic Beryllium Disease Prevention Program (CBDPP) and a sampling and monitoring program to assure that workers are adequately protected from the hazards associated with handling of Beryllium.

Program Readiness also supports the Nuclear Criticality Safety Program (NCSP). The NCSP, developed in response to DNFSB Recommendation 97-2, maintains a base nuclear criticality skills and technical capability necessary to support all operational criticality safety programs in the Department's nuclear facilities.

Special Projects **38,331** **0** **0**

Special Projects provides for activities that require special control or visibility, or do not fit easily into other categories.

Material Recycle and Recovery **83,667** **72,003** **69,982**

Material Recycle and Recovery provides for the recycle and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement of weapons and components. It also supports the implementation of new processes or improvements to existing processes for fabrication and recovery operations and for material stabilization, conversion, and storage. It supports the process of recycling and purifying the above materials to meet specifications for safe, secure, and environmentally acceptable storage, and to meet the directive schedule for tritium reservoir refills.

- At LANL, Materials Recycle and Recovery activities include response to uranium 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 SRS Tritium Facility, Material Recycle and Recovery 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 missions.

- At Y-12, Materials Recycle and Recovery 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 Management and to assure safe and secure handling of materials on-site. In addition, Material Recycle and Recovery includes the Central Scrap Management Office that manages the receipt, storage, and shipment of

(dollars in thousands)

FY 2005	FY 2006	FY 2007

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.

- Material Recycle and Recovery activities include responses to uranium stabilization / decontamination / repackaging; nuclear materials information management; a small amount of generic criticality safety support, and nuclear materials planning and reporting. Materials Recycle and Recovery is principally accomplished at Y-12, LANL, and SRS Tritium Facility.

Containers **22,487** **17,074** **20,130**

The RTBF Containers sub program provides for 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. New container systems are developed to improve safety, security, and maintainability; they are also designed to accept a broader array of contents to minimize the number of specialized containers that have to be maintained. Refurbishment work to provide containers to support specific DSW Dismantlement and Life Extension Programs is funded by the individual program.

Storage **21,494** **24,970** **35,285**

Storage provides for effective storage and management of national security and surplus pits, HEU, and other weapons and nuclear materials in compliance with DOE/NNSA requirements. This includes the cost of receipt, storage, and inventory of nuclear materials, non-nuclear materials, HEU, enriched lithium, and components from dismantled warheads. Storage also 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, storage 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 & Inspection Surveillance includes surveillance activities associated with pits in storage. Activities include weight and leak testing, visual inspections, and radiography.
- At Y-12, storage 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 (NMMS&D) program provides programmatic guidance and support of these materials and services throughout the Nuclear Weapons Complex. 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.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Construction	**217,236**	**246,876**	**281,422**

The RTBF Construction program 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 RTBF Construction projects are listed in the Construction Projects table in the Capital Operating Expenses and Construction Summary section.

The Construction program includes the cost of new and ongoing line item construction projects that support the nuclear weapons complex, except for the major programmatic specific projects that support specific campaigns. RTBF Construction projects range from complex, state-of-the-art facilities and advanced scientific and technical tools, to replacement facilities and basic infrastructure. The RTBF Construction program 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. Both are critical to ensure a reliable nuclear weapons stockpile.

To effectively support both the near and long-term needs of the weapons complex, the RTBF Construction program must be flexible and responsive to diverse and evolving program and facility requirements. The Integrated Construction Program Plan (ICPP), established in FY 2002 by the Deputy Administrator for Defense Programs and the Associate Administrator for Infrastructure and Environment, is the planning and prioritization document that integrates the line item construction plans included in the sites' Ten Year Comprehensive Site Plans with the FYNSP. Through the ICPP and associated processes, NNSA ensures the construction program is appropriately aligned and integrated with validated program requirements, and resources are optimally allocated to individual projects based on established priorities and demonstrated readiness.

Congressionally Directed Activity	**5,000**	**2,000**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006. (P.L. 109-103) provided $2 million for Construction activities for Project 05-D-140 PE&D Impact Resistant Bunkers at PX.

Congressionally Directed Activity	**50,000**	**11,000**	**0**

The Conference Report, 109-275, accompanying the Consolidated Appropriations Act, 2006. (P.L. 109-103) provided $11 million for Construction activities for Project 01-D-124 Highly Enriched Uranium Materials Facility at the Y-12 Plant.

Total, Readiness in Technical Base and Facilities	**1,657,712**	**1,644,755**	**1,685,772**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Operations of Facilities	
▪ Kansas City Plant – The decrease represents the net change resulting from increased operating costs and supporting higher than expected projections in pension costs. The Congressional earmark reflected in the FY 2006 appropriation is not requested in FY 2007.	**-4,136**
▪ Lawrence Livermore National Laboratory – The increase addresses Defense Nuclear Facilities Safety Board (DNFSB) recommendations accepted by NNSA and requirements from the Office of ES&H Evaluations; initiates upgrades and refurbishment of programmatic equipment in RTBF facilities; and supports increased labor costs due to inflation, TA-18 Early Move and CEF OPCS. Increase also results from restoring the internal reallocation of FY 2006 funding to the LLNL. The Congressional earmark reflected in the FY 2006 appropriation is not requested in FY 2007.	**+19,898**
▪ Los Alamos National Laboratory – Increase supports higher higher costs of operating the facilities, such as utility rate increases, increases in regulatory and compliance obligation, inflation, and increases in salaries required to attract and retain staff, and TA-18 Early Move and CEF OPCs. The Congressional earmark reflected in the FY 2006 appropriation is not requested in FY 2007.	**+32,467**
▪ Nevada Test Site – The decrease is the result of decreased costs associated with placing ATLAS in cold standby and a Congressional add-on in the FY 2006 appropriation not supported in the FY 2007 request. The Congressional earmark reflected in the FY 2006 appropriation is not requested in FY 2007.	**-3,264**
Congressionally Directed Activity	
Decrease reflects a Congressional add-on in the FY 2006 appropriation not supported in the FY 2007 request.	**-4,000**
▪ Pantex Plant – The decrease reflects a Congressional add-on in the FY 2006 appropriation not supported in the FY 2007 request.	**-36,863**
▪ Sandia National Laboratories – Increases result from bringing the Microsystems and Engineering Sciences Applications (MESA) and Z refurbished facilities in to operations in FY 2007 and transferring operational support for the Z facility from ICF to RTBF Operations of Facilities. The Congressional earmark reflected in the FY 2006 appropriation is not requested in FY 2007.	**+37,315**
▪ Savannah River Site – Increase supports upgrades to loading line B to support the Alternative Acorn reservoir production strategy and other projects that will support facility infrastructure to stabilize or reduce deferred maintenance,	**+11,114**

	FY 2007 vs. FY 2006 ($000)
replace or upgrade existing obsolete equipment and upgrade the facility engineering information management system.	
▪ Y-12 National Security Complex – The decrease reflects a Congressional add-on in the FY 2006 appropriation not supported in the FY 2007 request. ...	**-24,344**
▪ Institutional Site Support – Increase reflects additional funding for maintenance of programmatic equipment and real property, preparation of non-process contaminated facilities for demolition, consolidation activities and other activities supporting footprint reduction. The Congressional earmark reflected in the FY 2006 appropriation is not requested in FY 2007. ...	**+9,448**
Total, Operations of Facilities	**+37,635**
Program Readiness	
Decrease primarily reflects transfer of the Pulsed Power Technology readiness activity to the Science Campaign, and minor changes at the other sites.	**-29,514**
Material Recycle and Recovery	
Decrease reflects efficiencies realized at SRS, with the deactivation of building 232-H and relocation of its tritium gas-handling processes into building 233-H.	**-2,021**
Containers	
Reflects an increase in container activity supporting the LANL TA-18 Early Move initiative, and special nuclear materials consolidation effort at various sites.	**+3,056**
Storage	
Increase supports two activities at Y-12: 1) procurement of 500 additional rackable can storage boxes (RCSBs) needed to implement material transfer to the new storage facility, and 2) accelerated materials-consolidation initiatives needed to address the new Design Basis Threat guidance.	**+10,315**

	FY 2007 vs. FY 2006 ($000)
Construction	
▪ Increase: Supports ongoing construction projects at planned levels and funding needed to continue or complete design for projects initiated under Project Engineering and Design in FY 2003, 2005, 2006, and 2007. Due to changing mission requirements, the Building 942 Renovation, SNL is no longer needed and has been canceled. This change affects both PED and Line Item construction funding, which has been reallocated to other program requirements. Reflects adjustments to CEF line item and PED profiles.	
▪ Initiates design for one new subproject: Consolidate and Renovate Computing Facilities, KCP.	
▪ Initiates one new line item construction project: Radioactive Liquid Waste Treatment Facility Upgrade Project, LANL.	**+34,546**
Congressionally Directed Activity	
Decrease reflects a Congressional add-on in the FY 2006 appropriation not supported in the FY 2007 request.	**-13,000**
Total Funding Change, Readiness in Technical Base and Facilities	**+41,017**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	61,813	63,667	65,577
Capital Equipment	41,776	43,030	44,320
Total, Capital Operating Expenses	**103,589**	**106,697**	**109,897**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	67,545	69,571	71,658	73,808
Capital Equipment	45,650	47,020	48,430	49,883
Total, Capital Operating Expenses	**113,195**	**116,591**	**120,088**	**123,691**

[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 2006 and FY 2007 funding shown reflects estimates based on projected FY 2005 obligations.

Construction Projects[a] [b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005[c]	FY 2006	FY 2007	Unappropriated Balance
07-D-140, Project Engineering & Design, VL	7,477				4,977	2,500
07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade, LANL	50,000				14,828	35,172
06-D-140, Project Engineering & Design, VL	110,908			13,972	51,577	45,359
06-D-402, NTS Replace Fire Stations No. 1 and No. 2, NTS	28,839			8,201	13,919	6,719
06-D-403, Tritium Facility Modernization, LLNL	11,878			2,574	7,810	1,494
06-D-404, Building B-3 Remediation, Restoration and Upgrade NSO	16,000			15,840	0	160
05-D-140, Project Engineering & Design, VL	31,030		14,485	6,930	9,615	0
05-D-401, Bldg 12-64 Upgrade, PX	35,902		24,902	10,890	0	110
05-D-402, Beryllium Capability Project, Y-12	16,441		3,598	7,623	5,084	136
04-D-103, Project Engineering and Design, VL	7,011	3,543	1,488	1,980	0	0
04-D-125, Chemistry and Metallurgy Research Facility Replacement (CMRR), LANL	672,160	9,941	39,684	54,450	112,422	455,663
04-D-126, Building 12-44 Production Cells Upgrade, PX	12,465	9,886	2,579	0	0	0

[a] The TEC estimate is for design only for the PED projects included in 07-D-140, 06-D-140, 05-D-140, 04-D-103, 03-D-103, 02-D-103, and 01-D-103.

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

[c] The appropriated amounts for FY 2005 reflect reductions due to the rescission of 0.8 percent and reductions for prior year balances of $6,482,605 from 03-D-102, National Security Sciences Building, LANL included in the Consolidated Appropriations Act 2005 (P.L. 108-447).

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005[c]	FY 2006	FY 2007	Unappropriated Balance
04-D-128, Criticality Experiments Facility (formerly TA-18 Mission Relocation Project), LANL/NTS	102,887	3,768	0	12,870	24,197	62,052
04/D-102, Exterior Communications Infrastructure Modernization, (ECIM) SNL	25,187	24,628	550	0	0	9
04-D-101, Test Capabilities Revitalization, Phase I, SNL	47,317	47,078	239	0	0	0
03-D-102, National Security Sciences Bldg, LANL	98,365	54,875	37,100	6,390	0	0
03-D-103, Project Engineering and Design, VL	73,187	16,651	13,666	28,710	14,161	0
03-D-123, SNM Component Requalification Facility, PX	19,643	15,077	4,566	0	0	0
02-D-103, Project Engineering and Design, VL	26,044	10,465	4,970	0	0	10,609
02-D-105, Engineering Technology Complex Upgrade, LLNL	24,349	18,992	5,357	0	0	0
01-D-103, Project Engineering and Design, VL	59,413	42,985	5,953	8,910	1,565	0
01-D-124, Highly Enriched Uranium Materials Facility, Y-12	301,487	86,585	113,099	80,536	21,267	0
Total, Construction			**272,236**	**259,876**	**281,422**	**619,983**

Outyear Construction Projects

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Future Years Construction	5,046	6,161	117,136	275,241
11-D-xxx, Complex Command Center, Y-12	0	0	0	10,000
11-D-140, PED, DU/Binary, Y-12	0	0	0	10,000
11-D-140, PED, ESA Fabrication Facility Replacement, LANL	0	0	0	3,000
10-D-xxx, NW Engineering & Product Support Complex, SNL	0	0	4,000	5,000
10-D-140, PED, Complex Command Center, Y-12	0	0	4,000	4,000
09-D-xxx, TA-55 Infrastructure Reinvestment, LANL	0	12,000	12,000	12,000

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
09-D-xxx, Uranium Processing Facility, Y-12	0	55,000	90,000	90,000
08-D-xxx, TRU Waste Facility, LANL	2,500	12,000	15,000	5,000
08-D-xxx, Component Evaluation Facility, PX	14,000	30,000	30,000	0
08-D-xxx, Consolidate/Renovate Computing Facilities, KCP	5,000	5,000	6,000	2,000
08-D-xxx, Support Services Consolidation, LANL	14,000	0	0	0
08-D-xxx, Test Capabilities Revitalization – II, SNL	20,000	35,600	0	0
08-D-xxx, High Explosive Pressing Facility, PX	25,300	5,000	0	0
07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade, LANL	18,172	17,000	0	0
07-D-140, Project Engineering & Design, VL	2,500	0	0	0
06-D-140, Project Engineering & Design, VL	45,000	0	0	0
06-D-402, NTS Replace Fire Stations No. 1 and No. 2, NTS	6,719	0	0	0
04-D-125, Chemistry and Metallurgy Research Facility Replacement (CMRR), LANL	160,586	178,011	117,066	0
04-D-128, Criticality Experiments Facility (formerly TA-18 Mission Relocation Project), LANL/NTS	26,281	10,353	0	0
Total, Construction	**345,104**	**366,125**	**395,202**	**416,241**

07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade Project
Los Alamos National Laboratory (LANL)
Los Alamos, New Mexico

The project is in the conceptual design phase. Therefore, the project cost, scope, and schedule are preliminary estimates and will be revised for Critical Decision (CD) 2; Approve Performance Baseline.

1. Significant Changes

- D&D funding has been included as an FY 2011- 2012 Other Project Cost (OPC).

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2007	1Q FY 2006	4Q FY 2007	1Q FY 2008	1Q FY 2010	2Q FY 2011	2Q FY 2012

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	61,100	6,200	8,700[a]	76,000	NA[b]	76,000

4. Project Description, Justification, and Scope

Project Description:

The radioactive liquid waste treatment and disposal capability at LANL supports 15 technical areas, 63 buildings, and 1800 sources of radioactive liquid waste (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. This project will renovate and construct new facilities and systems to satisfy the RLW mission requirements.

[a] This is rough-order-of magnitude estimate and will be revised once the full details of D&D is established.

[b] The project cannot achieve baseline validation before receiving design funds. CD-2 approval is scheduled for December 2006.

Project Justification:

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.

Project Scope:

This project will re-capitalize the following RLW treatment capabilities at LANL and reduce the liquid discharge to Mortandad Canyon to zero:

1) Transuranic (TRU) waste treatment;
2) Facility/infrastructure and LLW treatment;
3) Secondary waste treatment;
4) RLW discharge system/Zero Liquid Discharge (ZLD), and
5) TRU influent storage.

The re-capitalization is needed to remediate significant deficiencies associated with the existing RLW treatment capabilities that pose a threat to the long-term availability of this function. The re-capitalization is ultimately aimed at providing an RLW treatment capability that is safe, reliable, and effective for the next 50 years in support of primary missions at LANL.

FY 2007 funding will be used to initiate construction activities. No construction funding will be used until CD 3, Approve Start of Construction, is approved.

The project will be conducted in accordance with the project management requirements in Department of Energy (DOE) Order 413.3 "Program and Project Management for the Acquisition of Capital Assets" and DOE Manual 413.3-1, "Project Management for the Acquisition of Capital Assets."

Compliance with Project Management Order: All dates are target dates since the project is still in the preliminary design, therefore, subject to change until the Performance Baseline is approved at CD 2:

- Critical Decision – 0: Approve Mission Need – 1Q FY 2005
- Critical Decision – 1: Approve Alternative Selection and Cost Range – 1Q FY 2006
- Critical Decision – 2: Approve Performance Baseline – 1Q FY 2007
- External Independent Review Final Report – 1Q FY 2007
- Critical Decision – 3: Approve Start of Construction – 4Q FY 2007
- Critical Decision – 4: Approve Start of Operations – 4Q FY 2010

5. Financial Schedule (dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2006	3,000	3,000	2,800
2007	8,100	8,100	7,400
2008	0	0	900
Construction			
2007	14,828	14,828	1,000
2008	18,172	18,172	26,000
2009	17,000	17,000	20,000
2010	0	0	3,000
Total, TEC	61,100	61,100	61,100

6. Details of Project Cost Estimate

Total Estimated Costs[b]

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Preliminary and Final Design	11,100	11,100
Construction Phase		
Site Preparation	0	N/A
Equipment	0	N/A
All other construction	35,900	N/A
Contingency	14,100	N/A
Total, Construction	50,000	N/A
Total, TEC	61,100	11,100

[a] FY 2006 Design funding was included in Project Engineering and Design (PED) in 06-D-140. Additional PED and construction funding are being requested in fiscal year 2007.

[b] This project is still in the preliminary design phase. The cost is a preliminary estimate subject to change once CD-2, Performance Baseline is approved by the Acquisition Executive at the completion of the preliminary design.

Other Project Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Conceptual Planning[a]	2,700	N/A
Start-up	3,500	N/A
D&D Phase		
D&D for removal of the existing facility	0	N/A
Other D&D to comply with "one-for-one" requirements	6,400	N/A
D&D contingency	2,300	N/A
Total D&D	8,700	N/A
Contingency for OPC other than D&D	0	N/A
Total, OPC	14,900	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)[b]	2,800	7,400	900	0	0	0	0	11,100
TEC (Construction)	0	1,000	26,000	20,000	3,000	0	0	50,000
OPC Other than D&D	3,100	800	600	800	900	0	0	6,200
D&D Costs	0	0	0	0	0	5,000	3,700	8,700
Total Project Costs	5,900	9,200	27,500	20,800	3,900	5,000	3,700	76,000

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2010
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	1Q FY 2011

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	22,600	N/A	678,000	N/A
Maintenance	3,100	N/A	93,000	N/A
Total Related funding	25,700	N/A	771,000	N/A

[a] Includes the cost for the Conceptual Design Report, National Environmental Policy Act (NEPA) documentation; environmental, safety and health (ES&H) costs.

[b] The cost of preliminary engineering and final design appropriated in 01-D-103, PED.

9. Required D&D Information

Should the new facility option be chosen as the preferred approach during conceptual design a reduction to the over-all LANL footprint will be achieved of approximately 7,000 square feet. This would occur in the FY11/12 time frame.

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

RLWTF East Annex, TA-50-001

D&D Information Being Requested	Square Feet
Area of new construction	20,000
Area of existing facility(ies) being replaced	13,400
Area of any additional space that will require D&D to meet the "one-for-one" requirement	7,000

10. Acquisition Approach

Project will be accomplished via design-bid-build approach. Design services will be obtained through competitively awarded contracts using a combination of firm fixed price and cost reimbursable pricing methods. Construction will be accomplished using a firm fixed price contracting approach.

07-D-140, Project Engineering and Design (PED) - RTBF, Various Locations

1. Significant Changes

- This is an initial PED for FY 2007 projects.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2007	2Q FY 2007	4Q FY 2008	Various	NA Various	Various	Various

3. Baseline and Validation Status[a]

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate (TEC)
FY 2007	7,477	NA	N/A	7,477	Various	42,200 - 92,000

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 project is 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, as well as very preliminary estimates of the TEC, including physical construction, of the subproject. The final TEC and

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

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.

FY 2007 Proposed Design 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 Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q FY 2007	1Q FY 2008	2Q FY 2008	2Q FY 2011	1,977	$22,200-$27,000

Fiscal Year	Appropriations	Obligations	Costs
2007	1,977	1,977	1,977

This project will construct a new 6,000 square foot Data Center, renovate an existing 10,000 square foot Data Center and consolidate equipment and operations from other auxiliary computer rooms.

Daily operations at the Kansas City Plan (KCP) are tightly integrated with the computing infrastructure as most administrative, development, and production activities (including all programs and campaign initiatives) rely on computers to gain the efficiency and accuracy advantage that enhanced computer and communication technologies offer. Production schedules require continuous availability of computer resources (24 hours, seven days a week) with minimal opportunities for scheduled maintenance or downtime. Computers have, and will continue to deliver enhanced and expanded automation opportunities to the KCP as computer and communication technologies advance yearly. However, the facilities that house these technologies were designed and built in the 1970‘s with no significant renovations or upgrades since initial construction. Existing facilities are also not configured or capable of supporting continuous operations, as temporary shutdowns are required to perform mandatory maintenance and testing of environment and first suppression systems. There is high risk of computer system failures now from any shutdown incident, as equipment restarts frequently result in component failures. Significant reconfiguration and renovation of computer facilities must be accomplished in order to ensure the continued availability and viability of the sites computer capabilities. Current computer facilities are not adequate to sustain anticipated growth beyond FY 2005. This line item will begin to alleviate space restrictions beginning with the operational use of the new Data Center in FY 2009, and then follow with renovation of the existing Data Center in FY 2010 and FY 2011. In the interim, continued incremental reconfigurations to existing facilities will be required to maintain capabilities.

07-02: Tru Waste Facilities, 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		
2Q FY 2007	4Q FY 2008	1Q FY 2009	1Q FY 2011	5,500	$ 20,000-$65,000

Fiscal Year	Appropriations	Obligations	Costs
2007	3,000	3,000	3,000
2008	2,500	2,500	2,500

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, 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 propose project will support the continued need of TRU waste generation at LANL while Area G is prepared for closure. The proposed project will provide sufficient space to accommodate newly generated TRU Waste for the next 25 years at LANL. The Project Engineering and Design fund is requested in Fiscal Year 2007 to meet the FY 2011 deadline to start Area G closure.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2007	4,977	4,977	4,977
2008	2,500	2,500	2,500
Total, Design	7,477	7,477	7,477
Total TEC	7,477	7,477	7,477

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Design Phase		
Preliminary and Final Design Costs (Drawings/Specifications)	6,627	N/A
Design Management costs (8% of TEC)	600	N/A
Project Management costs (3.3% of TEC)	250	N/A
Total, Design Costs (100% of TEC)	7,477	N/A
Total, TEC	7,477	N/A

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	N/A	N/A
Start-up	N/A	N/A
D&D Phase		
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
Project Costs								
TEC (Design)	0	4,977	2,500	N/A	N/A	N/A	N/A	7,477
OPC Other than D&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total, Project Costs	0	4,977	2,500	N/A	N/A	N/A	N/A	7,477

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	N/A
Expected Useful Life (number of years)	N/A
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

Design services will be obtained through competitive and/or negotiated contracts. Managing and Operating (M&O) contractor staff may be utilized in areas involving security, production, proliferation, etc., concerns.

06-D-140, Project Engineering and Design (PED) - RTBF, Various Locations

1. Significant Changes

- For the Uranium Processing Facility (UPF), $15M has been added in order to advance the design development. The UPF conceptual design has advanced past the initial conceptual phase, with an increased understanding of the initial concept, a more extensive design effort than was originally anticipated is needed, hence the increase cost.

- An additional $2 million has been added to the TA-55 Radiography Facility Project to comply with nuclear facilities requirements.

- The Building 942 Renovation, SNL project has been cancelled due to higher programmatic requirements. The FY 2006 appropriated funds of $2,113 million will be reprogrammed to Defense Programs higher priorities.

- Conceptual design costs for TA-55 Reinvestment Project at LANL and the Uranium Processing Facility at Y-12 are expected to exceed the Congressional notification threshold of $3M each.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	1Q FY 2006	3Q FY 2009	Various	Various	Various	Various
FY 2007	1Q FY 2006	3Q FY 2009	Various	Various	Various	Various

3. Baseline and Validation Status[a]

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006	92,213	N/A	N/A	92,213	Various	92,213
FY 2007	108,795	N/A	N/A	110,908	Various	108,795

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.

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

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.

New FY 2006 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, as well as very preliminary estimates of the TEC, including physical construction, of each subproject. The final TEC and the Total Project Cost (TPC) for each project described below will be validated and the Performance Baseline will be established at Critical Decision 2 (CD-2), following completion of preliminary design.

None of the projects listed in this data sheet has an approved performance baseline; therefore, all costs and schedule are preliminary until CD-2 is approved.

The project will be conducted in accordance with the project management requirements in Department of Energy (DOE) Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

5. Financial Schedule[a]

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2006	13,972	13,831	10,700
2007	51,577	51,577	52,077
2008	45,000	45,000	45,659

FY 2006 Proposed Design Projects

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		
1Q FY 2006	TBD	TBD	TBD	3,836	23,000-40,000

Fiscal Year	Appropriations	Obligations	Costs
2006	1,859	1,859	1,800
2007 [a]	1,977	1,977	2,036

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

The project Mission Need was approved in January 2005. The above changes reflect this approval. However, these dates are target dates, subject to change until the Performance Baseline is approved at the Critical Decision 2.

The purpose of this project is to design and construct a replacement Radiography Facility to be located within the TA-55 Perimeter Intrusion and Detection System (PIDAS). The specifics of the design and configuration are to be optimized to meet the requirements of the associated programs. The facility will house several x-ray systems suitable for the various energy level requirements, and will provide a long-term solution for LANL sealed nuclear component radiography. Radiography of sealed nuclear components is required for the Pit Manufacturing and Certification Project (PMCP) and Pit Surveillance Program (PSP).

LANL has been assigned the responsibility for establishing and maintaining a limited pit production mission for up to 20 pits per year until a more permanent pit manufacturing facility can be designed and constructed. Non-destructive examinations (NDE) using x-ray radiography, dye penetrant, and ultrasonic examinations are a necessary component of these operations to identify material defects and verify assembly configurations. The PSP examines approximately 15 pits per year; this is expected to increase to about 25 pits per year as stockpile life extension programs are implemented. Final radiography on "pits" manufactured at Los Alamos and radiography of surveillance pits (those removed from the stockpile for destructive examination) is currently performed at another facility that is over 40 years old. This facility does not have the permanent safety and security features required to meet the demands of the revised facility authorization basis or the revised design basis threat; therefore it is not suitable for the long term. NDE in this old facility also requires secure transport and extensive temporary security measures, which are labor intensive and inefficient.

This project will (1) reduce the programmatic and schedule risk associated with anticipated changes in the safeguards and security requirements for protecting nuclear assemblies during transportation and examination outside the PIDAS at TA-55; (2) provide improved protection for workers and the environment in the event of accidental releases; and (3) be commensurate with the Laboratory goal of consolidating nuclear operations around TA-55.

06-02: TA-55 Reinvestment Project, 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		
3Q FY 2006	2Q FY 2008	1Q FY 2009	4Q FY 2015	6,859	105,000-175,000

Fiscal Year	Appropriations	Obligations	Costs
2006	2,000	1,859	1,200
2007	1,500	2,000	1,641
2008	0	0	659

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 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 project received Critical Decision 0 on December 6, 2004, and is proceeding with the development of the Conceptual Design.

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; and material handling), electrical (power distribution, standby and emergency power), and utility systems (process gasses and liquids, piping), safety, facility monitoring and control, structural components, architectural (roofing, coatings), and other systems and components, as candidate options. The candidate systems and scope have been screened by a prioritized, risk-based selection process during the pre-conceptual phase that will be refined during conceptual design.

06-03: Radioactive Liquid Waste Treatment Facility Upgrade, 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		
1Q FY 2006	3Q FY 2007	4Q FY 2007	2Q FY 2010	11,100	52,000-79,000

Fiscal Year	Appropriations	Obligations	Costs
2006	3,000	3,000	2,700
2007	8,100	8,100	8,400

The radioactive liquid waste (RLW) treatment and disposal capability at Los Alamos National Laboratory supports 15 technical areas, 63 buildings, and 1800 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 the following RLW treatment capabilities at LANL and reduce the liquid discharge to Mortandad Canyon to zero:

- Transuranic (TRU) waste treatment,
- Facility/infrastructure and low-level waste (LLW) treatment,
- Secondary waste treatment,
- RLW discharge system/Zero Liquid Discharge (ZLD),
- TRU influent storage.

06-04: Building 942 Renovation, SNL

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		
N/A	N/A	N/A	N/A	N/A	N/A

Fiscal Year	Appropriations	Obligations	Costs
2006	2,113	0	0

This project has been cancelled. The FY 2006 appropriated funds of $2,113 million will be reprogrammed to Defense Programs higher priorities.

06-05: Uranium Processing Facility, Y-12

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		
2Q FY 2006	3Q FY 2009	TBD	TBD	90,000	600,000-1,000,000

CD-0 for the project was attained in December 2004, based on preliminary data. The cost and schedule data are accordingly identified as "TBD" but will be finalized in the future.

Fiscal Year	Appropriations	Obligations	Costs
2006	5,000	5,000	5,000
2007	40,000	40,000	40,000
2008	45,000	45,000	45,000

Because of the preliminary nature of the pre-conceptual work to date, the mapping between appropriations, obligations, and costs is not well understood. As a placeholder, pending better information, the three amounts are assumed to map one-to-one. The UPF conceptual design has advanced past the initial conceptual phase, with an increased understanding of the initial concept, a more extensive design effort than was originally anticipated is needed, hence the increase cost.

This subproject provides for preliminary and final (Title I and Title II) design for the Uranium Processing Facility (UPF), a major system acquisition, that is being proposed to ensure the long-term viability, safety, and security of the Enriched Uranium (EU) capability at the NNSA's Y-12 National Security Complex 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. The goals and objectives of the UPF are as follows:

- ensure the long-term capability and improve the reliability of EU operations through consolidation of facilities.
- replacement of deteriorating, end-of-life facilities with a modern manufacturing facility.
- enhance the health and safety of workers and the public by replacing marginally compliant facilities and 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 Design Basis Threat Policy.

The UPF will consolidate all EU operations into a single, modern facility with state-of-the-art technologies and safeguards and security concepts and strategies. Core capabilities will include the following:

- 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 (casting, rolling, forming, and machining); and
- chemical processing including conversion of scrap and salvage EU to metal and other compounds.

Most of the current operations to be replaced by this project are located in facilities that are greater than 50 years old, do not meet today's standards, and are technologically obsolete. This new facility, patterned after the Highly Enriched Uranium Materials Facility's (HEUMF) Designed Denial Facility concept, will provide modern facilities, reduce the site's highest security area by about 90%, and enable a reduction in annual operating costs of up to 50%.

This project is the key element in a new Y-12 modernization approach to accelerate Special Nuclear Material consolidation, provide near-term security enhancements, reduce maintenance and operating costs.

Details of Project Cost Estimate

Total Estimated Costs[a]

Cost Element	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	77,381	65,453
Design Management costs (9.9% of TEC)	11,176	8,920
Project Management costs (18.8% of TEC)	20,238	17,840
Total, Design Costs	108,795	92,213
Total, Line Item Costs (TEC, Design Only)	108,795	92,213

Other Project Costs

Cost Element	(dollars in thousands) Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	N/A	N/A
Start-up	N/A	N/A
Offsetting D&D		
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

7. Schedule of Project Costs

	(dollars in thousands) Prior Years	FY 2007	FY 2008	Total
TEC (Design)	10,700	52,436	45,659	108,795
TEC (Construction)	N/A	N/A	N/A	N/A
OPC Other than D&D	N/A	N/A	N/A	N/A
Offsetting D&D Costs	N/A	N/A	N/A	N/A
Total, Project Costs	10,700	47,436	50,659	108,795

[a] This cost estimate is based upon direct field inspection and historical cost estimate data, coupled with parametric cost data and completed conceptual studies and designs, when available. The cost estimate includes design phase activities only. Construction activities will be requested as line items upon completion of Title I design.

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter).....	Various
Expected Useful Life (number of years).....	Various
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

(Related Funding requirements) [a]

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

Design services will be obtained through competitive and/or negotiated contracts. Managing and Operating (M&O) contractor staff may be utilized in areas involving security, production, proliferation, etc., concerns.

[a] This data sheet is for design activities only. Costs related to items in this table may be determined when construction funds are requested under separate line items.

06-D-402, Replace Fire Stations No. 1 and No. 2, Nevada Test Site

1. Significant Changes

- The project baseline has been validated by the Office of Construction and Engineering Management. As a result, $6,719,000 additional funds are needed and requested in FY 2008.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	1Q FY 2005	1Q FY 2007	3Q FY 2006	1Q FY 2008	N/A	N/A
FY 2007	3Q FY 2005	3Q FY 2007	4Q FY 2006	1Q FY 2009	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate (TEC)
FY 2006	24,707	455	N/A	25,162	0	24,707
FY 2007	31,182	705	N/A	31,887	31,917	N/A

4. Project Description, Justification, and Scope

Project Description

This project will provide for the design and construction of two new fire stations on the NTS. Fire Station No. 1 will be located at the Mercury Camp Site in Area 23 and Fire Station No. 2 will be located in Area 6 near the Control Point. The new facilities will replace existing facilities and provide the space necessary to adequately accommodate the personnel and equipment assigned to support the emergency response mission to the southern, central, and northern areas of the NTS.

Justification

The NTS is located on approximately 1,375 square miles in south central Nevada and is home to a wide variety of Department of Energy (DOE) missions associated with Readiness in Technical Base Facilities (RTBF), Directed Stockpile Work (DSW), and Science Campaigns, as well as missions from the Department of Defense (DoD). In addition, there are missions associated with the storage of radiologically contaminated hazardous wastes.

Approximately 1,000 employees and the full 1,375 square miles of the NTS are being served by Fire Stations No. 1 and No. 2, located 25 miles apart. These existing Stations were constructed to meet the 1960's codes and no longer meet current code requirements. Major areas of deficiencies affect every area of occupational safety and health, including; separation of public and living areas from the vehicular and maintenance areas; isolation of blood borne pathogens, maintenance of clothing, breathing, and other equipment in proper facilities, and the general well being of employees who could be on duty up to 56 hours at a time. The stations are manned 24 hours per day, seven days a week. These stations have seen little in the way of modernization or expansion over the past 38 years, though

the mission and responsibilities of the NTS fire department have increased dramatically over the years to include hazardous materials response capabilities, technical rescue, advanced medical services, and expanded fire alarm notification/dispatching. Another change is the addition of female personnel. These and other changes in work scope and deliverables have required additional staffing, larger specialized vehicles and equipment, and alterations to the facilities to accommodate specific mandated requirements.

The inadequacies of the existing fire stations have been documented in several reports and studies, which have identified deficiencies with National Fire Protection Association (NFPA) codes and standards that should be addressed, including: inadequate sleeping quarters; inadequate disinfection area; inadequate indoor storage for emergency vehicles; inadequate office work spaces; and inadequate facilities for cleaning personal protective equipment.

Scope

The scope of this project is to provide the NTS with NFPA compliant emergency response facilities to ensure that emergency response personnel and equipment are housed in accordance with applicable codes and standards and that the NTS has an adequate firefighting, emergency medical, technical rescue, and hazardous materials capability. Fire Station No. 1 is estimated to be 35,000 square feet (sq. ft.) and Fire Station No. 2 is estimated to be 14,500 sq. ft. Both facilities will have sufficient space to accommodate administrative functions, dormitories, exercise area, restrooms, medical treatment room, kitchen and dining areas, classrooms, and storage. The project will include the necessary infrastructure tie-ins for electrical power, sewer, water, and telecommunications systems, and will include heating, ventilation, and air-conditioning systems, lighting systems, generators, intercom system, fire alarm and suppression systems, cable television system, furnishings, compressed air system, and exercise equipment and other miscellaneous elements as may be required for complete functional facilities.

FY 2007 funding will be used to continue construction of Fire Stations. Construction funds will not be used until Critical Decision 3, Approve Start of Construction is approved.
The project will be conducted in accordance with the project management requirements in DOE Order 413.3 “Program and Project Management for the Acquisition of Capital Assets” and DOE Manual 413.3-1, Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order: All dates are target dates since the project is still in the preliminary design, therefore, subject to change until the Performance Baseline is approved at Critical Decision 2:

- Critical Decision – 0: Approve Mission Need – 1Q FY 2005
- Critical Decision – 1: Approve Preliminary Baseline Range – 3Q FY 2005
- External Independent Review Final Report – 1Q FY 2006
- Critical Decision – 2: Approve Performance Baseline – 2Q FY 2006
- Critical Decision – 3A: Approve Start of Construction Fire Station 2 – 4Q FY 2006
- Critical Decision 3B: Approve Start of Construction Fire Station 1 – 2Q FY 2007
- Critical Decision – 4: Approve Start of Operations – 1Q FY 2009

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2004	2,343	0	0
2005	0	2,343	1,000
2006	0	0	1,343
Total, Design (PED No. 04-D-103)	2,343	2,343	2,343
Construction			
2006	8,201[b]	8,201	1,000
2007	13,919	13,919	14,000
2008[c]	6,719	6,719	11,000
2009	0	0	2,839
Total, Construction	28,839	28,839	28,839
Total TEC	31,182	31,182	31,182

6. Details of Project Cost Estimate

Total Estimated Costs[b]

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	2,343	2,343
Construction Phase		
Site Preparation	0	0
Equipment	0	0
All other construction	22,927	18,705
Contingency	5,912	3,659
Total, Construction	28,839	22,364
Total, TEC	31,182	24,707

[a] Funding for the preliminary and final design was included in the PED Line Item 04-D-103.

[b] The original Appropriation was $8,284,000. This was reduced by $82,840 by a government-wide mandatory rescission of 1.0 percent (P.L 109-148).

[c] An additional $6,719,000 is requested in Fiscal-Year 2008 to comply with the cost estimated validated by the Office of Engineering and Construction Management.

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning[a]	705	455
Start-up	0	0
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	705	455
Total, OPC	705	455

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)[b]	2,343	0	0	0	0	0	0	2,343
TEC (Construction)	1,000	14,000	11,000	2,839	0	0	0	28,839
OPC Other than D&D	705	0	0	0	0	0	0	705
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	4,048	14,000	11,000	2,839	0	0	0	31,887

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	1Q FY 2009
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs[c]	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	1,500	N/A	45,000	N/A
Maintenance	500	N/A	15,000	N/A
Total Related funding	2,000	N/A	60,000	N/A

[a] Includes the cost for the Conceptual Design Report, NEPA documentation; ES&H costs.

[b] The cost of preliminary and final designs appropriated in 04-D-103, PED.

[c] Rough order of magnitude estimate.

9. Required D&D Information

N/A

10. Acquisition Approach

Conceptual design and preliminary design will be performed by the on-site performance-based management contractor. The final design and construction will be accomplished by a firm fixed-priced contract, awarded on the best value selection criteria.

06-D-403, Tritium Facility Modernization Project (TFM)
Lawrence Livermore National Laboratory (LLNL)
Livermore, California

1. Significant Changes

- The Office of Engineering and Construction Management validated project baseline. The project focus is to modernize an existing facility, therefore, there is no plan for the D&D of existing facilities.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2006	2Q FY 2004	4Q FY 2005	4Q FY 2006	4Q FY 2009	N/A	N/A
FY 2007	2Q FY 2004	4Q FY 2006	2Q FY 2007	2Q FY 2009	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006	11,994	1,321[a]	N/A	13,315	N/A	13,315
FY 2007[b]	11,878	1,321	N/A	13,199	13,315	N/A

4. Project Description, Justification, and Scope

Project Description:

The TFM project is proposed to modernize and reconfigure the existing Tritium Facility in Building 331 (B331) at LLNL to meet projected mission needs. The project will provide enhanced hydrogen isotope research capabilities to meet the growing programmatic need to perform Research and Development (R&D) work at elevated pressures, high purities, and cryogenic-to-high temperatures. The modernized capability will support stockpile stewardship specifically by providing necessary infrastructure for high energy density physics, weapons-effects and tritium/materials R&D, including aging effects on stockpile materials and components, tritium shipping and handling, and reimbursable work for others.

[a] OPC's associated with conceptual design.

[b] The FY 2006 Appropriation of $2,600,000 was reduced by $26,000 as a result of a government-wide mandatory rescission of 1.0 percent enacted by P.L 109-148. This reduced the validated Total Estimated and Total Project Costs by $26,000. The FY 2007 funding was reduced by an additional amount of $90,000 which further reduced the validated baseline.

Project Justification:

The TFM project will restore an important element of LLNL R&D capability in nuclear weapons science and to enhance the lab's core competency in this vital area. The inertial confinement fusion (ICF) research program at LLNL also requires the capability and other areas of research interest, such as hydride energy storage and tritium/environmental interactions will benefit from it. The facility is also 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).

Project Scope:

The TFM project will upgrade and modernize the tritium handling capabilities of B331, including structural, functional and operational changes to the facility as described below:

- Removal and relocation of existing tritium operations and equipment from laboratory rooms 150, 154, 158 (existing tritium laboratories) and the adjacent corridor. Approximately 3,100 square feet of B331 will be designated for TFM laboratories.

- Decontamination and renovation of the planned TFM laboratories including the removal of contaminated parts and equipment such as gloveboxes, hoods, piping, pumps and cable trays. Walls that would be retained under the TFM project would be patched and painted, and seismically reinforced. Existing floor tiles would be removed and replaced.

- Modification of these labs, including removal of sections of the existing concrete walls to provide access for large user devices (cryogenic transport vehicles) and upgrading finishes and building electrical and mechanical systems for the new user devices.

- Construction of a weather-protected staging, storage, and maintenance area for large user devices on the east side of B331. A pre-fabricated metal building, approximately 2,160 square feet in size, will be installed in the existing paved area.

- Division of the B331 Radiological Materials Area into two physically isolated and programmatically distinct segments: Increment 2 will support primarily tritium operations; Increment 1 will support primarily actinide operations. The purpose of segmentation is to permit the independent use of full Hazard Category 3 inventories in each Increment. The TFM project will provide for construction of physical barriers and separation of support systems necessary to preclude the credible simultaneous release of combined Increments 1 and 2 inventories. Installation of gloveboxes, support equipment (e.g., tritium monitors), utilities (electrical, data, compressed air, etc.) and other services necessary for TFM.

The project will be executed in two phases. Funding in FY 2006 will be used for the first phase of the project, which will be long-lead procurements of a high precision mass spectrometer and the primary tritium handling station (TPS) first fill station. The second phase using FY 2007 funds will complete all remaining work.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 "Program and Project Management for the Acquisition of Capital Assets" and DOE Manual 413.3-1, "Project Management for the Acquisition of Capital Assets."

- Critical Decision – 0: Approve Mission Need – 1Q FY 2002
- Critical Decision – 1: Approve Alternative Selection and Cost Range – 1Q FY 2004
- External Independent Review Final Report – 1Q FY 2006
- Critical Decision – 2: Approve Performance Baseline – 1Q FY 2006
- Critical Decision – 3a: Approve Long-Lead Procurement – 1Q FY 2006
- Critical Decision - 3b: Approve Start of Construction – 1Q FY 2007
- Critical Decision – 4: Approve Start of Operations – 4Q FY 2009

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2004	1,494[b]	1,494	424
2005	0	0	1,070
Construction			
2006	2,574[cd]	2,574	1,100
2007	7,810[c]	7,810	4,700
2008	0	0	3,200
2009	0	0	1,384
Total, TEC	11,878	11,878	11,878

[a] The TEC includes the cost of preliminary and final design ($1,494,000) which was appropriated in 03-D-103, Project Engineering and Design (PED).

[b] The FY 2004 appropriated amount of $1,500,000 was reduced by $6,190 by the mandatory rescission of 0.59 percent (P.L. 108-199).

[c] Includes $1,100,000 for long-lead procurement.

[d] The FY 2006 original Appropriation was $2,600,000. This was reduced by $26,000 by a government-wide mandatory rescission of 1.0 percent (P.L. 109-148). As a result, the validated Total Project Cost and Total Estimated Cost were reduced by $26,000.

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Preliminary and Final Design	1,494	1,494
Construction Phase		
Site Preparation	N/A	N/A
Equipment	4,560	4,560
All other construction	3,800	3,800
Contingency	2,024	2,140
Total, Construction	10,384	10,500
Total, TEC[a]	11,878	11,994

Other Project Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Conceptual Planning	389	389
Start-up	932[b]	932
D&D Phase		
D&D for removal of the existing facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	1,321	1,321

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)	1,494[c]	0	0	0	0	0	0	1,494
TEC (Construction)	1,100	4,700	3,200	1,384	0	0	0	10,384
OPC Other than D&D	601			720	0	0	0	1,321
D&D Costs	0	0	0	0	0	0	0	0
Total Project Costs	3,195	4,700	3,200	2,104	0	0	0	13,199

[a] The FY 2006 original Appropriation was $2,600,000. This was reduced by $26,000 by a government-wide mandatory rescission of 1.0 percent (P.L 109-448). As a result, the validated Total Estimated Cost was reduced by $26,000.

[b] Including tasks such as Project Execution Plan, Pre-Title I Options Study, Design Criteria, Safeguards and Security Analysis, Quality Assurance Planning, Operations and Maintenance Support, ES&H Monitoring, start up activities and Operational Readiness Assessments.

[c] Included in the Project Engineering and Design Line Item 03-D-103-04.

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2009
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations[a] [b] [c]	1,247	1,247	37,410	37,410
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	1,247	1,247	37,410	37,410

9. Required D&D Information

N/A: An existing facility is being upgraded.

10. Acquisition Approach

Project will be accomplished via design-bid-build approach. Design services will be obtained through competitively awarded contracts using a combination of firm fixed price and cost reimbursable pricing methods. Construction will be accomplished using a firm fixed price contracting approach.

[a] Facility operating costs are approximately $21,000 per year (representing facility maintenance and repair costs for the renovated and added floor area only), when facility is operational in 4Q FY 2009. Costs are based on the LLNL internal indirect rate Laboratory Facility Charge (LFC) for facility operating costs.

[b] The annual operating expenses for the TFM are estimated at $1,221,000 based on representative operating expenses for 3.5 to 4 additional personnel starting in FY 2009. The majority of this funding is expected to come from DOE/DP for activities in support of the Nuclear Weapons Stockpile Stewardship Program. Includes utilities cost. Utilities costs are based on LLNL expected utility recharge rates for the renovated and added floor area in FY 2009.

[c] Includes utilities cost. Utilities costs are based on LLNL expected utility recharge rates for the renovated and added floor area in FY 2009.

05-D-140, Project Engineering and Design (PED) - RTBF, Various Locations

1. Significant Changes

- The FY 2005 appropriated amount of $2,000,000 for Dynamic Experimentation (DX) High Explosives Characterization Project, LANL, less the 0.8 percent government-wide rescission enacted amount of $16,000 by Public Law 108-447, was reprogrammed to Defense Programs other higher priority activities.

- The Conference Report, 109-275, accompanying the Energy and Water Development Appropriations Act (P.L. 109-103) provide an additional $2,000,000 over the budget request for the Test Capabilities Revitalization Project, Phase 2.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	2Q FY 2005	2Q FY 2008	2Q FY 2007	4Q FY 2011	Various	Various
FY 2007	2Q FY 2005	2Q FY 2008	2Q FY 2007	4Q FY 2011	Various	Various

3. Baseline and Validation Status

(dollars in thousands)

	TEC[a]	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006	31,196	N/A	N/A	31,196	Various	31,196
FY 2007	20,118	N/A	N/A	20,118	Various	20,118

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.

[a] The TEC is for design only for the subprojects currently included in this data sheet. The TEC was reduced as a result of the cancellation of two projects: the DX High Explosive Characterization Project at the Los Alamos National Laboratory, and the Albuquerque Transportation and Technology Center. The funding was reprogrammed to Defense Program other higher priority activities.

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 2005 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, as well as very preliminary estimates of the TEC, including physical construction, of each subproject. The final TEC and the Total Project Cost (TPC) for each project described below will be validated and the Performance Baseline will be established at CD-2 following completion of preliminary design.

None of the projects listed in this data sheet has an approved performance baseline; therefore, all costs and schedule are preliminary until CD-2 is approved.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

5. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations[a]	Costs
Design			
2005	14,485 [b]	3,573	1,889
2006	6,930	6,930	6,684
2007	9,615	9,615	8,100
2008	0	0	3,445

[a] The obligations and costs reflect a reprogramming of the FY 2005 ATTC design funding of $5,952,000. They also exclude $4,960,000 appropriated for Impact Resistant Bunkers.

[b] Appropriation of $16,600,000 was reduced by 0.8 percent, or $131,000 due to the rescission included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). The FY 2005 appropriated value also reflects a reprogramming to move DX High Explosives Characterization Project funding of $1,984,000, to address other Defense Program higher priority activities.

FY 2005 Design Projects

05-01: DX High Explosives Characterization Project, LANL

This project has been cancelled. The FY 2005 appropriated funds of $1.984M were reprogrammed to Defense Programs other higher priority activities.

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		
N/A	N/A	N/A	N/A	N/A	N/A

Fiscal Year	Appropriations	Obligations	Costs
2005	0[a]	0	0

05-02: Test Capabilities Revitalization (TCR) Project, Phase II, SNL

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		
2Q FY 2005	4Q FY 2007	2Q FY 2008	4Q FY 2011	9,083	60,000-70,000

Fiscal Year	Appropriations	Obligations	Costs
2005	1,589[b]	1,589	1,589
2006	4,430[c]	4,430	4,430
2007	3,064	3,064	3,064

Congress earmarked an additional $2,000,000 over the budget request for this project in FY 2006 (Total FY 2006 Appropriation of $4,500,000. This was reduced by $70,000 by a government-wide mandatory rescission of 1.0 percent by P.L. 109-148). Part of the additional funds will be added to the design contingency account to increase the level of confidence to at least 80 percent. The balance will be used to accelerate the design of Phase 2B facilities to reduce the project overall schedule and reduce project risks due to future cost escalation.

Phase II of the Test Capabilities Revitalization (TCR) project is required to revitalize the NNSA aged and deteriorated normal and abnormal mechanical environment test capabilities at Sandia National

[a] The FY 2005 appropriation was reduced by $16,000 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). The balance of funds, $1,984,000 were reprogrammed to Defense Programs other higher priority activities.

[b] The FY 2005 appropriation was reduced by $11,000 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[c] Congress earmarked an additional $2,000,000 over the budget request for this project in FY 2006 (Total FY 2006 Appropriation of $4,500,000. This was reduced by $70,000 by a government-wide mandatory rescission of 1.0 percent by P.L. 109-148).

Laboratories (SNL) and to enable an integrated experimental strategy to develop, validate, and apply models required to perform weapon system qualifications and development activities. The facilities to be revitalized are needed to perform nuclear weapon component-, subsystem- and system-level design, development, qualification, surveillance, significant finding investigations, and model development and validation experimentation and testing.

The TCR test capabilities needs are driven by three overarching and equally important requirements. The first requirement is to maintain and modernize the existing stockpile as defined in the current *Nuclear Weapons Stockpile Memorandum*. This encompasses all maintenance and stockpile surveillance activities, as well as Significant Finding Investigations.

This requirement also includes Phase 6.2 and 6.3 development efforts that result in weapons modifications or alterations. The second requirement, stated explicitly in the 1994 Nuclear Posture Review (NPR) and reaffirmed in the 2002 NPR, is to maintain the capability to design a new weapon system, if necessary. The test capability needs arising from these two overarching requirements are to support weapon design and development efforts at Sandia and to maintain the ability to qualify weapons to the Military Characteristics (MCs) and STS. The third requirement driving Sandia test capabilities is the need to develop and validate weapon-related models. Sandia has embarked on an aggressive modeling and simulation effort under the Advanced Simulation and Computing (ASC) Campaign. To be successful, this campaign requires significant test support to aid the development, validation, and application of models.

The existing test capabilities are inadequate to reliably support mission requirements. Without revitalization, individual test capabilities will be lost over the next five years. Without labs and test instrumentation enhancements, the Modeling and Simulation approach to design, development, and qualification will not be achieved. Without improved test facilities, Sandia will not attract the high-quality test engineers and scientists needed to meet NNSA's stockpile stewardship obligations. A study conducted in 2000 found that nearly 90% of TCR's test equipment and facilities were inadequate or marginal, and only 11% were adequate to meet mission requirements. Conditions have worsened since this study and multiple system failures have delayed defense program testing and increased program expenses to make temporary repairs.

05-03: Component Evaluation Facility (CEF), Pantex

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		
4Q FY 2005	2Q FY 2008	2Q FY 2008	2Q FY 2011	11,035	101,000-135,000

Fiscal Year	Appropriations	Obligations	Costs
2005	1,984[a]	1,984	300
2006	2,500	2,500	4,184
2007	6,551	6,551	5,000
2008	0	0	1,551

CD-0 was obtained for the project in 4QFY2004 and CD-1 is forecast for 3Q FY2006.
The Component Evaluation Facility (CEF) at the Pantex Plant will consolidate and increase capability and capacity of existing technologies, and provide space for new technologies required for surveillance and re-qualification of weapons. This data sheet constitutes notification to Congress that the cost of conceptual design work may exceed the $3 million threshold.

Capabilities at the CEF will include the ability to conduct concurrent operations on multiple stockpile weapon types on a non-interference basis, to completely disassemble and inspect any insensitive-high-explosive weapon, and sufficient facility capacity to house, test, and operate new weapon diagnostics developed in the Enhanced Surveillance activities of the Engineering Campaign. The CEF will consist of a 75,000 square foot, 7 bay facility complex. The bays will house the following operations:

- High Energy Linac
- Mass Properties
- Computed Tomography
- CSA Evaluation
- Small Lot Build
- Advanced Concepts Initiative/Diagnostics Development
- Staging/Anomaly Evaluation Bay

The canned subassembly (CSA) Evaluation, Small Lot Build, Advanced Concepts/Diagnostics, and Staging Bays will be equipped with typical assembly/disassembly bay utility services to allow production flexibility. It is also planned that special process equipment for these 4 bays will be funded and installed by the weapons programs later when detailed equipment requirements are known. Process Equipment for the Linear Accelerator (LINAC), Mass Properties and cable test (CT) bays are included in the construction project.

[a] Original appropriation was for $2,000,000. This was reduced by $16,000 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). There is no change to the TEC due to a corresponding increase to the FY 2007 appropriation request amount.

05-04: Albuquerque Transportation and Technology Center (ATTC), AL

This project has been cancelled as third party financing has been approved. The FY 2005 appropriated funds of $5.952M were reprogrammed to project 03-D-102, National Security Sciences Building.

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		
N/A	N/A	N/A	N/A	N/A	N/A

Fiscal Year	Appropriations	Obligations	Costs
2005	5,952[a]	0	0

05-05: Impact Resistant Bunkers, Pantex

This project has been cancelled.

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		
N/A	N/A	N/A	N/A	4,960	N/A

Fiscal Year	Appropriations	Obligations	Costs
2005	4,960[b]	0	0

[a] The FY 2005 appropriation of $6,000,000 was reduced by $48,000 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). The project was cancelled and third party financing was approved. The remaining FY 2005 appropriated funds for $5,952,000 were reprogrammed to project 03-D-102, National Security Sciences Building.

[b] The FY 2005 appropriation was reduced by $40,000 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

6. Details of Cost Estimate

Total Estimated Cost[abc]

Cost Element	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	16,074	26,516
Design Management costs (6.7% of TEC)	1,348	1,560
Project Management costs (13.4% of TEC)	2,696	3,120
Total, Design Costs	20,118	31,196
Total, Line Item Costs (TEC, Design Only)	20,118	31,196

Other Project Costs

Cost Element	(dollars in thousands) Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning [d]	N/A	N/A
Start-up	N/A	N/A
Offsetting D&D		
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

[a] This cost estimate is based upon direct field inspection and historical cost estimate data, coupled with parametric cost data and completed conceptual studies and designs, when available. The cost estimate includes design phase activities only. Construction activities will be requested as individual line items upon completion of Title I design.

[b] The obligations and costs relect a reprogramming of FY 2005 Albuquerque Transportation and Technology Center design funding $5,952,000, and the DX High Explosives Characterization Project at Los Alamos National Laboratory $1,984,000, to Defense Programs other higher priority activities.

[c] TEC was reduced as a result of cancellation of two projects: Albuquerque Transportation and Technology Center and DX High Explosive Characterization Project at the Los Alamos National Laboratory and funding reprogrammed to Defense Programs other higher priority activities.

[d] Includes the cost for the conceptual design, NEPA documentation, Preliminary Project Execution Plan, startup, ES&H and contingency.

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	Total
TEC (Design) [a] [b]	8,573	8,100	3,445	20,118
TEC (Construction)	N/A	N/A	N/A	N/A
OPC Other than D&D	N/A	N/A	N/A	N/A
Offsetting D&D Costs	N/A	N/A	N/A	N/A
Total, Project Costs	8,573	8,100	3,445	20,118

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	Various
Expected Useful Life (number of years)	Various
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements) [c]

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

Design services will be obtained through competitive and/or negotiated contracts. Managing and Operating (M&O) contractor staff may be utilized in areas involving security, production, proliferation, etc., concerns.

[a] The obligations and costs reflect a reprogramming of the FY 2005 Albuquerque Transportation and Technology Center design funding $5,952,000, and the DX High Explosives Characterization Project at Los Alamos National Laboratory $1,984,000, to Defense Programs other higher priority activities.

[b] TEC was reduced as a result of cancellation of two projects: Albuquerque Transportation and Technology Center and DX High Explosive Characterization Project at the Los Alamos National Laboratory and funding reprogrammed to Defense Programs other higher priority activities.

[c] This data sheet is for design activities only. Costs related to items in this table may be determined when construction funds are requested under separate line items.

05-D-402, Beryllium Capability (BeC) Project
Y-12 National Security Complex, Oak Ridge, Tennessee

1. Significant Changes

- During the Department of Energy (DOE) Order 413.3 process, the National Nuclear Security Administration (NNSA) developed alternatives and worked with the Department of Defense (DoD) to reduce weapon requirements. Those changes allowed elimination of all parts of this project except for a single glovebox and significantly reduced project costs. The scope, cost and schedule have been adjusted to reflect the new weapon program and construction project requirements. It is now anticipated that $3.8 million will be required for Project Engineering Design and the remaining $16.4 million will be required for constructing the BeC. The total estimated cost (TEC) has been reduced from a range of $36–44 million to $17.2–23.3 million, and the total project cost (TPC) has been reduced accordingly.

- Since the project is still in the planning phase, the cost and schedule are preliminary estimates and are subject to change once the performance baseline is approved by the Acquisition Executive at the completion of the preliminary design [Critical Decision 2 (CD-2)].

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2005	3Q FY 2004	3Q FY 2005	1Q FY 2006	2Q FY 2008	N/A	N/A
FY 2006	1Q FY 2005	2Q FY 2006	2Q FY 2006	3Q FY 2008	N/A	N/A
FY 2007	1Q FY 2005	3Q FY 2006	3Q FY 2006	1Q FY 2008	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	40,000	10,000	N/A	50,000	N/A	50,000
FY 2006	42,998	9,804	N/A	52,802	N/A	52,802
FY 2007	24,005	7,445	N/A	31,450	2Q FY 2006	27,679

4. Project Description, Justification, and Scope

The BeC project designs, procures and installs a glovebox in an existing facility at the Y-12 National Security Complex to meet critical and urgent mission needs. The BeC project will replace previous capability that can no longer be used because it poses an unacceptable risk of exposing workers and the environment to hazardous levels of beryllium, a toxic material that causes in some people Chronic Beryllium Disease (CBD), a debilitating respiratory condition.

The BeC project will design, procure and install a glovebox in Area 3, of an existing Y-12 structure that is located within the protected area. The operation will be segregated and performed in a negative-pressure glovebox with the process exhaust routed to High Efficiency Particulate Airborne-filtered

exhaust systems. The BeC processes and equipment will be designed to satisfy the occupational action level of 0.2 $\mu g/m^3$ for suspended beryllium in air (8-hour time-weighted average). The BeC will use special design strategies to comply with 10 CFR 850, the DOE CBD Prevention Program rule, and will replace the current administrative controls and Personal Protection Equipment (PPE) with engineered controls that confine beryllium materials to protect the workers, the public, and the environment.

This strategy provides for physical separation of beryllium-containing areas from nonberyllium areas by Beryllium Buffer Areas (BBAs). The glovebox and other engineered controls will minimize the potential for operator exposure by preventing beryllium contamination in BBAs. In the event of an unplanned confinement breach, the process ventilation system will provide immediate operator protection during an evacuation. When entering the area for a planned (maintenance) breach or returning to the area after an unplanned breach, personnel will wear appropriate Personal Protection Equipment.

FY 2007 funding will be utilized to continue facility construction activities.

Compliance with Project Management Order

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

- Critical Decision – 0: Approve Mission Need – 3Q FY 2000
- Critical Decision – 1: Approve Preliminary Baseline Range – 3Q FY 2005
- Critical Decision – 2: Approve Performance Baseline - 2Q FY 2006
- Critical Decision – 3: Approve Start of Construction – 3Q FY 2006
- Critical Decision – 4: Approve Start of Operations – 3Q FY 2008

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design [a]			
2002	0[b]	0	0
2003	0[c]	0	0
2004	7,700	7,700	0
2005	0	0	1,420
2006	0[d]	(3,907) [d]	2,373
Construction			
2005	3,598[e]	3,598[e]	0
2006	7,623[f]	7,623	2,780
2007	5,084	5,084	13,360
2008	0	0	165
Total, TEC	24,005	24,005	20,005

[a] Design funding was appropriated in 02-D-103, PED.

[b] Original FY 2002 appropriation of $7,700,000 was reduced by $800,000 as part of a reprogramming to 01-D-103 for the Purification Facility design. The appropriated amount was further reduced by $1,695,000 as a result of a rescission pursuant to the FY 2002 Supplemental Appropriations Act, P.L. 107-206. Finally, the FY 2004 appropriations directed the Department to meet its obligations to make payments to the Ohio Valley Electric Corporation (OVEC) from FY 2004 funding rather than in accord with the Department's proposed reprogramming presented in FY 2003. Funding in the amount of $5,205,000 has been taken from this project to fund a portion of the Weapons Activities total financial responsibility for OVEC of $23,000,000.

[c] Original appropriation was $8,665,000. This was reduced by $56,000 by a rescission and by $196,000 by the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI. The appropriation was further decreased $876,000 by the FY 2003 reduction/reallocation reprogramming. In addition, the FY 2004 appropriations directed the Department to meet its obligations to make payments to the Ohio Valley Electric Corporation (OVEC) from FY 2004 funding rather than in accord with the Department's proposed reprogramming presented in FY 2003. Funding in the amount of $6,669,000 has been taken from this project to fund a portion of the Weapons Activities total financial responsibility for OVEC of $23,000,000. The remaining $868,000 was eliminated as part of the FY 2004 Weapons Activities use of prior balances reduction.

[d] Original FY 2004 appropriation of $7,700,000 will be reduced by $3,907,000 in FY 2006 through a Department reprogramming action.

[e] Original appropriation was $3,627,000. This was reduced by $28,627 by the rescission of 0.8 percent in the Consolidated Appropriation Act, 2005 (P.L. 108-447).

[f] A rescission of 1 percent in FY 2006 of $77,000 was included in the Department of Defense Appropriations Act 2006, P.L. 109-148); TEC was reduced accordingly.

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate	Previous Estimate
Preliminary and Final Design	3,793	6,492
Construction Phase		
Site Preparation	0	0
Equipment	6,666	11,454
All other construction	10,720	14,408
Contingency	2,826	10,644
Total, Construction	20,212	36,506
Total, TEC	24,005	42,998

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate	Previous Estimate
Conceptual Planning	2,257	450
Start-up	4,572	9,354
D&D Phase		
D&D for removal of the existing facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total D&D	0	0
Contingency for OPC other than D&D	616	0
Total, OPC	7,445	9,804

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)	3,793	0	0	0	0	0	0	3,793
TEC (Construction)	2,780	13,360	165	0	0	0	0	16,305
OPC Other than D&D	3,221	2,154	2,070	0	0	0	0	7,445
D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Project Costs	9,794	15,514	2,235	0	0	0	0	31,450

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	3Q FY 2008
Expected Useful Life (number of years)	40
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)*

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	TBD	0	TBD	0
Maintenance	TBD	0	TBD	0
Total Related funding	TBD	0	TBD	0

* These Costs to be determined during the PED Phase.

9. Required D&D Information

This project will not generate any new square footage.

10. Acquisition Approach

Overall project direction and responsibility for this project resides with the NNSA. The NNSA has assigned day-to-day management of project activities to the Y-12 Operating Contractor, BWXT Y-12. BWXT Y-12 completed Conceptual Design of this project utilizing site forces. Preliminary and detail design for this project will be performed by an architectural engineering firm under a fixed price subcontract to BWXT Y-12. BWXT Y-12 will procure the glovebox via a fixed price subcontract. BWXT Y-12 will perform final installation of the glovebox and perform all startup procedures.

04-D-125, Chemistry and Metallurgy Research Building Replacement (CMRR) Project, Los Alamos National Laboratory (LANL) Los Alamos, New Mexico

1. Significant Changes

- Construction and financial schedules reflect alternative selection and cost range information for the CMRR project approved by the Deputy Secretary of Energy via Critical Decision (CD)-1 on May 18, 2005. The CD-1 cost range is established at $745M - $975M and the schedule estimate is 8-12 years. CD-1 also included approval of the CMRR Acquisition Strategy that implements CMRR design/construction in three separate phases: Phase A, Radiological Laboratory/Utility/ Office Building (RLUOB); Phase B - Special Facilities Equipment (SFE); and Phase C - Nuclear Facility (NF).

- Concurrent with CMRR CD-1, CD-0, Approval of Mission Need, for D&D of the existing Chemistry and Metallurgy Research (CMR) Building was also approved. Consistent with FY 2007 budget guidance, initial pre-conceptual estimates for CMR D&D are identified in this CPDS. However, as CMR D&D will not be initiated until final start-up of CMRR Nuclear Facility operations currently projected to occur no earlier than FY 2014, inclusion of CMR D&D in the FY 2007 budget request is premature. Approval of CD-0 provides formal recognition by Department of Energy/National Nuclear Security Administration (DOE/NNSA) of the requirement for D&D of the existing CMR Building in advance of final funding determinations yet to be made as needed to support requisite programming, planning and budgeting actions in future year (FY 2008- 2009) budget submissions. This action also demonstrates NNSA/DOE compliance with FY 2002 Energy and Water and Water Development appropriations Bill Conference Report (107-258) "one-for-one" requirements. Preliminary cost and schedule information presented in section 9 of this CPDS for CMR D&D is based on pre-conceptual studies with costs presented in un-escalated FY 2004 dollars.

- Funding in FY 2007 has been reduced to reflect the fact that the project experienced some delays in getting the project's Critical Decisions in FY 2005.

- Critical Decisions 2 and 3 were attained for Phase in 1st Quarter FY 2006 to 2nd Quarter FY 2006.

2. Design, Construction, and D&D Schedule[a]

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start[b]	D&D Offsetting Facilities Complete[b]
FY 2004	1Q FY 2004	3Q FY 2006	2Q FY 2004	1Q FY 2011	N/A	N/A
FY 2005	3Q FY 2004	3Q FY 2007	3Q FY 2005	3Q FY 2012	N/A	N/A
FY 2006	2Q FY 2005	1Q FY 2007	1Q FY 2006	4Q FY 2010	N/A	N/A
FY 2007	3Q FY 2005	2Q FY 2007	2Q FY 2006	1Q FY 2013	TBD[b]	TBD[b]

3. Baseline and Validation Status[c]

(dollars in thousands)

	TEC[d]	OPC, except D&D Costs	Offsetting D&D Costs[b]	Total Project Costs	Validated Performance Baseline[e]	Preliminary Estimate
FY 2004	500,000	100,000	N/A	600,000	0	600,000
FY 2005	500,000	100,000	N/A	600,000	0	600,000
FY 2006	750,000	100,000	N/A	850,000	0	850,000
FY 2007	738,097	100,000	TBD	838,097	164,000	838,097

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 beyond 2010 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 in

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[a] The start of physical construction relates to CMRR Phase A, (RLUOB); complete physical construction relates to CMRR Phase C (Nuclear Facility).

[b] See Section 1, "Significant Changes", for information regarding CMR D&D. Section 9 provides preliminary pre-conceptual cost and schedule information for CMR D&D.

[c] The TEC and OPC (exclusive of CMR D&D costs) for this project reflect alternative selection and cost range information approved at CD-1, 3Q FY 2005. Updated estimates provided in this FY 2007 request reflect funding currently supported in FYNSP/ICPP for CMRR Phases A, B, and C.

[d] The TEC includes the cost of preliminary design ($66.392M) appropriated in 03-D-103, Project Engineering and Design (PED).

[e] The validated performance baseline for CMRR Phase A was attained in 1Q FY 2006. The overall preliminary estimate ($838,192,000) includes this validated value and the unvalidated estimates for Phases B and C, which are expected to be baselined in FY 2007.

or around 2010, 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, and unplanned facility outages have resulted in the operational loss of two of seven wings at the CMR Building. These operational restrictions preclude the full implementation of the level of operations DOE/NNSA requires as documented through the Record of Decision for the 1999 LANL Site-Wide Environmental Impact Statement, and the 1996 Stockpile Stewardship and Management 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) while also providing for SNM storage capabilities in order to sustain national security missions at LANL, and while reducing risks to the public and workers as described in the November 2003 Final Environmental Impact Statement for CMRR and approved in the February 2004 Record of Decision.

Scope

The CMRR project consists of three primary elements. These elements define the basic scope and drive the acquisition strategy.

- Phase A, Radiological Laboratory/Utility/Office Building (RLUOB): Construction of a facility to house laboratory space of approximately 20,000 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 heating and chilled 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 is the initial element of the CMRR and will be implemented through a Design-Build (D-B) procurement approach.

- Phase B, Special Facilities Equipment (SFE): Nuclear Process Equipment (including gloveboxes, hoods, materials transfer system, and AC/MC instrumentation). This phase of the project was established to enable timely acquisition of long-lead specialty equipment for the CMRR project and is intended to lower overall schedule risk. This phase follows the RLUOB (Phase A) and would be executed in conjunction with the Nuclear Laboratory (Phase C).

- Phase C, CMRR Nuclear Facility (NF): Construction of a facility located behind perimeter security protective systems of approximately 22,500 net square feet to house Hazard Category II nuclear laboratory space for analytical chemistry/material characterization, and actinide research & development operations. Additionally, this facility will include SNM Storage, and a large vessel handling capability.

<u>Compliance with Project Management Order:</u>

- Combined Critical Decision 1 for RLUOB, SFE and NF – 3Q FY 2005
- Critical Decision 2/3, RLUOB (Design-Build) – 1Q FY 2006
- Award RLUOB Design-Build Contract – 4Q FY 2005
- Physical Construction Start, RLUOB – 1Q FY 2006
- Critical Decision 2/3, SFE/NF (Design-Build) – 3Q FY 2007

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Preliminary Design[a]			
2004	9,499	0	0
2005	13,568[b]	20,067	1,900
2006	28,710	31,709	49,877
2007	14,161	14,161	14,160
Total, Preliminary Design (PED 03-D-103)	65,937	65,937	65,937
Final Design[c]			
2004	9,941	0	0
2005	10,063[d]	0	0
2006	0	20,004	20,004
2007	40,000	40,000	40,000
2008	73,921	73,921	73,921
Total, Final Design (TEC 04-D-125)	133,925	133,925	133,925
Total, Design	199,862	199,862	199,862
Construction			
2004	0	0	0
2005	29,621	29,621	0
2006	54,450[e]	54,450	62,605
2007	72,422	72,422	65,134
2008	86,665	88,498	89,177
2009	178,011	178,011	175,194
2010	117,066	115,233	129,261
2011	0	0	16,864
2012	0	0	0
Total, Construction (TEC 04-D-125)	538,235	538,235	538,235
Total TEC	738,097	738,097	738,097

[a] Preliminary design funding for CMRR Phases B and C were appropriated through 03-D-103, PED.

[b] PED includes a rescission of $0.108M or 0.8 percent and was based on the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[c] Final design includes funding for all CMRR Phases.

[d] The total funds FY05 appropriated in 04-D-125 was $39.684M and included $16M increase above original budget request and rescission of $0.316M or 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[e] Reflects a government-wide mandatory rescission of 1.0 percent enacted by P.L. 109-148.

6. Details of Cost Estimate[a]

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design[b]	200,317	200,317
Construction Phase		
Site Preparation	0	0
Equipment	50,869	50,869
All other construction	361,877	361,877
Contingency	125,134	125,129
Total, Construction	537,875	537,875
Total, TEC	738,192	738,192

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	24,895	24,291
Start-up	58,193	58,797
D&D Phase[c]		
D&D for removal of the offsetting facility	TBD	TBD
Other D&D to comply with “one-for-one” requirements	TBD	TBD
D&D contingency	TBD	TBD
Total, D&D	0	0
Contingency for OPC other than D&D	16,912	16,912
Total, OPC	100,000	100,000

[a] Estimate based on alternative selection and cost range (CD-1) information. The performance baseline will be established following approval of CD-2 for each CMRR phase.

[b] The preliminary design funds of $66.392M were appropriated under 03-D103 and are for CMRR Phases B and C only. The remaining $134M is for the final design of all CMRR Phases and was funded through 04-D-125.

[c] See Section 1, "Significant Changes," for information regarding CMR D&D. Section 9 provides preliminary pre-conceptual cost and schedule information for CMR D&D.

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years[a]	FY 2007[b]	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)[c]	72,071	54,325	73,921	0	0	0	0	200,317
TEC (Construction)	84,621	62,422	86,665	178,011	126,156	0	0	537,875
OPC Other than D&D	34,218	5,000	7,000	3,000	5,000	21,000	24,782	100,000
Offsetting D&D Costs	0	0	0	0	0	0	TBD	TBD
Total, Project Costs	190,910	121,747	167,586	181,011	131,156	21,000	24,782	838,192

8. Related Operational and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy Phase A (fiscal quarter)	3Q FY 2008
Start of Operation or Beneficial Occupancy Phase C (fiscal quarter)	2Q FY 2014
Expected Useful Life (number of years)	50
Expected Future start of D&D for new construction (fiscal quarter)	2Q FY 2065

(Related Funding Requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

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 $200M-$350M (un-escalated FY 2004 dollars) with an associated schedule estimate range of 4-5 years. (If this cost range is escalated to FY 2012, the cost estimate range increases to $350M-$500M). 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. The receipt of CD-0 for the D&D of the CMR Facility demonstrates NNSA commitment to the FY 2002 Energy and Water and Water Development appropriations Bill Conference Report (107-258) “one-for-one” requirement. The current FYNSP/ICPP funding profiles included in this CPDS do not include the funding for the D&D of the CMR Facility as final funding determinations have yet to be made for inclusion in the appropriate

[a] Previous project data sheets included $5,242K of Pre-Conceptual Design costs (Pre CD-0) that have been removed based on FY 2007 project data sheet guidance.

[b] Funding for FY 2007, FY 2009, and FY 2010 have been adjusted to reflect NNSA FY 2007 Program Decision Memorandum.

[c] TEC (Design) includes $66.4M in preliminary design for CMRR Phases B and C appropriated through 03-D-103.

budget year for this activity. NNSA will not initiate CMR D&D activities until completion and operational start-up of the CMRR Nuclear Facility, currently projected to be no earlier than FY 2014. As such, budget formulation for CMR D&D is premature for the FY 2007 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.

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

N/A

D&D Information Being Requested	Square Feet
Area of replacement facility: CMRR, LANL, TA-55	400,000
Area of existing facility: CMR, LANL, TA-3, building 29	550,000
Area of any additional space that will require D&D to meet the "one-for-one" requirement	0

10. Acquisition Approach

The contractor for the LANL Management and Operating Contract will implement design and Construction Management. The CMRR Acquisition Strategy is based on the use of design-build procurement strategies for each phase of the CMRR project in order to mitigate overall schedule risk. Phase A (RLUOB) will be implemented via LANL-issued traditional design-build subcontract based on performance specifications developed during CMRR Conceptual Design. Phases B (SFE) and C (NF) will be implemented via LANL-issued design-build contracts based on detailed performance requirements/specifications developed during CMRR preliminary design phase.

All DOE facilities are designed and constructed in accordance with applicable Public Laws, Executive Orders, OMB Circulars, Federal Property Management Regulations, and DOE Orders. The total estimated cost of the project includes the cost of measures necessary to assure compliance with Executive Order 12088, "Federal Compliance with Pollution Control Standards," section 19 of the Occupational Safety and Health Act of 1970, the provisions of Executive Order 12196, and the related Safety and Health provisions for Federal Employees (CFR Title 29, Chapter XVII, Part 1960); and the Architectural Barriers Act, Public Law 90-480, and implementing instructions in 41 CFR 101-19.6. The project will be located in an area not subject to flooding determined in accordance with Executive Order 11988. DOE has reviewed the GSA inventory of Federal Scientific laboratories and found insufficient space available, as reported by the GSA inventory.

04-D-128, Criticality Experiments Facility (CEF) Project, Los Alamos National Laboratory (LANL) and Nevada Test Site (NTS)

1. Significant Changes

- Construction of the Entry Guard Station was accelerated to accommodate the transfer of TA-18 programmatic special nuclear materials. Construction started in 4Q FY 2005 and completed 1Q FY 2006.

- The project baseline was approved in December 2005. As a result, the funding profile has changed to be consistent with the project baseline schedule. In addition, the approved baseline reflects an additional $1,540,282 in Project Engineering and Design to address the nuclear safety significant requirements for the criticality assembly machines identified during the preliminary safety analysis development. Further, to stay within the National Nuclear Security Future Years Nuclear Security Program, modifications of two facilities, Control Point (CP)-9 and CP-72, have been removed from the scope of this project.

- The Office of Engineering and Construction Management validated the project baseline in December 2005.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2006	4Q FY 2004	4Q FY 2006	4Q FY 2006	3Q FY 2008	N/A	N/A
FY 2007	4Q FY 2004	4Q FY 2006	3Q FY 2005[a]	3Q FY 2008	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006	105,892	36,831	N/A	142,723	N/A	142,723
FY 2007	102,887[bc]	42,316	N/A	145,203	145,203	N/A

[a] Construction of the Entry Guard Station was accelerated to start in June 2005 to accommodate TA-18 Early Move activities.

[b] Includes $25,418,000 for design funded by the PED line item 01-D-103.

[c] An additional $1,540,282 is requested in FY 2007 PED line item 01-D-103 to incorporate nuclear safety significant requirements in to the criticality assembly machines development.

4. Project Description, Justification, and Scope

Project Description:

The goal of the CEF Project is to provide a long-term base criticality experiments capability, improve the security and safety posture, and maximize the use of existing facilities. This project is conceived as the best long-term solution to achieve this goal. Equipment, special nuclear material, and capabilities will be moved from TA-18, the sole remaining facility in the United States capable of performing general-purpose nuclear materials handling experiments and conducting training essential to support national security missions. TA-18 activities include: (1) research and development (R&D) of technologies in support of Homeland Defense and counter-terrorism initiatives; (2) continued safe and efficient handling and processing of fissile materials; (3) development of technologies vital to implementing arms control and nonproliferation agreements; (4) development of emergency response technologies for response to terrorist attacks and other emergencies; and (5) training for criticality safety professionals, fissile materials handlers, emergency responders, International Atomic Energy Agency professionals, and other Federal and State organizations charged with Homeland Defense responsibilities.

Project Justification:

The need for this project is based on the projected large capital investment for security and infrastructure upgrades required over the next 10 years to remain at TA-18. The NNSA completed environmental reviews and technical and cost studies to evaluate sitting options for the TA-18 missions, and designated that the preferred alternative is to relocate a portion of the TA-18 missions to the Device Assembly Facility (DAF) at the NTS.

Project Scope:

The DAF will be modified to accommodate a base criticality experiments capability with existing DAF missions. Specifically:

- The DAF will be modified to accept four critical assemblies, two storage vaults, two control rooms, several offices, and a 60 person classified conference room with restrooms.

- The existing entry guard station will be modified to provide two automated entry lanes with biometrics.

- New personnel control fencing will be constructed within the PIDAS to allow escorted, uncleared workers access to the CEF construction sites.

- Classified workstations and telecommunications between the secure DAF and LANL in New Mexico will be provided.

In addition, four critical assembly machines will be disassembled from TA-18, transported and reassembled at the DAF. The critical assembly controls and safety systems will be upgraded to meet nuclear safety requirements.

FY 2007 funding will be used to continue construction of DAF. Construction funds will not be used until Critical Decision 3 is approved.

The project is being executed in accordance with the project management requirements in Department of Energy (DOE) Order 413.3 "Program and Project Management for the Acquisition of Capital Assets" and DOE Manual 413.3-1, Project Management for the Acquisition of Capital Assets.

- Critical Decision – 0: Approve Mission Need – 4Q FY 2002
- Critical Decision – 1: Approve Alternative Selection and Cost Range – 3Q FY 2004
- Critical Decision 2A: Approve Performance Baseline for the Entry Guard Station - 3Q FY 2005
- Critical Decision 3A: Approve Start of Construction for the Entry Guard Station - 3Q FY 2005
- External Independent Review Final Report: 1Q FY 2006
- Critical Decision – 2B: Approve Performance Baseline - 1Q FY 2006
- Critical Decision 3B: Approve early procurement of critical equipment - 2Q FY 2006
- Critical Decision – 3C: Approve Start of Construction of DAF - 4Q FY 2006
- Critical Decision – 4: Approve Start of Operations - 1Q FY 2010

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year[a]			
2001	998[b]	0	0
2002	6,426	0	0
2003	0	7,424	0
2004	1,591[c]	1,591	1,731
2005	5,953[d]	5,953	10,696
2006[e]	8,910	8,910	11,451
2007	1,540[f]	1,540	1,540
Construction			
2004	3,768[g]	3,768	0
2005	0	0	221
2006[e]	12,870	12,870	5,085
2007	24,197	24,197	37,264
2008	26,281	26,281	25,200
2009	10,353	10,353	9,111
2010	0	0	588
Total TEC	102,887	102,887	102,887

[a] Design accomplished in 01-D-103, PED.

[b] The FY 2001 Appropriations Act designated $1,000,000 for initiation of design activities for relocation of TA-18 Nuclear Materials Handling Facility at LANL. The original appropriation was $1,000,000. This was reduced by $2,000 by a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[c] Original appropriation was $1,600,000. This was reduced by $9,441 for the mandatory rescission of 0.59 percent enacted by P.L. 108-199.

[d] Original appropriation was $6,000,000. This was reduced by $47,439 for the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[e] FY 2006 original Appropriation for Project Engineering and Design was $9,000,000. This was reduced by $90,000 as a result of a government-wide mandatory rescission of 1.0 percent (P.L. 109-148). FY 2006 construction appropriation was $13,000,000. This was reduced by $130,000,000 also as a result of a government-wide mandatory rescission of 1.0 percent (P.L. 109-148).

[f] An additional $1,540,282 is requested for the Project Engineering and Design to incorporate nuclear Safety Significant requirements for the Critical Assembly Machines identified during preliminary Safety Analysis development.

[g] Original appropriation was $8,820,000. This was reduced by $52,041 for a government-wide mandatory rescission of 0.59 percent enacted by P.L. 108-199. The amount was further reduced by $5,000,000 for a reprogramming to Readiness in Technical Base Facilities (RTBF) operating funds (Operations of Facilities and Containers) to support early movement of special nuclear material from TA-18 to DAF.

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design[a] [b]	25,418	23,968
Construction Phase		
Improvement to land	3,000	3,000
Buildings	46,430	51,000
Standard Equipment	2,000	2,000
Inspection, design and project liaison, testing, checkout and acceptance	2,000	2,000
Construction Management	4,462	4,462
Project Management	3,000	3,000
Contingency	16,577	16,462
Total, Construction	77,469	81,924
Total, TEC	102,887	107,862

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning[c]	25,761	36,831
Start-up[d]	16,555	N/A
Offsetting D&D		
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	42,316	36,831

[a] FY 2006 original Appropriation was $13,000,000. This was reduced by $130,000 as a result of a government-wide mandatory rescission of 1.0 percent by P.L. 109-148.

[b] An additional $1,540,282 is requested for the Project Engineering and Design to incorporate nuclear Safety Significant requirements for the Critical Assembly Machines identified during preliminary safety analysis development.

[c] Includes the cost for the Conceptual Design Report, National Environmental Policy Act (NEPA) documentation; environmental, safety and health (ES&H) costs.

[d] Includes the cost of Operational Readiness Reviews.

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)[a]	23,878	1,540	0	0	0	0	0	25,418
TEC (Construction)	5,306	37,264	25,200	9,111	588	0	0	77,469
OPC Other than D&D	21,269	2,798	5,561	9,960	2,728	0	0	42,316
D&D Costs[b]	0	0	0	0	0	0	0	0
Total Project Costs	50,453	41,602	30,761	19,071	3,316	0	0	145,203

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	1Q FY 2010
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD
Total Related funding	TBD	TBD	TBD	TBD

9. Required D&D Information

N/A. Existing Facility is being upgraded.

10. Acquisition Approach

Due to the facility's security classification, the Management and Operating contractors will perform most design and construction activities. Design of CP-9 and CP-72 was completed via a firm-fixed price contract.

[a] The cost of preliminary and final designs appropriated in 01-D-103, PED.

[b] D&D of the TA-18 Facility (approximately 70,0000 square foot) at LANL, although not part of this project, may be paid by the Facilities and Infrastructure Recapitalization Program and estimated to be approximately $10 million.

03-D-103, Project Engineering and Design (PED) - RTBF
Various Locations

1. Significant Changes

- In a report provided to Congress, the Infrastructure Plan for the NNSA Nuclear Complex (dated April 2003) provided an approach for complex planning to continue to downsize the complex and to evaluate options for consolidation of capabilities and functions. Consistent with this approach, NNSA has evaluated the feasibility of consolidating high explosive manufacturing capabilities required for future missions into one location. The location of the new facility has been determined. Accordingly, no FY 2006 construction funds are requested for the Energetic Materials Processing Center Project at the Lawrence Livermore National Laboratory and the project has been cancelled.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2003	1Q FY 2003	4Q FY 2006	N/A	N/A	N/A	N/A
FY 2004	3Q FY 2003	3Q FY 2006	N/A	N/A	N/A	N/A
FY 2005	1Q FY 2004	3Q FY 2007	N/A	N/A	N/A	N/A
FY 2006	1Q FY 2004	1Q FY 2007	N/A	N/A	N/A	N/A
FY 2007	1Q FY 2004	2Q FY 2007	N/A	N/A	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC[a]	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2003	63,709	N/A	N/A	63,709	N/A	63,709
FY 2004	23,209	N/A	N/A	23,209	N/A	23,209
FY 2005	33,276	N/A	N/A	33,276	N/A	33,276
FY 2006	75,130	N/A	N/A	75,130	N/A	75,130
FY 2007	73,187	N/A	N/A	73,642	N/A	73,642

4. Project Description, Justification, and Scope

This project provides for Architect-Engineering (A-E) services for several 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.

[a] The TEC estimate is for design only for the subprojects currently included in this data sheet, with CMRR limited to preliminary design only. The FY 2005 funding for the cancelled EMPC project was reprogrammed to address higher priority Defense Programs requirements and is reflected in the FY 2007 data sheet.

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 2003 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, as well as very preliminary estimates of the Total Estimated Cost (TEC), including physical construction, of each subproject. The final TEC and the Total Project Cost (TPC) for each project described below will be validated and the Performance Baseline will be established at Critical Decision 2 (CD-2), following completion of preliminary design.

FY 2003 Proposed Design Projects

03-01: Chemistry and Metallurgy Research Facility Replacement (CMRR) Project, LANL

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)[a]
Preliminary Design Start	Preliminary Design Finish	Physical Construction Start	Physical Construction Complete		
3Q FY 2005	2Q FY 2007	1Q FY 2006	1Q FY 2013	65,937	745,000 - 975,000

Fiscal Year	Appropriations	Obligations	Costs
2003	0[b]	0	0
2004	9,499[c]	0	0
2005	13,568[d]	20,067	1,900
2006	28,710[e]	31,709	49,877
2007	14,161	14,161	14,160

This subproject includes the design activities required to support the design-build acquisition strategy for the Chemistry and Metallurgy Research Facility Replacement (CMRR) Project at Los Alamos National Laboratory (LANL). The existing Chemistry and Metallurgy Research (CMR) building is a

[a] The cost range for the CMRR Project was approved at CD-1 on May 18, 2005. Final design and construction is appropriated under 04-D-125.

[b] Original appropriation was $10,000,000. This was reduced by $64,000 by a rescission and by $227,000 by the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI. The appropriation was further decreased $3,384,000 by a reprogramming. Finally, the FY 2004 Appropriation Act use of PY balances reduction eliminated the remaining $6,325,000, but $5,000,000 was restored by a reprogramming in FY 2004.

[c] Includes $5,000,000 restored by reprogramming action for FY 2003 prior year balance reduction.

[d] The original appropriation was $13,675,000. This was reduced by $107,922 by the rescission of 0.80 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). FY 2005 costs shown are actuals compared with previous planned estimates. FY 2006 and FY 2007 costs are current estimates and will be updated.

[e] This reflects the FY 2006 rescission of 1 percent in the amount of $290,000 included in the Department of Defense Appropriations Act 2006, (P. L. 109-148).

Hazard Category 2 nuclear facility that is over fifty years old. CMR actinide chemistry research capabilities are vital to fulfill several critical LANL missions, including but not limited to, pit rebuild, pit surveillance and pit certification. In January 1999, DOE approved a strategy for managing risks at the CMR facility. This approval committed DOE and LANL on a course to upgrade and temporarily continue to operate the CMR facility through approximately 2010 with operational limitations. This approval also committed DOE and LANL to develop long-term facility and site plans to ensure continuous mission support beyond the year 2010. It was acknowledged that mission support beyond 2010 may require new facilities.

Line item 04-D-125 includes the final design and construction funding for this project. In previous years' data sheets, the expanded, preliminary design costs for the Special Facilities Equipment and Nuclear Facility phases of the project were included as line item costs. These costs are now more appropriately reflected as PE&D costs. This will allow for development of an accurate baseline for the CMRR.

03-02: Building 12-64 Production Bays Upgrade, PX

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		
1Q FY 2004	1Q FY 2006	4Q FY 2005	1Q FY 2007	2,868	23,000-32,000

Fiscal Year	Appropriations	Obligations	Costs
2003	1,106[a]	1,106	0
2004	1,663	1,663	1,880
2005	99[b]	99	988

This subproject includes the preliminary and final design for the Pantex Building 12-64 Production Bays Upgrade. This project will lessen the bay shortfall by modifying the bays in Building 12-64 and bringing 17 bays up to the same operational/capacity level as other bays at Pantex. The project will install systems necessary to allow any weapons program to be started in any of the bays in 12-64. Some of the systems installed or modified are the heating, ventilating, and air conditioning system, the dehumidification system, the building electrical system, the hoists and hoist support system, installation of a deluge system, and the installation of a task exhaust system.

The building 12-64 Production Bays Upgrade will provide a crucial asset in meeting the DOE objective of maintaining confidence in the nuclear weapons stockpile. This project will provide modifications to an existing facility to increase capacity to meet the impact of changing weapon complexity, projected workload, and life extension project activities.

Line item 05-D-401 includes the construction funding for this project.

[a] Original appropriation was $1,139,000. This was reduced by $7,000 by a rescission and by $26,000 by the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI.

[b] Original appropriation was $100,000. This was reduced by $800 by the 0.80 percent rescission enacted by P. L. 108-447.

03-03: Energetic Materials Processing Center, Lawrence Livermore National Laboratory (LLNL)
In a report provided to Congress, entitled the Infrastructure Plan for the NNSA Nuclear Complex (dated April 2003) provided an approach for complex planning to continue to downsize the complex and to evaluate options for consolidation of capabilities and functions. Consistent with this approach, NNSA has evaluated the feasibility of consolidating high explosive manufacturing capabilities required for future missions into one location. The location of the new facility has been determined. Accordingly, no FY 2006 construction funds will be requested for the Energetic Materials Processing Center Project at the Lawrence Livermore 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		
2Q FY 2004	4Q FY 2005	1Q FY 2006	4Q FY 2008	2,888	44,000-60,000

Fiscal Year	Appropriations	Obligations	Costs
2004	2,888	2,888	1,842
2005	1,488[a]	0	1,046

This subproject has been cancelled.

03-04: Tritium Facility Modernization, LLNL

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		
2Q FY 2004	4Q FY 2005	1Q FY 2006	3Q FY 2008	1,494	12,000-14,000

Fiscal Year	Appropriations	Obligations	Costs
2003	0	0	0
2004	1,494	1,494	424
2005	0	0	1,070

A hydrogen isotope Research and Development (R&D) capability is needed at LLNL to enable its programs to meet mission objectives in stockpile stewardship and energy research. The proposed Tritium Facility Modernization project will modernize the hydrogen isotope research and development capabilities at LLNL and provide an operational hydrogen isotope research capability to meet the mission needs. The modernized capability will focus on the behavior, properties, and uses of hydrogen and its isotopes under a variety of extreme conditions ranging from cryogenic to high temperatures and pressures. Addition of this capability supports stockpile stewardship specifically by providing necessary infrastructure for high energy density physics, weapons effects and tritium/materials R&D, including aging effects on stockpile materials and components, tritium shipping and handling, and reimbursable

[a] Original FY 2005 appropriation was $1,500,000. This was reduced by $12,050 by the 0.8 percent rescission included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). The FY 2005 funding for the cancelled EMPC project was reprogrammed to address higher priority Defense Programs requirements.

work-for-others. More generally, it restores an important element of LLNL R&D in nuclear weapons science and enhances the laboratory's core competency in this vital area. The inertial confinement fusion (ICF) research program at LLNL also requires the capability and other areas of research interest, such as hydride energy storage and tritium/environmental interactions, will benefit from it.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations[e]	Costs[e]
Design/Construction by Fiscal Year			
Design			
2003	1,106[a]	1,106	0
2004	15,545[b]	6,045	4,146
2005	15,154[c]	23,166	26,171
2006	28,710[d]	28,710	28,710
2007	14,161	14,161	14,161
Total, Design (03-D-103)	73,188	73,188	73,188
Total TEC	73,188	73,188	73,188

[a] Original appropriation was $11,139,000. This was reduced by $71,000 by a rescission and by $253,000 by the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI. The appropriation was further decreased $3,384,000 by a reprogramming.

[b] The FY 2004 appropriated amount $10,570,000 was reduced by the FY 2004 Congressional Omnibus Appropriations Bill rescission of .59 percent. Finally, the FY 2004 Appropriation Act use of PY balances reduction eliminated $6,325,000 from the CMRR subproject, but $5,000,000 of the funding was required and NNSA restored it with a reprogramming action during FY 2004.

[c] The FY 2005 original appropriation was $15,275,000. This was reduced by $120,722 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447The FY 2005 funding for the cancelled EMPC project of $1,487,950 was reprogrammed to address higher priority Defense Programs requirements

[d] This reflects the FY 2006 rescission of 1 percent in the amount of $290,000 included in the Department of Defense Appropriations Act 2006, (P.L. 109-148).

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Design Phase[a]		
Preliminary and Final Design Costs (Drawings/Specifications)[b]	62,392	63,880
Design Management costs (10% of TEC)	7,500	7,500
Project Management costs (5% of TEC)	3,750	3,750
Total, Design Costs (100% of TEC)	73,642	75,130
Total, TEC	73,642	75,130

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	N/A	N/A
Start-up	N/A	N/A
Offsetting D&D	N/A	N/A
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
Project Costs [c]								
TEC (Design)	59,027	14,161	N/A	N/A	N/A	N/A	N/A	73,188
OPC Other than D&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total, Project Costs	59,027	14,325	N/A	N/A	N/A	N/A	N/A	73,188

[a] The percentages for Design Management, Project Management, and Design Phase Contingency are estimates based on historical records and are preliminary estimates (pre-performance baseline).

[b] The FY 2005 funding for the cancelled EMPC project of $1,487,950 was reprogrammed to address higher priority Defense Programs requirements.

[c] Only direct PED costs are reflected. OPC's are reflected in each of their construction projects' CPDS.

8. Related Operations and Maintenance Funding requirements

CMRR Phase A Start of Operation or Beneficial Occupancy (fiscal quarter).....	3Q FY 2008
CMRR Phase C Start of Operation or Beneficial Occupancy (fiscal quarter)	2Q FY 2014
Expected Useful Life (number of years).....	50
Expected Future start of D&D for new construction (fiscal quarter).....	2Q FY 2065

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	0	0	0	0
Maintenance	0	0	0	0
Total Related funding	0	0	0	0

9. Required D&D Information

N/A

10. Acquisition Approach

Design services will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, production, proliferation, etc. concerns.

01-D-103, Project Engineering and Design (PED) - RTBF, Various Locations

1. Significant Changes

- The Criticality Experiments Facility (previously TA-18 Relocation) subproject 07 of this PED project baseline was approved in December 2005. As a result, the approved baseline requires an additional $1,540,282 in Project Engineering and Design to address the nuclear safety significant requirements for the criticality assembly machines identified during the preliminary safety analysis development.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2001	1Q FY 2001	2Q FY 2002	Various	Various	Various	Various
FY 2002	1Q FY 2001	4Q FY 2003	Various	Various	Various	Various
FY 2003	1Q FY 2001	4Q FY 2005	Various	Various	Various	Various
FY 2004	2Q FY 2001	4Q FY 2005	Various	Various	Various	Various
FY 2005	2Q FY 2001	4Q FY 2006	Various	Various	Various	Various
FY 2006	2Q FY 2001	4Q FY 2006	Various	Various	Various	Various
FY 2007	2Q FY 2001	4Q FY 2007	Various	Various	Various	Various

3. Baseline and Validation Status[a]

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2001	14,500	N/A	N/A	14,500	Various	14,500
FY 2002	82,676	N/A	N/A	82,676	Various	82,676
FY 2003	56,086	N/A	N/A	56,086	Various	56,086
FY 2004	55,122	N/A	N/A	55,122	Various	55,122
FY 2005	TBD	N/A	N/A	TBD	Various	TBD
FY 2006	57,938	N/A	N/A	57,938	Various	57,938
FY 2007b	59,413	N/A	N/A	59,413	Various	59,413

4. Project Description, Justification, and Scope

This is the seventh year of a pilot project to provide for Architect-Engineering (A-E) services for several National Nuclear Security Administration (NNSA) construction projects. This allows 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

[a] The Total Estimated Cost (TEC) is for design only for the subprojects currently included in this data sheet.

[b] FY 2006 original Appropriation for the TA-18 Mission Relocation (now called Criticality Experiments Facility) was $9,000,000. This was reduced by $90,000 as a result of a government-wide rescission of 1.0 percent by P.L. 109-148. An additional $1,540,282 is requested in Fiscal Year 2007 for the Criticality Experiments Facility Project (formerlyTA-18 Mission Relocation) to incorporate nuclear safety significant requirements identified during the preliminary safety analysis development. As a result, the Preliminary Estimate Cost changed to $59,388,000 in FY 2007.

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. The use of a PED line item will enable a project to proceed immediately upon completion of the conceptual design into preliminary and final designs. It will permit acceleration of new facilities, provide savings in construction costs based on current rates of inflation, and permit more mature cost, schedule, and technical baselines for projects when the budget is submitted to Congress.

The NNSA has made decisions as to which sub-projects should proceed to Title I design efforts to best support the Stockpile Stewardship mission; the amount of funding to be applied to each of these subprojects is reflected in this data sheet. The FY 2005 request provided funding to continue one subproject not fully funded in previous fiscal years.

Following completion of preliminary design activities, the NNSA will determine preliminary design project baselines, providing detailed funding and schedule estimates for final design and physical construction. The NNSA will request external independent experts to assess the project scope, schedule and budget. Based upon the results of this assessment, and a review of the continuing programmatic requirement for the project, the NNSA will either cancel further action on the subproject, or set the Performance Baseline for the project while proceeding with final design activities. The preliminary design baseline will be the basis for the request to Congress for authorization and appropriations for physical construction, though some projects may require construction funding for long lead procurements prior to establishment of the performance baseline. Each project that proceeds to physical construction will be separated into an individual construction line item, the total estimated cost (TEC) of which would include the cost of the engineering and design activities funded through the PED line item. All but one project which began design in this line item have established Performance Baselines and have proceeded to construction, including the Microsystems and Engineering Sciences Applications (MESA) Complex, the Electrical Power Systems Safety, Communications and Bus Upgrades project, the Engineering Technology Complex Upgrade project, the Atlas Relocation to the Nevada Test Site project, and the Purification Facility. One project, the Sandia Underground Reactor Facility, was cancelled following design because the security cost savings envisioned in justification of the project were no longer valid due to a revised Design-Basis Threat and an increase in the estimated cost to construct the facility.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations[a]	Costs
Design/Construction by Fiscal Year			
Design			
2001	22,119[bc]	21,121	8,583
2002	19,275[d]	12,849	14,608
2003	0	7,424	9,528
2004	1,591[e]	1,591	2,982
2005	5,953[f]	5,953	10,696
2006[g]	8,910	8,910	11,451
2007[h]	1,565	1,565	1,565
Total, Design (01-D-103)	59,413	59,413	59,413
Total TEC	59,413	59,413	59,413

[a] Appropriations & Obligations are reduced to reflect the planned reprogramming of uncosted balances available after completion of the designs for Atlas Relocation ($14,000), MESA ($31,000) and SURF ($83,000).

[b] The FY 2001 Energy and Water Development appropriation for design and other non-design activities increased the requested appropriation from $14,500,000 to $35,500,000. This was reduced by $78,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[c] The FY 2001 Congressional Budget Supplemental transferred $13,289,000 of the FY 2001 appropriation to 01-D-108 ($9,500,000) and 01-D-107 ($3,789,000).

[d] Includes a reprogramming of $3,010,000 for the Purification Facility subproject.

[e] The FY 2004 appropriated amount has been adjusted for the FY 2004 Congressional Omnibus Appropriations Bill rescission of .59 percent. This reduced the $1,600,000 by $9,441.

[f] Original FY 2005 appropriation was $6,000,000. This was reduced by $47,439 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[g] FY 2006 original Appropriation was $9,000,000. This was reduced by $90,000 as a result of a government-wide mandatory rescission by P.L. 109-148.

[h] An additional $1,565,282 is requested for the Project Engineering and Design to incorporate nuclear Safety Significant requirements for the Critical Assembly Machines (Criticality Experiments Facility Project) identified during the preliminary safety analysis development.

FY 2001 Proposed Design Projects

01-01: Microsystems and Engineering Sciences Applications (MESA), SNL

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Performance Baseline Total Estimated Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q FY 2001	1Q FY2003	3Q FY 2003	4Q FY 2008	14,925[a]	461,272[b]

Fiscal Year	Appropriations	Obligations	Costs
2001	10,456	10,456	6,673
2002	4,469[a]	4,469[a]	7,426
2003	0	0	826

The Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories in Albuquerque, will be a state-of-the-art national complex that will provide for the design, integration, prototyping and fabrication, and qualification of microsystems into weapon components, subsystems, and systems within the stockpile. Design for this project is complete; line item 01-D-108 includes the construction funding.

01-03: Electrical Power Systems Safety, Communications, and Bus Upgrades, NTS

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Performance Baseline Total Estimated Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q FY 2002	4Q FY 2003	3Q FY 2004	4Q FY 2005	2,693	16,313

Fiscal Year	Appropriations	Obligations	Costs
2001	0	0	0
2002	2,693	2,693	727
2003	0	0	1,714
2004	0	0	252

The Electrical Power Systems Safety, Communications, and Bus Upgrades project will provide for a new Mercury Distribution Substation and the upgrade of Jackass Flats Substation and Mercury Switching Center. This project received Critical Decision 2 on November 1, 2002, establishing the Performance Baseline, reflected above. Line item 02-D-107 includes the construction funding for this

[a] Congress provided $20,000,000 in the FY 2001 appropriation for design and supporting infrastructure upgrades for MESA. The total TEC for design is $15,000,000. This was reduced by $44,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. Funding for the infrastructure upgrades originally appropriated here in FY 2001 was transferred to line item 01-D-108 as part of the FY 2001 Congressional Budget Supplemental. The appropriations, obligations and costs now reflect the actual cost of design.

[b] Validated baseline was $462,500,000. This includes the Project Engineering Design funds appropriated under this PED Line Item and the construction funds appropriated in 01-D-108. This was reduced by various government-wide rescission and return of $31,000 of uncosted design funds, to $461,272.

project.

01-04: Engineering Technology Complex Upgrade, LLNL

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		
2Q FY 2002	3Q FY 2003	4Q FY 2002	2Q FY 2006	2,250	26,700

Fiscal Year	Appropriations	Obligations	Costs
2001	0	0	0
2002	2,250	2,250	984
2003	0	0	1,214
2004	0	0	52

The Engineering Technology Complex Upgrade (ETCU) project will upgrade the Building 321 Complex at Lawrence Livermore National Laboratory (LLNL) which supports the weapons program by manufacturing parts for research programs important to the Stockpile Stewardship Program including the National Ignition Facility (NIF), Lasers, Computations, and the Weapons Program. Line item 02-D-105 includes the construction funding for this project.

01-06: Atlas Relocation to the Nevada Test Site, NTS

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Performance Baseline Total Estimated Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q FY 2001	1Q FY 2002	1Q FY 2002	1Q FY 2004	1,186[a]	16,272

Fiscal Year	Appropriations	Obligations	Costs
2001	1,186[a]	1,186[a]	1,146
2002	0	0	40

This subproject supported the design efforts of a joint team of Los Alamos National Laboratory (LANL), Bechtel Nevada (BN), personnel from other laboratories, and NNSA Nevada Operations Office staff in the development and implementation of the plan to relocate Atlas to the Nevada Test Site. The design has been completed and the project construction was funded under line item 01-D-107.

[a] Original appropriation was $5,000,000. This was reduced by $11,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act, and a total of $3,789,000 in construction funding was transferred to line item 01-D-107 as part of the FY 2001 Congressional Budget Supplemental. The appropriations, obligations and costs now reflect the actual cost of design.

01-07: TA-18 Mission Relocation, LANL (Renamed Criticality Experiments Facility, CEF), at NTS

Fiscal Quarter				Total Estimated Cost Design Only ($000)	Performance Baseline Total Estimated Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
4Q FY 2004	4Q FY 2007	4Q FY 2005	3Q FY 2008	25,443	102,983

Fiscal Year	Appropriations	Obligations	Costs
2001	998[a]	0	0
2002	6,426	0	0
2003	0	7,424	0
2004	1591[b]	1,591	1,731
2005	5,953[c]	5,953	10,696
2006[d]	8,910	8,910	11,451
2007[e]	1,565	1,565	1,565
Total	25,443	25,443	25,443

This subproject provides for preliminary and final design associated with the LANL Technical Area (TA)-18 Mission Relocation Project (MRP) (now called CEF), the goal of which is to provide a secure, modern location for conducting general-purpose nuclear materials handling activities currently conducted at LANL TA-18. TA-18 is the sole remaining facility in the United States capable of performing general-purpose nuclear materials handling experiments and conducting training essential to support national security missions including: research and development of technologies in support of Homeland Defense and counter-terrorism initiatives; the continued safe and efficient handling and processing of fissile materials; the development of technologies vital to implementing arms control and nonproliferation agreements; the development of emergency response technologies to respond to terrorist attacks, etc.; training for criticality safety professionals, fissile materials handlers, emergency responders, International Atomic Energy Agency professionals, and other Federal and State organizations charged with Homeland Defense responsibilities. The need for this project is based on the projected large capital investment for security and infrastructure upgrades required over the next 10 years to remain at TA-18.

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[a] Original appropriation was $1,000,000. This was reduced by $2,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[b] FY 2004 original appropriation was $1,600,000. This was reduced by $9,441 for the rescission of 0.59 percent enacted by P.L. 108-199.

[c] FY 2005 original appropriation was $6,000,000. This was reduced by $47,439 for the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[d] FY 2006 original Appropriation was $9,000,000. This was reduced by $90,000 as a result of a government-wide mandatory rescission by P.L. 109-148.

[e] An additional $1,565,282 is requested for the Project Engineering and Design to incorporate nuclear Safety Significant requirements for the Critical Assembly Machines (Criticality Experiments Facility Project) identified during the preliminary safety analysis development.

The NNSA completed environmental reviews and technical and cost studies to evaluate siting options for the TA-18 missions, and designated that the preferred alternative is to relocate a portion of the TA-18 missions (those requiring Security Category I/II special nuclear material) to the Device Assembly Facility (DAF) at the NTS with the remaining missions (those requiring Security Category III/IV special nuclear material) residing at LANL. The previous preferred alternative was construction of a new facility at LANL. This project will include capabilities to house and operate critical assemblies, store associated special nuclear material, and provide infrastructure to support criticality training and detection development activities. Construction funding is being requested under line item 04-D-128, Criticality Experiments Facility. Additional Project Engineering and Design funds in the amount of $9,000,000 was requested in FY 2006 for the CEF to implement nuclear facilities' design requirements. Construction funding request in FY 2006 was reduced by the same amount. The project performance baseline was approved in December 2005. The new baseline reflects an additional $1,565,000 for the Project Engineering and Design. This amount is needed to upgrade the four critical assembly machines to meet safety significant design and procurement requirements identified during preliminary safety analysis development.

01-08: Sandia Underground Reactor Facility (SURF), SNL

Fiscal Quarter				Total Estimated Cost Design Only ($000)	Performance Baseline Total Estimated Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
3Q FY 2001	4Q FY 2002	Cancelled	Cancelled	3,123[a]	Cancelled

Fiscal Year	Appropriations	Obligations	Costs
2001	2,696	2,696	764
2002	427[a]	427[a]	2,351
2003	0	0	8

This project was cancelled by the NNSA in October 2003 because the security cost savings envisioned in justification of the project were no longer valid due to the recently completed draft Design-Basis Threat (DBT). Coupled with an increase in the estimated cost to construct the facility since establishment of the performance baseline, the payback period for capturing the initial investment increased to the point that the programmatic benefit anticipated for the project was significantly reduced.

[a] The appropriations, obligations and costs now reflect the actual cost of design.

01-09: Purification Facility, Y-12

Fiscal Quarter				Total Estimated Cost Design Only ($000)	Performance Baseline Total Estimated Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q FY 2002	3Q FY 2003	3Q FY 2003	4Q FY 2004	9,739[a]	37,977

Fiscal Year	Appropriations	Obligations	Costs
2001	6,783	6,783	0
2002	3,010[b]	3,010	3,080
2003	0	0	5,766
2004	0	0	947

The Purification Facility at the Y-12 Plant will meet both near-term LEP requirements and support projected longer-term weapons program needs. Operations performed within the Purification Facility will include 1) dissolution, filtration, and recrystallization; and, 2) powder processing in a nitrogen atmosphere. Line item 03-D-122 includes the construction funding for this project.

[a] Original amount allocated to this subproject was reduced by $17,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[b] $3,010,000 was reprogrammed to this subproject in FY 2002 to support the increased design TEC.

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Design Phase		
Preliminary and Final Design Costs (Drawings/Specifications)	47,538	45,538
Design Management costs (8.1% of TEC)	4,810	4,800
Project Management costs (11.8% of TEC)	7,040	7,600
Total, Design Costs (100% of TEC)	59,388	57,938
Total, TEC	59,388	57,938

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	N/A	N/A
Start-up	N/A	N/A
Offsetting D&D	N/A	N/A
D&D for removal of the offsetting facility	N/A	N/A
Other D&D to comply with “one-for-one” requirements	N/A	N/A
D&D contingency	N/A	N/A
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
Project Costs [a]								
TEC (Design)	57,848	1,540	N/A	N/A	N/A	N/A	N/A	59,388
OPC Other than D&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total, Project Costs	57,848	1,540	N/A	N/A	N/A	N/A	N/A	59,388

[a] An additional $1,540,282 is requested for the Project Engineering and Design to incorporate nuclear Safety Significant requirements for the Critical Assembly Machines (Criticality Experiments Facility) identified during the preliminary safety analysis development.

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	Various
Expected Useful Life (number of years).....	Various
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

(Related Funding requirements) [a]

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

Design services will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, production, proliferation, etc. concerns.

[a] This data sheet is for design activities only. Costs related to items in this table are reflected in the construction line items for the individual projects included in this PED line item

01-D-124, Highly Enriched Uranium (HEU) Materials Facility
Y-12 National Security Complex, Oak Ridge, Tennessee

1. Significant Changes

- The Total Project Cost reflects an additional $15million to address preliminary estimated costs for design and construction changes resulting from revised guidance for meeting the new Design Basis Threat (DBT). However, detailed design, cost, and schedule assessments for incorporating facility improvements to meet the new DBT and facility startup activities are still in progress. It is anticipated that, when these assessments are complete, the baseline TEC will increase substantially and the completion date will slip.

- Congress increased funding for this project by $11,000,000 in FY 2006 by appropriating $81,350,000.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2001	1Q FY 2001	1Q FY 2002	2Q FY 2001	2Q FY 2005	N/A	N/A
FY 2002	3Q FY 2001	4Q FY 2002	4Q FY 2001	2Q FY 2005	N/A	N/A
FY 2003	3Q FY 2001	4Q FY 2003	2Q FY 2002	4Q FY 2006	N/A	N/A
FY 2004	3Q FY 2002	4Q FY 2003	3Q FY 2002	3Q FY 2006	N/A	N/A
FY 2005	4Q FY 2002	1Q FY 2004	2Q FY 2003	1Q FY 2007	N/A	N/A
FY 2006	4Q FY 2002	1Q FY 2004	2Q FY 2003	1Q FY 2007	N/A	N/A
FY 2007	4Q FY 2002	1Q FY 2004 [a]	2Q FY 2003	2Q FY 2007	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2001	120,000	24,000	N/A	144,000	0	144,000
FY 2002	119,949[b]	24,000	N/A	143,949	0	143,949
FY 2003	119,949	24,000	N/A	143,949	0	143,949
FY 2004	184,000	38,500	N/A	222,500	0	222,500
FY 2005	211,898	39,300	N/A	251,198	251,198	251,198
FY 2006[c]	280,731	42,980	N/A	323,711	251,198	323,711
FY 2007[b]	301,487	42,980	N/A	334,527	319,527	334,527

[a] The design has been reopened to restore design features originally deleted to reduce costs. These design features are needed to comply with the provisions of the latest revisions to the Design Basis Threat. FY 2007 reflects direction from the Deputy Secretary in the approved ESAAB on May 18, 2005, to include $15,000,000 for Design Basis Threat activities for this project

[b] Original TEC was $120,000,000. This was reduced by $51,000 for Safeguards and Security (S&S) Amendment in 2001.

[c] This information reflects the proposed Performance Baseline, based on approval of proposed BCP-05-151, in accordance with DOE Order 413.3 requirements with an allowance for contingency.

4. Project Description, Justification, and Scope

The HEU Materials Facility will support the consolidation of long-term highly enriched uranium materials into a state-of-the-art facility. The new facility will result in cost savings and an increased security posture and will feature: storage in a hardened concrete structure for enhanced security, new Safe Secure Trailer (SST) or Safeguard Transport (SGT) shipping/receiving station, a central location near HEU processing facilities, that includes a small administrative area to house the building operators. This facility will be located in a Protected Area. The Program Requirements Document for the Y-12 National Security Complex HEU Materials Facility, DOE/ORO-2113 Rev.1, documents the storage requirements.

The Y-12 National Security Complex Environmental, Safety, and Health (ES&H) Vulnerability Assessment, dated October 1996, resulted in a number of findings related to the current storage of HEU in multiple buildings. The assessment raised issues concerning fire, flooding, natural phenomena, and related concerns that would likely involve major upgrades to existing facilities in order to continue present HEU storage. In addition to ES&H vulnerabilities, existing conditions are inefficient. Maintaining and expanding HEU storage in multiple facilities involves increased security personnel, increased operations personnel, increased maintenance and utility costs, increased Special Nuclear Material (SNM) vehicle transfers, increased cost for ES&H, facility safety assessments and upgrades, and management oversight. Costs for HEU storage will be reduced by implementing this initiative. Cost savings are achieved by reduced personnel requirements, by the efficient use of space and technology, by reduction of the footprint, and by eliminating the necessity for creating additional storage in the old facilities.

This project will provide the following:

- Receipt and storage for Canned Sub-Assemblies (CSAs) as well as cans of uranium oxide and metal
- Docks for SST/SGT shipping/receiving
- A small administrative area inside the facility.

The life expectancy of the facilities is 50 years, thereby assuring a viable, long-term HEU storage capability to support the enduring weapons stockpile and strategic reserve for the foreseeable future.

The facilities will be designed to meet Conduct of Operations requirements, minimize the number of personnel required for operations, and meet DOE requirements for SNM accountability and control.

FY 2007 funding will be utilized to continue facility construction activities.

Compliance with Project Management Order

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

- Critical Decision – 0: Approve Mission Need – 1Q FY 1999
- Critical Decision – 1: Approve Preliminary Baseline Range – 3Q FY 2002
- Critical Decision – 2: Approve Performance Baseline - 1Q FY 2004

- External Independent Review Final Report – 3Q FY 2003
- Critical Decision – 3: Approve Start of Construction – 4Q FY 2004
- Critical Decision – 4: Approve Start of Operations – 3Q FY 2008

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year*			
2001	17,710[b]	17,710	0
2002	0	0	1,242
2003	24,140[c]	24,140	19,980
2004	44,735[d]	44,735	16,726
2005	113,099[e]	113,099	50,227
2006	80,536[f]	80,536	162,013
2007	21,297[c]	21,297	51,229
2008	0	0	0
Total TEC	301,487	301,487	301,487

* Design funding (PED) on this project was not appropriated separately. All funds for 01-D-124 were appropriated within Construction Funds and is shown above consistently. No long lead procurements were requested prior to validation of the Performance Baseline.

[a] FY 2007 reflects direction from the Deputy Secretary in the approved ESAAB on May 18, 2005, to include $15,000,000 for Design Basis Threat activities for this project. The project is able to leverage $4,185,000 of this amount. NNSA has identified the funding source for the additional $10,815,000 in FY 2007.

[b] The original 2001 appropriation request was $17,800,000. This was reduced by $51,000 by the Safeguards and Security (S&S) Amendment, and by $39,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[c] Original 2003 appropriation was $25,000,000. This was reduced by $159,000 for a rescission and by $567,000 for the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI. The appropriation was further decreased by $134,000 by a reprogramming.

[d] Original 2004 appropriation was $45,000,000. This was reduced by $265,514 for the FY 2004 Congressional Omnibus Appropriations Bill rescission of .59 percent enacted by P.L. 108-199.

[e] Original FY 2005 request was $64,000,000; this was increased by $50,000,000 in the FY 2005 Appropriation for a total of $114,000,000. This total was reduced by $901,341 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[f] Congress appropriated an additional $11,000,000 for FY 2006, bringing the total Line Item appropriation to $81,350,000; however the government-wide rescission enacted in FY 2006 pursuant to P.L. 109-148 reduced this amount by $81,350.

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	27,002	21,591
Construction Phase		
Site Preparation	8,315	8,315
Equipment	36,265	32,285
All other construction	188,839	189,425
Contingency	42,136	29,115
Total, Construction	301,487	259,140
Total, TEC	301,487	280,731

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	17,275	17,275
Start-up	24,654	24,654
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with “one-for-one” requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	1,051	1,051
Total, OPC	42,980	42,980

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	0	0	0	0	0	0	0	0
TEC (Construction)	250,951	40,419	0	0	0	0	0	291,370
OPC Other than D&D	31,548	11,432	0	0	0	0	0	42,980
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	282,499	51,851	0	0	0	0	0	334,527

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter).....	3Q FY 2008 [a]
Expected Useful Life (number of years).....	50
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	8,000	7,350	475,000	475,000
Maintenance	1,600	1,650	82,000	82,000
Other Capital Expense.....	N/A[b]	N/A	300,000	300,000
Total Related funding	9,600	9,000	857,000	857,000

9. Required D&D Information

N/A

10. Acquisition Approach

Overall project direction and responsibility for this project resides with the NNSA. The NNSA has assigned day-to-day management of project activities to the Y-12 Operating Contractor, BWXT Y-12. BWXT Y-12 completed Conceptual Design of this project utilizing site forces, and has performed initial site readiness and site preparation activities. Preliminary and detail design for this project was performed by an architectural engineering firm under subcontract to BWXT Y-12. With completion of design, construction and initial component and system testing will be performed via a fixed price construction subcontract to BWXT Y-12. Specialty systems and equipment designed by BWXT Y-12 will be procured by BWXT Y-12 and provided for installation by the construction subcontractor. BWXT Y-12 will perform final connection of the facility to existing plant security and support systems. Following construction, BWXT Y-12 will perform integrated system testing and startup testing of the facility. The NNSA will provide oversight and review of the entire project process, and will perform an Operational Readiness Review at the completion of the project prior to authorization of the facility to begin operations.

[a] Changes mandated by the latest design basis threat are expected to delay start of operation until 1Q FY 2007 or later and to exceed the currently requested funds. The full impact of these changes are expected to be understood in 3Q FY 2006.

[b] Other Capital Expense is for facility upgrades every 15 years and was not estimated as annual costs.

Secure Transportation Asset

Overview

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Secure Transportation Asset (STA)			
Operations and Equipment	142,736	142,328	130,484
Program Direction	56,973	67,651	78,780
Subtotal, Secure Transportation Asset	**199,709**	**209,979**	**209,264**
Use of Prior Year Balance	0	0	0
Total, Secure Transportation Asset	**199,709**	**209,979**	**209,264**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Out-year Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Total, Secure Transportation Asset Outyears	**225,057**	**237,344**	**244,212**	**247,580**

Description

The goal of the Secure Transportation Asset (STA) Program is to safely and securely transport nuclear weapons, weapons components, and Special Nuclear Materials (SNM) to meet projected Department of Energy (DOE), Department of Defense (DoD), and other customer requirements.

Benefits

The STA GPRA unit contains two activities – Operations and Equipment, and Program Direction. Although these are two separately funded activities, the STA is managed as a single program because of the unique structure of the STA as a government owned/government operated organization.

As reflected in the current NNSA Future-Years Nuclear Security Program (FYNSP) , the workload requirements for this program will escalate significantly to support the dismantlement and maintenance schedule for the nuclear weapons stockpile and the Secretarial initiative to consolidate the storage of nuclear material. The accelerated cleanup schedule planned for Hanford by the DOE Environmental Management Program requires planning and funding for higher levels of new vehicle and trailer production, as well as the recruiting and training of additional agents. These are long-lead efforts taking as long as three years to effectively increase mission capacity. The challenge to increase the capacity of the program is coupled with and impacted by increasingly complex national security concerns and the requirements of the FY 2005 Design Basis Threat (DBT) posture. The increasingly uncertain threat environment necessitates either the implementation of force multiplier technologies or increasing the number of agents that accompany the convoys. The latter alternative will reduce the mission capacity of the STA and reduce the number of total convoys completed each year. This, in turn, raises the cost per convoy and increases work backlog. The STA is conducting analyses and testing to determine if the

FY 2008 implementation deadline for the FY 2005 DBT can be met by reducing capacity only, as opposed to the use of force multiplier equipment/technology. Preliminary results indicate a potential for additional requirements to meet the FY 2005 DBT. However, additional testing and validation must be conducted to make this determination. NNSA will use FY 2006 resources to accelerate technology development such as the SRV5 in addition to adding agents to address the 2005 DBT requirements.

Major FY 2005 Achievements

- Safely and securely completed 106 full-up convoy equivalents at a cost per convoy of $1.90 million.
- Produced 2 Safeguard Transporters (SGTs) for a total of 33.
- Reduced average agent overtime to 1,000 hours.
- Shipped 85 percent of requested shipments.
- Completed the design phase for Eastern, Central, and Western Commands.
- Began the construction phase for Eastern and Western Commands.
- Achieved agent end-strength of 330.

Major Outyear Considerations

The STA budget, with the exception of FY 2007, remains on a steady 5 percent ramp reflecting the increase projected for the STA mission tempo and the cost of support necessary to meet that increased tempo.

The workload requirements for this program will escalate significantly to support the dismantlement and maintenance schedule for the nuclear weapons stockpile and the Secretarial initiative to consolidate the storage of nuclear materials. The accelerated cleanup schedule planned for Hanford by the DOE Environmental Management program requires planning and funding for higher level of new vehicle and trailer production, as well as the recruiting and training of additional agents. These are long-lead efforts taking as long as three years to effectively increase mission capacity.

The challenge to increase capacity is coupled with, and impacted by, increasingly complex national security concerns and the requirements of the FY 2005 DBT. This increasingly uncertain threat environment necessitates either the implementation of force multiplier technologies or increasing the number of agents that accompany the convoys.

The STA's primary goal 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 escalating workload requirements, while maintaining the safety and security of shipments, STA is increasing the cumulative number of Safeguard Transporters in operation by three per year, to a total of 51 in FY 2011. The number of secure convoys also will increase up to a projected 135 in FY 2008. However, if force multiplier technologies cannot be implemented, the number of agents per convoy will increase, causing capacity to drop back to approximately 115 convoys per year for

FY 2009 – 2011, and increasing the cost per convoy. The reduction in capacity will also serve to increase the work backlog. The STA also intends to add additional agents up to a total agent force of 420 in FY 2008. The mission cost of those additional agents and their training will increase outyear expenditures.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Budget request, and the Department will take the necessary steps to continue to improve performance.

For FY 2006, the OMB evaluated the STA program using PART. The OMB gave the STA program scores of 100 percent on the Purpose and Design, and Strategic Planning Sections; 86 percent on the Program Management Section; and 67 percent on the Results Section. Overall, the OMB rated the STA 81 percent, its second highest rating of "Moderately Effective." The OMB attributed these scores on the fact that the STA Program is well managed, with a clear and unique purpose and clear, meaningful, and measurable performance metrics that the program is demonstrating good progress in meeting. Additionally, the OMB assessment found that funds were spent for their intended purpose but the unique nature of the organization results in year-end uncosted balances that are higher than for other programs. In addition, the OMB observed that independent evaluations of program effectiveness had not been completed recently to validate prior assessments. In response to the OMB findings, the STA increased the number of supporting accounts to increase management flexibility in responding to changing security conditions and mission priorities and to improve obligation and costing of funds. The STA also established an internal independent assessment branch in the organization to ensure more frequent independent evaluations.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
There are no related targets.	There are no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
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%	R: 100%	R: 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.
Annual cost per convoy expressed in terms of millions of dollars (Efficiency) *	R: $2.20	R: $1.95	R : $1.90	T: $1.80	T: $1.63	T: $1.57	T: $1.77	T: $1.84	T: $1.88	By 2011, achieve an annual cost per convoy of $1.41M (2002 baseline: $2.65M). (NOTE: Projections based on number of agents used to meet the current DBT indicate that the 2011 endpoint target will not be met.)***
Annual number of secure convoys completed (Annual Output)	R: 78	R: 91 T: 90	R: 106 T: 105	T: 115	T: 125	T: 135	T: 115	T: 115	T: 115	By 2011, complete 165 convoys per year. (NOTE: Projections based on number of agents used to meet the current DBT indicate that the 2011 endpoint target will not be met.) ***
Cumulative number of Safeguard Transporters (SGTs) in operation (Long-term Output)	R: 28	R: 31 T: 32**	R: 33 T: 33**	T: 36	T: 39	T: 42	T: 45	T: 48	T: 51	By 2011, achieve an SGT fleet of 51.
Cumulative number of Federal Agents at the end of each year (Long-term Output)	R: 248	R: 283 T: 266	R: 318 T: 335	T: 355	T: 385	T: 420	T: 420	T: 420	T: 420	By 2008, achieve end strength of 420 Agents.

* New measure, for 2006, replacing 2 prior measures on agent overtime (efficiency) and package delivery.
** Target was incorrectly set at 32; should have been 31, based on 3 new Safeguard Transporters annually.
*** Additional agents per convoy required to meet Design Basis Threat (DBT); resulting in fewer convoys and increase in cost per convoy.

Secure Transportation Asset

Operations and Equipment

Funding Schedule by Activity

	FY 2005	FY 2006	FY 2007
Operations and Equipment			
Mission Capacity	70,875	72,283	71,862
Security/Safety Capability	14,416	13,248	16,180
Infrastructure and C3 Systems	28,717	25,602	27,550
Design Basis Threat Response	18,300	19,100	0[a]
Program Management	10,428	12,095	14,892
Subtotal, Secure Transportation Asset, Operations and Equipment	**142,736**	**142,328**	**130,484**
Use of Prior Year Balances	0	0	0
Total, Secure Transportation Asset Operations and Equipment	**142,736**	**142,328**	**130,484**
Total, Full Time Equivalents	**555**	**575**	**664**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Out-year Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Operations and Equipment				
Mission Capacity	77,486	93,672	95,304	97,978
Security/Safety Capability	17,879	17,530	18,089	19,356
Infrastructure and C3 Systems	28,598	21,030	25,454	25,184
Design Basis Threat Response	0[b]	0	0	0
Program Management	15,897	16,415	16,819	17,996
Total, Secure Transportation Asset Operations and Equipment	**139,960**	**148,647**	**155,666**	**160,514**

Benefits

Within the Secure Transportation Asset (STA) Operations and Equipment Activity, each of five sub-programs make unique contributions to the NNSA Program Goal regarding the safety and security of the nuclear stockpile. These sub-programs accomplish the following: (1) Mission Capacity: provides agent candidate courses for an increasing new agent force, provides mission-essential agent equipment, maintains and expands the transportation fleet, provides aviation services, optimizes transport

[a] FY 2007 funding for DBT is included in projects contained in Mission Capacity, Security/Safety Capability, and Infrastructure and C3 Systems.

[b] Out-year funding for DBT is included in projects contained in Mission Capacity, Security/Safety Capability, and Infrastructure and C3 Systems.

operations, and utilizes contract drivers to move empty vehicles; (2) Security/Safety Capability: develops and implements new fleet technologies, intensifies agent training, and implements Security/Safety programs; (3) Infrastructure and command, control, and communications (C3) systems: provides facility maintenance, support for construction projects, and C3 systems; (4) Design Basis Threat (DBT): assesses, modifies, and applies new state-of-the-art detection and deterrence technology for mobile site security; and, (5) Program Management: provides corporate functions and business operations that control, assist, and direct secure transport operations.

Detailed Justification

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Mission Capacity	**70,875**	**72,283**	**71,862**

Provides support to the program goal of raising and maintaining the mission capacity of the STA to meet projected workloads. This goal includes the following activities: (1) Annually, conduct two Agent Candidate Training classes to increase the agent end-strength from approximately 280 agents to 420 agents by the end of FY 2008. Funding supports the recruiting, equipping, and training of approximately 70 students**.** (2) Replaces the aging vehicle fleet with newly designed vehicles. Funding supports the design, engineering, testing, and fielding of specialized vehicles 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, and mobile communication and defensive systems. It also supports the operation of three classified maintenance facilities. (4) Optimizes the use of agent time through the use of contract drivers, government aircraft, and computer-based planning systems. Contract drivers stage and return empty mission vehicles and trailers to their appropriate destinations. Aircraft are used to move agents and contract drivers to staging points to minimize travel time. Aircraft are also used to support the Limited Life Components Program and support emergency response for the Nuclear Emergency Search Team (NEST)/ Accident Response Group (ARG)/Radiological Assistance Program (RAP)/ Joint Tactical Operations Team (JTOT). Funding supports the operation and maintenance of two DC-9s, one C-9, one G3, one Learjet 35, and two Twin Otters.

In FY 2007, specific activities focus on: training new agents, increasing the number of secure convoys completed, producing new Safeguard Transporters (SGTs) and escort vehicles, and maintaining and refurbishing existing equipment to support increased mission activity.

Security/Safety Capability	**14,416**	**13,248**	**16,180**

Provides support to the program goal 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, the implementation of intelligence gathering/dissemination systems, 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

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Response Force, Operational Readiness, 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, 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 and upgrades the NNSA Emergency Operations Center (EOC) in Albuquerque, NM, as well as trains and exercises STA's response capability. Funding supports the Emergency Management Program to include Federal Agent Incident Command System refresher and sustainment training.

The focus in FY 2007 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, testing and evaluating new mission technologies.

Infrastructure and C3 Systems..... **28,717** **25,602** **27,550**

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, control, and communications (C3) systems activities to enhance required oversight of nuclear convoys. Funding supports operation of the Transportation Emergency Control Centers; communications maintenance; electronic systems depot maintenance; installation of the Mobile Interface Controller upgrades; the costs for operating relay stations in five states; and the Very High Frequency radio upgrade required by federal law. (2) Expand, upgrade, and maintain the STA's facilities and equipment to support the increase in federal agents and workload. Funding supports the maintenance, upgrades, required expansion projects, and leases for 80 facilities and their respective equipment.

The FY 2007 focus will be on the completion of facility projects that were started in FY 2006, and the initial funding for implementation of the Albuquerque Transportation Technology Center (ATTC) facility project with the General Services Administration. The vehicle communication systems will also be upgraded to meet the regulatory deadline requirements and maintain the current technology base.

Design Basis Threat Response **18,300** **19,100** **0**

Funding for FY 2007 activities covering DBT is included in projects contained in Mission Capacity, Security/Safety Capability, and Infrastructure and C3 Systems.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Program Management	**10,428**	**12,095**	**14,892**

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 sub-elements: (1) Provide for corporate functions 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, Joint Testing Exercises, routine STA Web support, configuration management, and business integration activities by support contractors.

Total, Secure Transportation Asset Operations and Equipment	**142,736**	**142,328**	**130,484**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Mission Capacity	
The net decrease is attributable to a combination of factors including: completion of retrofit activities for the Electronic Systems Depot; completion of technology project; reduction of engineering and technical support for communications due to completion of NETCOM in FY 2006; completion of refurbishment activities on the SSTs; and extending the refurbishment schedule of the SGTs.	**-421**
Security/Safety Capability	
The net increase in funding supports the additional training requirements resulting from the growth in the workforce and the expanded training to equip the federal agent workforce with necessary, additional skills to defend the shipments of nuclear weapons and nuclear components.	**+2,932**
Infrastructure and C3 Systems	
The net increase is necessary to complete the upgrade of the communication systems to be in compliance with the National Telecommunications Information Administration (NTIA) regulatory requirement for narrowband radio systems. Additionally, the costs for projects started in FY 2006 are funded for completion in FY 2007.	**+1,948**
Design Basis Threat Response	
Technology activities conducted in FY 2006 to meet the FY 2004 Design Basis Threat (DBT) transitioned from design and development to implementation activities which are funded in the mission capacity, security/safety capability, and Infrastructure and C3 Systems (subprograms above). $10 million of the subprograms support the DBT effort.	**-19,100**
Program Management	
The net increase supports the higher projected costs for the Human Reliability Program and the annual Joint Testing Exercise. It will also support an expansion of the internal review and oversight functions.	**+2,797**
Total Funding Change, Secure Transportation Asset Operations and Equipment.....	**-11,844**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects			
Multiple Projects at all Sites	5,728	4,649	3,800
Capital Equipment	0	0	3,000
Total, Capital Operating Expenses	**5,728**	**4,649**	**6,800**

Out-year Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects				
Multiple Projects at all Sites	9,873	2,550	3,291	1,500
Capital Equipment	3,000	0	0	0
Replacement Aircraft Acquisition	0	13,038	16,600	0
Total, Capital Operating Expenses	**12,873**	**15,588**	**19,891**	**1,500**

Secure Transportation Asset

Program Direction

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Secure Transportation Asset Program Direction			
Salaries and Benefits	49,739	60,113	68,003
Travel	5,689	6,008	7,800
Other Related Expenses	1,545	1,530	2,977
Subtotal, Secure Transportation Asset, Program Direction	**56,973**	**67,651**	**78,780**
Use of Prior Year Balances	0	0	0
Total, Secure Transportation Asset Program Direction	**56,973**	**67,651**	**78,780**
Total, Full Time Equivalents	**555**	**575**	**664**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Out-year Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Secure Transportation Asset Program Direction				
Salaries and Benefits	74,200	77,417	76,964	78,782
Travel	9,201	9,564	9,847	6,529
Other Related Expenses	1,696	1,716	1,735	1,755
Total, Secure Transportation Asset Program Direction	**85,097**	**88,697**	**88,546**	**87,066**

Benefits

The Secure Transportation Asset Program Direction makes unique contributions to the NNSA Program Goal 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; (6) staff and operate the Transportation Safeguards Training Site, including the conduct of two 18-week training classes for new agents; and (7) perform administrative and logistical functions for the organization.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Salaries and Benefits	**49,739**	**60,113**	**68,003**

Provides for the salaries and benefits of 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 553 federal agents and secondary positions and 111 staff.

Travel	**5,689**	**6,008**	**7,800**

Provides for travel associated with 125 annual secure convoys, training at other United States (U.S.) Government facilities and military installations, and program oversight.

Other Related Expenses	**1,545**	**1,530**	**2,977**

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, Secure Transportation Asset Program Direction	**56,973**	**67,651**	**78,780**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Salaries and Benefits	
The net increase is due to the addition of 55 additional agents and direct operational secondary personnel. The increase reflects the impact of two forty-person agent candidate training (ACT) classes conducted in FY 2006 and two in FY 2007. The full impact of the last FY 2006 hiring will be noticed in FY 2007 (agents are hired at a student rate with only a few months remaining in the fiscal year). In FY 2007, these individuals will have transitioned from students to agents; consequently, there will be significant increases in salaries, benefits, and overtime. There will also be an increase in support staff positions because of the larger agent force. A portion of the increase is due to removing the overtime pay cap based on the 2004 National Defense Authorization Act, (H.R. 1588), Section 1121. The removal of the Overtime cap has caused a 45-percent increase in estimated overtime cost. The agents now earn their actual hourly rate as opposed to being capped at the GS-10 level. Since workload still exceeds capability, the addition of more agents will result in more total overtime hours and thus increase overtime costs.	**+7,890**
Travel	
The net increase reflects higher travel costs associated with a larger agent/support force. With the addition of 55 additional agents and secondary positions there are additional travel costs both for missions and for training purposes.	**+1,792**
Other Related Expenses	
The increase in Permanent Change of Station funding addresses the need to meet organizational structure changes. The STA will be organized into six units by FY 2008 in order to meet future workload requirements. In order to achieve this restructuring, some agents will have to be relocated to other Agent Commands. Training expenses will also rise due to the addition of 55 agents and secondary positions, and due to the necessity of increasing agent skill sets to meet newly identified threats, particularly in relation to the FY 2004 DBT.	**+1,447**
Total Funding Change, Secure Transportation Asset Program Direction	**+11,129**

Other Related Expenses

	FY 2005	FY 2006	FY 2007
Training.....	953	944	964
PCS Moves.....	500	495	1,800
Other Contractual Services.....	92	91	213
Total, Other Related Expenses.....	**1,545**	**1,530**	**2,977**

Nuclear Weapons Incident Response

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Nuclear Weapons Incident Response			
Emergency Response (Homeland Security)	90,676	100,494	118,555
Emergency Management (Homeland Security)	7,751	6,615	7,366
Operations Support (Homeland Security)	0	10,499	9,433
Total, Nuclear Weapons Incident Response	**98,427**	**117,608**	**135,354**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Emergency Response (Homeland Security)	119,910	121,381	123,603	125,607
Emergency Management (Homeland Security)	7,755	7,755	7,846	8,036
Operations Support (Homeland Security)	10,101	10,883	10,883	11,058
Total, Nuclear Weapons Incident Response	**137,766**	**140,019**	**142,332**	**144,701**

Description

The Nuclear Weapons Incident Response (NWIR) program responds to and mitigates nuclear and radiological incidents worldwide.

The National Nuclear Security Administration (NNSA) Emergency Operations Homeland Security (HS) remains the United States (U.S.) government's primary capability for radiological and nuclear emergency response. 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 constantly maintains a readiness level for protecting and serving the U.S. and its allies. The focus is on providing the U.S. government with a nuclear radiological emergency response capability that is truly ready to respond. The September 11, 2001, attacks signaled a major change in both the intelligence picture and the tactics of the terrorists. The country's national response posture must change to meet the new challenges in the war against terrorism. There is increasing focus on redefining relationships with old partners such as the Federal Bureau of Investigation (FBI), forging new relationships with the Department of Homeland Security (DHS), and enhancing Technology Integration. Lastly, operations tempo (OPSTEMPO) continues to increase.

Effective May 1, 2004, the Department consolidated Emergency Operations Centers and threat assessment by transferring these functions to NNSA. Starting in FY 2006, funding for the Emergency Operations Centers and associated functions are included within this program under "Operations Support HS."

In recognition of the fact that NWIR's performance metrics were not measuring what was vitally important to the organization, the program has eliminated its current measures and adopted a single

measure; Readiness. Readiness encompasses trained personnel, reliable and operational equipment and communications ready to respond to and mitigate nuclear and radiological incidents worldwide. This puts NWIR'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. NWIR tested its concepts for three quarters in FY 2005 and fully implemented the readiness measure for FY 2006.

This budget realigns the Render Safe Research and Development funding from the Defense Nuclear Nonproliferation Appropriation where it was inadvertently budgeted and funded in FY 2006 to Emergency Response where it is managed. It further accomplishes some minor reprioritization of requirements and includes price growth at approved escalation rates. There is virtually no program growth.

This Program budget represents the minimum required to accomplish vital national security missions. It assumes that the Department of Homeland Security will provide the funding required by the Homeland Security Act of 2002. Program Direction to support all NWIR programs is budgeted for in the Office of the Administrator appropriation account.

The entire Nuclear Weapons Incident Response program is a homeland security related activity.

Benefits

Within the Nuclear Weapons Incident Response program, the Emergency Response HS, Emergency Management HS, and Operations Support HS subprograms each make unique contributions to Program Goal 01.37.00.00. 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. Operations Support activities support Headquarters' emergency response operations through the Headquarters' Watch Office and Operations Center. Program staff participate in tests and exercises to improve communication and notification capabilities and procedures. NWIR 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 site emergencies.

Major FY 2005 Achievements

- Deployed multiple field teams to conduct operations in support of Homeland Security, including National Special Security Events, National Security Events, and elevated threats. These included: Inauguration; State of the Union; Super Bowl; International Monetary Fund Meetings; Marine Corp Marathon; Albuquerque Balloon Festival; 10 Radiological Assistance Program (RAP) Deployments; and two Ongoing Search Operations.

- Participated in multiple interagency national and international counter terrorism exercises, including: Direct Focus; Eligible Receiver; Dingo King; and Vital Archer.

- Participated in Pinnacle, a major interagency continuity exercise.

- Supported the FBI stand up of its render safe capability.

- Improved the capability of triage, a radiological reach-back capability, to provide first responders with expert analysis of detector readings.

Major Outyear Considerations

NWIR outyear budgets will concentrate on the programs that contribute the most to vital national security missions.

Deferred requirements will be reprioritized based on fact of life changes. High priority is likely for an increase to the Render Safe Research and Development and/or Technical Integration program to leverage scientific breakthroughs, increases to fix deficiencies surfaced by quarterly evaluation of the readiness performance measure, and necessary upgrades to Emergency Operations Centers.

Annual Performance Results and Targets

NWIR was not part of the NNSA during this entire timeframe and the DOE APP did not include measures for NWIR for these years.

FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
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)	N/A	N/A	R :71	T: 91	T: 91	T: 91	T: 91	T: 91	T: 91	Annually, maintain an Emergency Operations Readiness Index of 91 or higher.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Emergency Response (Homeland Security)	**90,676**	**100,494**	**118,555**

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 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 (NEST)** **67,940** **76,111** **93,805**

Under the provisions of the Atomic Energy Act of 1954 and Presidential Decision Directives 39 and 62, 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 was initiated in 1974 to provide DOE/NNSA technical assistance to a Lead Federal Agency (LFA), whether it be DHS, DOE, FBI, Environmental Protection Agency (EPA), Nuclear Regulatory Commission (NRC), 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 in the detection of nuclear devices: searching for, rendering safe, and command and control of the asset. Furthermore, there are six 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), Joint Technical Operations Team (JTOT), and Lincoln Gold Augmentation Team (LGAT). 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 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.

Although it appears that this program is increasing significantly, it is not. This budget includes a realignment of $15 million from the Defense Nuclear Nonproliferation appropriation, where it was

inadvertently included in FY 2006, to the NEST Technology Integration account where it belongs. Technology Integration has been managing this program since its inception.

- **Other Assets** **22,736** **24,383** **24,750**

The HS Emergency Response also maintains the following additional assets to provide assistance to local, state and other federal agencies and conduct exercises in response to emergencies involving nuclear/radiological materials as well as the detection of biological agents. Additionally, these assets provide 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, measures, and tracks 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 plots generated by sophisticated computer models.
- The Consequence Management Teams provide the technical capabilities 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 treatment and medical consultation for injuries resulting from radiation exposure and contamination and serves as a training facility. 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.

Emergency Management (Homeland Security) **7,751** **6,615** **7,366**

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 have a fully implemented and fully integrated Departmental comprehensive emergency management system throughout the DOE complex.

The Office of NNSA Emergency Management Implementation is responsible 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 DOE and NNSA emergency management policy. This office serves as the single point of contact for coordinating among NNSA Headquarters offices, site offices, sites, facilities, and contractors to ensure compliance with and implementation of Departmental and NNSA-specific emergency management policy, plans and performance expectations.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

The Emergency Operations Training Academy is an academically accepted training and development center that remains on the cutting edge of technology and innovation. It is the Emergency Operations point of service for training development and oversight.

In late FY 2005, Continuity Programs expanded to include responsibility for all of DOE. These programs develop the Headquarters and the field Continuity of Operations (COOP) plans that are updated constantly. Periodic training and exercises are required. NNSA and DOE continue to participate in major interagency exercises sponsored by DHS on an annual basis.

Operations Support (Homeland Security)	**0**	**10,499**	**9,433**

Emergency Operations Support operates the DOE Emergency Operations Centers and the Emergency Communications Network. The DOE Headquarters Emergency Operations Center provides the core functions of supporting Departmental command, control, communications and intelligence requirements for all types of emergency situations. The goal of the Emergency Communications Network (ECN) Program is to provide the DOE/NNSA 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.

Total, Nuclear Weapons Incident Response	**98,427**	**117,608**	**135,354**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Emergency Response (Homeland Security)	
Nuclear Emergency Support Team (NEST)	
Realigns properly Render Safe Research and Development funding that is part of the Emergency Operations baseline in FY 2006 from Defense Nuclear Nonproliferation where it was inadvertently appropriated.	**+15,000**
Increase for escalation.	**+1,674**
Initiation of a program to recruit and train personnel for the Accident Response Group and Joint Technical Operations Team (ARG/JTOT) to fill watch bill requirements. This program is critical due to the downsizing of the Defense Programs workforce.	**+900**
Increases Radiological Assistance Program (RAP) training commensurate with their expanded responsibilities in the area of crisis response.	**+872**
Extending the timeframe for replacing and upgrading ARG/JTOT equipment. It is necessary to provide funding for higher priority NNSA missions.	**-600**
This decrease of 1 percent is a general rescission, which is taken in accordance with the Department of Defense Appropriations Act, P.L. 109-148.	**-152**
Other Assets	
Increase for escalation.	**+536**
Consequence Management has traditionally been sized to provide 12 hour per day coverage. It is unreasonable to expect less than a 24-hour per day coverage to be required. This reprioritization slightly increases equipment and increases personnel significantly to bring capability into line with the expected response scenario.	**+960**
Eliminates one of three B200 aircraft used to accomplish radiological search and consequence management missions to provide funding to support higher priority DOE missions.	**-1,129**
Subtotal, Emergency Response	**+18,061**
Emergency Management (Homeland Security)	
Increase for escalation.	**+146**
Increases funding to Emergency Operations Training Academy to support response training needs.	**+605**
Subtotal, Emergency Management	**+751**

	FY 2007 vs. FY 2006 ($000)
Operations Support (Homeland Security)	
Increase for escalation.	**+231**
Decreases Emergency Operations Centers upgrade and maintenance funding to support higher priority NNSA/DOE missions.	**-1,297**
Subtotal, Operations Support.....	**-1,066**
Congressionally Directed Activity	
This request accomplishes a major realignment, some minor reprioritization of requirements, and provides price growth at approved escalation rates. There is virtually no program growth. This budget represents the minimum required to accomplish the country's vital national security missions.	**0**
Total Funding Change, Nuclear Weapons Incident Response.....	**+17,746**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	0	0	0
Capital Equipment	571	589	606
Total, Capital Operating Expenses	**571**	**589**	**606**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0	0
Capital Equipment	624	643	662	682
Total, Capital Operating Expenses	**624**	**643**	**662**	**682**

Facilities and Infrastructure Recapitalization Program

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Facilities and Infrastructure Recapitalization Program			
Operations and Maintenance (O&M)			
Recapitalization	212,353	70,344	192,649
Facility Disposition	50,000	19,200	25,000
Infrastructure Planning	26,884	10,296	27,634
Subtotal, O&M	**289,237**	**99,840**	**245,283**
Construction	24,485	49,525	45,935
Total, Facilities and Infrastructure Recapitalization Program	**313,722**	**149,365**	**291,218**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Target Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Facilities and Infrastructure Recapitalization Program				
Operations and Maintenance (O&M)				
Recapitalization	204,814	240,825	312,934	396,996
Facility Disposition	25,000	20,000	0	0
Infrastructure Planning	32,035	40,754	45,096	0
Subtotal, O&M	**261,849**	**301,579**	**358,030**	**396,996**
Construction	48,520	37,678	10,024	0
Total, Facilities and Infrastructure Recapitalization Program	**310,369**	**339,257**	**368,054**	**396,996**

Description

The Facilities and Infrastructure Recapitalization Program (FIRP) mission is to restore, rebuild and revitalize the physical infrastructure of the nuclear weapons complex.

This mission contributes significantly to the third leg of the new Triad, as identified in the Nuclear Posture Review dated December 2001 and released by the Administration in January 2002. The program applies new direct appropriations to address an integrated, prioritized series of repair and infrastructure projects focusing on deferred maintenance that will significantly increase the operational efficiency and effectiveness of the NNSA nuclear weapons complex sites.

FIRP is a capital renewal and sustainability program that was established to reduce the estimated $2.4 billion backlog of NNSA's deferred maintenance, which developed during the 1990s, to an appropriate level consistent with industry best practices. The FIRP Recapitalization subprogram funds projects in accordance with established criteria and priorities that target deferred maintenance reduction and repair (non-programmatic) of mission essential facilities and infrastructure. These projects are key to restoring the facilities that house the people, equipment, and material necessary to support scientific

research, production, or testing to conduct the Stockpile Stewardship Program, the primary NNSA mission. FIRP Facility Disposition activities reduce Environment, Safety and Health (ES&H) and safeguards and security requirements, address a portion of the necessary footprint reduction of the complex, improve management of the NNSA facilities portfolio, and reduce long-term costs and risks. FIRP Infrastructure Planning funds planning activities for next-year Recapitalization projects. Its primary objective is to ensure that projects are adequately planned in advance of project start. This will permit the timely use of construction funds and effective project execution, using a graded approach to meet the requirements of DOE Order 413.3, "*Program and Project Management for the Acquisition of Capital Assets*". FIRP Construction funds selected utility line-item construction projects across the weapons complex to further reduce the deferred maintenance backlog. This satisfies a critical need for improvement to NNSA sites' utilities infrastructure.

FIRP is separate and distinct, but 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, and allow for the recapitalization of aging facility systems. FIRP works in partnership with RTBF to assure the facilities and infrastructure of the nuclear weapons complex are restored to an appropriate condition to support the mission, and to institutionalize responsible and accountable facility management practices.

Beginning in FY 2005, the cost of conducting External Independent Reviews (EIRs) for Capital Asset Projects greater than $5 million within the Facilities and Infrastructure Recapitalization Program (FIRP) have been funded by this program. Examples of EIRs include conducting Performance Baseline EIRs prior to Critical Decision-2 (CD-2) to verify the accuracy of cost and schedule baseline estimates, and conducting Construction/Execution Readiness EIRs, which are done for all Major System projects prior to CD-3. These funds, which are managed by the Office of Engineering and Construction Management, are exclusively used for EIRs directly related to these projects funded within FIRP. Beginning in FY 2007, the EIR business line will be financed via the Working Capital Fund to achieve parity on how EIRs are funded, and to standardize the administration of these critical activities.

Benefits

FIRP supports the overall goals of the Weapons Activities appropriation through improvements to NNSA facilities and infrastructure that result in increased operational efficiency and effectiveness. FIRP is able to readily respond to changing missions, priorities and decisions affecting both sites and their facilities within the nuclear weapons complex through the implementation of its integrated, prioritized project list that targets the worst facilities and infrastructure deficiencies first. Within FIRP, four subprograms each make unique contributions to Program Goal 01.38.00.00. The Recapitalization subprogram funds capital renewal and sustainability projects, focusing on deferred maintenance reduction required to restore the facilities and infrastructure comprising the nuclear weapons complex to an acceptable condition. The Facility Disposition subprogram funds the decontamination, dismantlement, removal and disposal of excess facilities that have been deactivated. The Infrastructure Planning subprogram funds planning activities for next-year Recapitalization projects. FIRP project planning and execution follow a graded approach for the requirements of DOE Order 413.3, "*Program and Project Management for the Acquisition of Capital Assets*". The FIRP Construction subprogram

funds selected utility line item construction projects across the nuclear weapons complex to further reduce the deferred maintenance backlog, and satisfy a critical need for improvement to NNSA sites' utilities infrastructure. These four subprograms combined are effectively addressing the many facilities and infrastructure related problems that exist at NNSA sites due to previous years of underfunding.

FIRP has made excellent progress towards achieving its long-term performance goals including ambitious targets and timeframes, as demonstrated by the results reported to date for excess facilities disposition and deferred maintenance reduction. The program is improving the condition of NNSA's facilities and infrastructure, and has demonstrated significant and measurable progress towards meeting both the NNSA's corporate long-term performance goals for deferred maintenance reduction and excess facilities disposition. The FY 2007-2011 Budget Request somewhat improves the funding profiles for FIRP that were artificially compressed in the FY 2006-2010 Budget Request. Specifically, this year's FY 2007-2011 projections increase by over 15 percent over the FY 2006 Request. Even with these additions, it is no longer possible to meet the Congressionally mandated 2011 date for completing activities under this program. The Program is currently re-assessing the impact of reduced funding on its deferred maintenance goals.

FIRP is effectively executing the Program and reports the corresponding planned and actual performance results in the congressional budget request, Program Assessment Rating Tool (PART) self-assessment and during the NNSA Administrator's Program Reviews. The FIRP's program partners, NNSA sites and M&O contractors have committed to the achievement of the FIRP annual performance goals. The success of FIRP to date is attributed to strong central management of the program; independent and objective oversight; and an ongoing partnership between Headquarters program partners, NNSA Site Offices, and NNSA M&O contractors.

Major Outyear Considerations

FIRP is established to reduce the NNSA's large backlog of deferred maintenance and return the condition of the nuclear weapons complex to acceptable standards within a ten-year period (FY 2001-2011). The program's goals include: elimination of $1.2 billion of deferred maintenance, achieving a Facility Condition Index of 5 percent, and elimination of 3,000,000 gross square feet of excess facilities. Although FIRP is achieving excellent results, the current funding profile will not allow the NNSA to meet its established goals by the Congressionally mandated completion date of 2011. Under the Future-Years Nuclear Security Program (FYNSP), successful completion of the FIRP mission requires a two-year extension to the program's 2011 end date. NNSA is seeking legislation to amend the FIRP end date from 2011 to 2013, and will request restored funding in order to meet the original program objectives.

FIRP will not achieve the corporate goal of eliminating $1.2 billion of NNSA's deferred maintenance by FY 2009, which adversely impacts mission support of the Stockpile Stewardship Program. The FY 2006 funding will result in no improvement to the overall condition of its facilities as measured by the Facilities Condition Index (FCI) in FY 2006. The outyear funding profile will not permit mission-critical facilities to improve sufficiently to meet the 5 percent FCI goal by FY 2009.

While FIRP is scheduled to achieve its original 3,000,000 gross square feet footprint reduction goal in FY 2009, an additional 1,700,000 gross square feet of excess facilities has been identified that still

require disposition. The FYNSP funding profile does not support disposition of these additional excess facilities.

FIRP is funding a number of critically required utility line item projects. Two of these construction projects originally slated for FY 2007 were cancelled (Replace Main Switchgear at Kansas City Plant and High Pressure Fire Loop Zone 12 South at Pantex). Execution of utility line items recapitalizes key utility systems across the nuclear Weapons Complex. Funding totaling $34.2 million (FY 2007-2009) is redirected to Operations and Maintenance (recapitalization) in order to meet higher priority recapitalization needs.

Major FY 2005 Achievements

- FIRP achieved NNSA's FY 2005 goal to stabilize deferred maintenance in FY 2004 - one year ahead of schedule. In FY 2005, the Program ensured NNSA's deferred maintenance remained stable by continuing to reduce the residual deferred maintenance backlog at levels greater than new deferred maintenance growth. The stabilization of deferred maintenance is a major NNSA accomplishment that indicates physical deterioration of the nuclear weapons complex has been arrested.

- The FIRP facility disposition program has eliminated a cumulative total of more than two million gross square feet of excess facilities, with strict attention to cost efficiency and within cost parameters that compare favorably to best-in-class organizations

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the pubic, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Facilities and Infrastructure Recapitalization Program (FIRP) Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2004, the OMB evaluated the FIRP using the PART. The OMB gave the FIRP scores of 80 percent on the Purpose and Design Section; 100 percent on the Strategic Planning Section; 90 percent on the Program Management Section, and 67 percent on the Program Results Section. Because the FIRP was new, with only limited measurable results to date, the OMB's overall PART rating for the FIRP was 78 percent, its highest allowable rating of "Moderately Effective." The OMB assessment found that the FIRP has a clear and unique purpose; is well managed; and has clear, concise, meaningful, and measurable performance metrics.

The FIRP provided the OMB with an FY 2005 update to its FY 2004 PART, and completed an FY 2006 and FY 2007 update as an element of its self-assessment program. The Program expects to achieve a rating of "Effective" during the next OMB PART review due to program improvements in response to

previous PART recommendations, sustained successful achievement of annual performance targets, and overall progress towards achieving long-term program goals.

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Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Execute oversight of more than 50 FY 2002 Recapitalization Projects consistent with scope, cost, and schedule baselines. (MET GOAL) Implement an excess prioritized project list to ensure high priority facilities are demolished, based on NNSA's 10 Year Comprehensive Site Plans (TYCSPs) that result in disposal of over 485,311 square feet of floor space. (MET GOAL)	Execute a multi-year recapitalization program to arrest the deterioration and reduce the backlog of maintenance and repair projects. (MET GOAL)

Annual Performance Results and Targets

(R = Results; T= Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Deferred Maintenance Reduction: Annual dollar value; and cumulative percentage of FY 2003 deferred maintenance baseline of $1.2 billion; funded for elimination by FY 2009	R: $77M	R: $97M (8%) T: $79M (7%)	R: $178.2M (23%) Deferred maintenance remains stabilized. T: $154.75M (21%) Stabilize deferred maintenance by the end of FY 2005.	T: $60M (28%)	T: $151M (41%)	T: $124M (51%)	T: $161M (64%)	T: $144M (76%)	T: $151M (89%)	The 2009 date for elimination of $1.2B of the deferred maintenance backlog has slipped due to constrained outyear funding.
Footprint Reduction: Annual gross square feet (gsf) of NNSA excess facilities space funded for elimination; and cumulative percentage of FY2002-FY2009 total goal of three million gsf eliminated	R: 317,707 (34%)	R: 525,000 (57%) T: 325,000 (45%)	R: 514,000 (75%) T: 350,000 (69%)	T: 175,000 (79%)	T: 225,000 (86%)	T: 225,000 (94%)	T : 175,000 (100%)	N/A	N/A	By 2009, eliminate three million gsf of excess facility space.

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Efficiency Measure: Annual NNSA complex-wide aggregate Facility Condition Index (FCI), as measured by deferred maintenance per replacement plant value, for all mission-essential facilities and infrastructure (the industry standard is below 5%) (Efficiency)	N/A	R: 7.2% T: 10%	R: 7.4% T: 9%	T: 7.4%	T: 6.8%	T: 6.4%	T: 6.1%	T: 5.6%	T: 5.5%	By 2009, return the condition of mission essential facilities and infrastructure to industry standards. (Note: FCI Targets based on the latest NNSA Ten Year Comprehensive Site Plans (TYCSP) indicate that the FY 2009 endpoint target will not be achieved).

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Recapitalization	**212,353**	**70,344**	**192,649**

Recapitalization funds capital renewal and sustainability projects required to restore the facilities and infrastructure comprising the nuclear weapons complex to an acceptable condition. NNSA has established corporate commitments/performance goals to stabilize deferred maintenance by FY 2005 (achieved in FY 2004), and reduce the residual deferred maintenance by FY 2009 to less than five percent of replacement plant value for mission essential facilities and infrastructure. The primary executor of these corporate commitments is the Recapitalization subprogram. Recapitalization funds projects in accordance with established criteria and priorities that target deferred maintenance reduction and repair (non-programmatic) of mission essential facilities and infrastructure. These projects are key to restoring the facilities that house 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 $20 million on its complex-wide Roof Asset Management Program, and will invest an additional $6 million in FY 2006 and $10 million in FY 2007 to maintain a corporate approach for the management of NNSA's roofing assets. Benefits of the Roof Asset Management Program include improved cost efficiencies, improved quality and life extension of NNSA's roofing assets, consistent approach and common standards for optimal roofing repairs and replacement, and additional deferred maintenance reduction.

The focus of the Recapitalization subprogram in FY 2007 will be on achieving its annual deferred maintenance reduction target in support of NNSA's aggressive corporate goal to reduce complex-wide deferred maintenance to within industry standards. The FY 2007-2011 Budget Request somewhat improves the funding profiles for FIRP that were artificially compressed in the FY 2006-2010 Budget Request. Specifically, the FIRP funding level for FY 2007 increases by 3.7 percent above the FY 2006 Request, and the FYNSP increases by nearly 10 percent. Even with these additions, FIRP funding will not be restored to previously planned levels, and it is no longer possible to meet the Congressionally mandated 2011 date for completing activities under this program.

Facility Disposition	**50,000**	**19,200**	**25,000**

Facility Disposition provides funds to accomplish 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 program has established a performance goal to reduce the NNSA footprint by three million gross square feet by FY 2009. Annual targets are in place that demonstrate aggressive progress towards achieving this goal. Facility Disposition activities reduce Environment, Safety and Health (ES&H), and safeguards and security requirements, address a portion of the necessary footprint reduction of the complex, improve management of the NNSA facilities portfolio, and reduce long-term costs and risks.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

FIRP Facility Disposition provides an economical approach to meeting the direction of Congress and supports overall NNSA footprint reduction efforts. Recent independent reviews of disposition costs indicate that the unit costs (i.e., dollars per square foot) compare very favorably with industry norms for the disposition of similar facilities.

Infrastructure Planning..... **26,884** **10,296** **27,634**

Infrastructure Planning funds planning activities for next-year Recapitalization projects. Its primary objective is to ensure that projects are adequately planned in advance of project start to permit the timely obligation of construction funds and effective project execution. The Infrastructure Planning subprogram supports: the establishment of Recapitalization project baselines; planning and design for priority general infrastructure projects, to include FIRP utility line items; contract preparation and other activities necessary to ensure the readiness to obligate and execute funds. Infrastructure Planning also funds Other Project Costs (OPC) in anticipation of FIRP Project Engineering and Design (PED) and construction for FIRP utility line items. FIRP projects follow a graded approach for the requirements of DOE Order 413.3, "*Program and Project Management for the Acquisition of Capital Assets*". Other key activities funded by this subprogram include assessments of the physical condition of the complex to aid in the prioritization of deferred maintenance reduction and facility consolidation efforts; procurement support of small business contracts; and planning for the repair and renewal of cross-complex roofing projects.

FIRP Construction..... **24,485** **49,525** **45,935**

FIRP Construction funds selected utility line item construction projects across the weapons complex to further reduce the deferred maintenance backlog, and satisfy a critical need for improvement to NNSA sites utilities infrastructure. These projects are expected to result in increased efficiencies because it is typically more cost effective to replace, rather than maintain, aging utilities. The projects typically include: electrical power distribution, central steam systems and distribution, central chilled water facilities and distribution, water supply systems, sanitary waste disposal systems, and natural gas distribution systems. FIRP Construction also funds the Project Engineering and Design (PED) of utility line item construction projects. FIRP initiated PED in FY 2005 and FY 2006 for several utility line item projects that will begin construction in FY 2007, consistent with Construction Project Data Sheets (CPDS). Initial planning and conceptual design activities for proposed FIRP utility line item construction projects (i.e., Other Project Costs) are funded from the Infrastructure Planning subprogram. These construction projects meet the criteria for funding within the FIRP program and are managed in accordance with current Department of Energy and NNSA orders and policies, including DOE Order 413.3, "*Program and Project Management for the Acquisition of Capital Assets*". All FIRP line item construction projects are rated as "Green" by the DOE Office of Engineering and Construction Management.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

- **07-D-253, TA-1 Heating Systems Modernization** **0** **0** **14,500**

The objective of Sandia's Technical Area – I (TA-I) Heating Systems Modernization (HSM) project is to prevent further degradation of the 50-year old, mission essential, TA-I heating utility by upgrading to a reliable, cost effective, safe and environmentally friendly heating system that mitigates risks and extends the useful life of this infrastructure to the year 2035. New building heating systems will be designed and constructed for approximately 50 buildings of various sizes, situated throughout Technical Area I and adjacent areas. The natural gas distribution utility will be modified to deliver natural gas to each building in a reliable and safe manner. The existing steam to hot water conversion equipment will be removed and, in many cases, the new boiler(s) and piping will be installed in the same space. In other locations, new stand-alone facilities may be required due to the lack of space in the building. This project will be a design-bid-build acquisition. The M&O contractor will provide the direct project management, direct construction management and administer the design and construction contracts. Design services are being provided by an experienced, small business qualified engineering firm on a firm, fixed price basis. The design services contract was established based on best value to the government, considering qualifications and price. Construction services will be accomplished by multiple, small business, firm fixed price contracts awarded on the basis of competitive bids to pre-qualified contractors. PED funding is provided under 05-D-160 for Architect-Engineering services to develop and complete preliminary and final (Title I and II) design of this project.

- **06-D-160, FIRP Project Engineering and Design (PED) Project**..... **0** **5,753** **2,700**

This FIRP PED project provides for Architect-Engineering (A-E) services (Title I and Title II) for several utility construction projects that begin in FY 2006 (i.e., High Pressure Fire Loop, Zone 12, at Pantex Plant, Replace Main Switchgear at Kansas City Plant, and Potable Water System Upgrade at Y-12 National Security Complex), allowing designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). Based on revised out year FIRP funding, the Electrical Distribution System Upgrade project at the Y-12 National Nuclear Security Complex was withdrawn, and the associated FY 2006 PED funding was realigned to Y-12's Potable Water System Upgrade (06-04). 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.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007

- **06-D-601, Electrical Distribution System Upgrade (EDSU)** **0** **3,960** **6,429**

  Funding for this project provides for the last year of construction for the Electrical Distribution System Upgrade at the Pantex Plant. The EDSU project will address three areas of the electrical distribution system that are of questionable reliability due to aging, and/or unavailability of spare parts, which have been prioritized by safety and mission criteria: 1) Ground Fault and Surge Arrester Upgrade, 2) Facility Standby Diesel Generators Upgrade, and 3) the Overhead Electrical Power Line Replacement. PED funding was provided under 05-D-160 for Architect Engineering services to develop and complete preliminary and final (Title I and II) design of the EDSU.

- **06-D-602, Gas Main & Distribution System Upgrade (GMDSU)** **0** **3,663** **3,145**

  Funding for this project provides for the construction of the Gas Main & Distribution System Upgrade at the Pantex Plant. This Project will replace the existing Government-owned gas main and distribution system comprised of approximately 8.4 miles of carbon steel pipe offsite, approximately 5.7 miles of carbon steel pipe onsite, and approximately 4.4 miles of high density polyethylene pipe onsite ranging in diameters from ½" to 12". Upgrade of the gas main and distribution system will reduce the deferred maintenance backlog by $3.1 million. The project cost for the GMDSU has increased, following a program-directed Independent Cost Review, from $6,361,000 to $8,856,000. Per Title 50 USCA § 2744, *Limits on construction projects*, the included construction project data sheet constitutes formal notification of cost increases greater than 25 percent. No construction funds will be used until the requirements of Title 50 USCA § 2744 have been satisfied. Additionally, no construction funds will be used until the performance baseline has been validated. The procurement strategy for this project has changed from a design-bid-build to a design-build contract. Due to the change in procurement strategy, PED funds provided under 05-D-160 will be used for the design portion of the design-build subcontract. While the construction cost has increased, the design costs have remained unchanged with no need for additional PED. PED funding is provided for Architect Engineering services to develop and complete preliminary and final (Title I and II) design of the GMDSU.

- **06-D-603, Steam Plant Life Extension (SPLE) Project, Y-12** **0** **722** **17,811**

  Funding for the Steam Plant Life Extension (SPLE) project at the Y-12 National Security Complex provides for the repair and/or replacement of existing boiler and auxiliary systems and components. Major scope elements include the following: boiler systems, coal receiving and handling system, forced-draft system, induced-draft system, feed-water system, wet and dry ash handling systems, steam plant wastewater system, steam plant control system, steam plant electrical system, and steam plant structural system. Completion of this project will eliminate approximately $21 million in deferred maintenance costs associated with the steam plant facility at Y-12. The project cost has increased following a program-directed Independent Cost Review. There is an increase in construction cost due to material cost increases, better definition of scope, additional security costs associated with working in limited access areas, and clean air permitting requirements. The AE Title I Design estimate shows the TEC approximately $8.9M higher than the conceptual estimate,

but still within the upper end of the cost range established at CD-1. PED funding is provided under 05-D-160 for Architectural Engineering services to develop and complete preliminary and final (Title I and II) design of the SPLE.

- **05-D-160, FIRP Project Engineering and Design (PED) Project**..... **8,631** **10,537** **648**

This FIRP PED project provides for Architect-Engineering (A-E) services (Title I and Title II) for several utility construction projects that begin in FY 2005 (i.e., TA I Heating System Modernization at Sandia National Laboratories, Steam Plant Life Extension (SPLE) Project at Y-12 National Security Complex, and Electrical Distribution System Upgrade and Gas Main and Distribution System Upgrade at Pantex Plant) allowing designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). The resources identified provide the last year of PED for the SPLE Project. The design effort will be sufficient to ensure project feasibility, define 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.

- **05-D-601, Compressed Air Upgrades Project**..... **4,365** **9,644** **702**

This project provides funding to construct the Compressed Air Upgrades Project (CAUP). The objective of this project is to rehabilitate the existing compressed air capability at the Y-12 National Security Complex to maintain a reliable, cost-efficient compressed air capability for current and future buildings and facilities that will in turn ensure continued operations of Y-12's production facilities. PED funding is provided under 04-D-203 for Architect Engineering services to develop and complete preliminary and final (Title I and II) design of the CAUP.

- **05-D-602, Power Grid Infrastructure Upgrade**..... **9,921** **8,415** **0**

The primary objectives of this project at the Los Alamos National Laboratory (LANL) are to construct the Southern Technical Area substation, install a new 115kV transmission line, and address deferred maintenance issues at the Eastern Technical Area substation, thus eliminating future vulnerabilities to the power supply and distribution systems in LANL. This project will be accomplished through a design-build acquisition method, which is standard industry practice for this type of project. Design and construction will proceed in parallel, therefore, there are no PED funds shown for this project.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **05-D-603, New Master Substation Unit, Technical Areas I and IV**.....	**595**	**6,831**	**0**

This project provides for the New Master Substation Unit (NMSU) for Technical Areas I and IV at Sandia National Laboratories (SNL) in Albuquerque, New Mexico. The NMSU incorporates the design basis features for Sandia's standardized master substations. Standardization of substations will allow for the use of components/sub-systems that have proven operating efficiency and reliability, ease of maintenance, personnel and system safety features, and result in lower spare parts inventory. The new 12.47 kilovolt underground distribution feeder cables will connect the NMSU to the existing normal service master substations (Subs 35, 36, 37, & 41) in the Technical Area I-IV campus in a radial/loop configuration. The project enables procurement and delivery of the main transformer to the site in concert with the beginning of construction scheduled to start in FY 2006. PED funding was provided under 04-D-203 for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and II) design of the NMSU.

▪ **04-D-203, FIRP Project Engineering and Design (PED) Project**.....	**973**	**0**	**0**

This PED project provides for Architect-Engineering (A-E) services (Title I and Title II) for two utility construction projects that began in FY 2004 (i.e., CAUP at Y-12 National Security Complex and the NMSU at SNL) allowing designated projects to proceed from conceptual design into preliminary and definitive design, Titles I and II, respectively. 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.

Total, Facilities and Infrastructure Recapitalization Program.....	**313,722**	**149,365**	**291,218**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Recapitalization	
The increase reflects FY 2007 funding that is essential to continued progress in restoring the condition of mission-critical facilities and infrastructure across the nuclear weapons complex to an acceptable condition. The increase reflects the redirection of FY 2007 planned funding from FIRP's subprograms (Disposition and Construction) to Recapitalization to enable the accomplishment of additional deferred maintenance reduction of mission-critical facilities and infrastructure. The FY 2007 and outyear funding increases support the NNSA's legislative proposal to extend FIRP's Congressionally mandated 2011 end date to 2013.	**+122,305**
Facilities Disposition	
The increase, coupled with better than expected results from prior years' execution, will enable this subprogram to achieve its long-term goal to eliminate three million gross square feet of excess space by FY 2009.	**+5,800**
Infrastructure Planning	
The increase is an alignment with the Recapitalization subprogram's funding increase, and supports the continuation of credible, up-front planning and baselining of planned outyear Recapitalization projects. These planning activities will ensure the effective and efficient expenditure of program funds.	**+17,338**
Construction	
The decrease reflects a reduction in construction project mortgages. The decrease is partially offset by commencement of one new utility item construction project that will result in further reductions to NNSA's deferred maintenance.	**-3,590**
Total Funding Change, Facilities and Infrastructure Recapitalization Program.....	**+141,853**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	122,703	42.414	130,175
Capital Equipment	7,533	2,604	7,992
Total, Capital Operating Expenses	**130,236**	**45,018**	**138,167**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	134,081	138,103	142,246	146,513
Capital Equipment	8,231	8,478	8,733	8,995
Total, Capital Operating Expenses	**142,312**	**146,581**	**150,979**	**155,508**

[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 2006 and FY 2007 funding shown reflects estimates based on actual year to date FY 2005 obligations.

Construction Projects [a, b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
07-D-253, TA-1 Heating Systems Modernization, SNL....	49,524	0	0	0	14,500	35,024
06-D-160, Facilities and Infrastructure Recapitalization Program Project Engineering and Design, VL.....	8,453	0	0	5,753	2,700	0
06-D-601, Electrical Distribution System Upgrade, PX.....	10,389	0	0	3,960	6,429	0
06-D-602, Gas Main and Distribution System Upgrade, PX.....	6,808	0	0	3,663	3,145	0
06-D-603, Steam Plant Life Extension Project, Y-12.....	44,831	0	0	722	17,811	26,298
05-D-160, Facilities and Infrastructure Recapitalization Program, Project Engineering and Design, VL.....	19,816	0	8,631	10,537	648	0
05-D-601, Compressed Air Upgrades Project, Y-12.....	14,711	0	4,365	9,644	702	0
05-D-602, Power Grid Infrastructure Upgrade, LANL ..	18,336	0	9,921	8,415	0	0
05-D-603, New Master Substation Unit, Technical Area I & IV, SNL	7,426	0	595	6,831	0	0
04-D-203, Facilities and Infrastructure Recapitalization Program, Project Engineering and Design, VL.....	4,670	3,697	973	0	0	
Total, Construction.....			**24,485**	**49,525**	**45,935**	

[a] The TEC estimate is for design only for the PED projects included in 06-D-160, 05-D-160, and 04-D-203.

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

Outyear Construction Projects

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
07-D-253, TA-1 Heating Systems Modernization, SNL	13,000	12,000	10,024	0
06-D-603, Steam Plant Life Extension Project, Y-12.....	15,020	11,278	0	0
08-D-xxx, Potable Water System Upgrades, Y-12.....	20,500	14,400	0	0
Total, Construction	**48,520**	**37,678**	**10,024**	**0**

07-D-253 TA-1 Heating Systems Modernization
Sandia National Laboratories, New Mexico

1. Significant Changes

- None.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	2Q FY 2005	3Q FY 2006	2Q FY 2007	2Q FY 2011	1Q FY 2010	1Q FY 2011
FY 2007	2Q FY 2005	3Q FY 2006	2Q FY 2007	2Q FY 2011	1Q FY 2010	1Q FY 2011

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs[a]	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	55,393[b]	3,178	6,159	58,571 [b]	58,678	54,000-63,500

4. Project Description, Justification, and Scope

Project Description:

New building heating systems will be designed and constructed for approximately 50 buildings of various sizes, situated throughout Technical Area I and adjacent areas. The natural gas distribution utility will be modified to deliver natural gas to each building in a reliable and safe manner. The existing steam to hot water conversion equipment will be removed and, in many cases, the new boiler(s) and piping will be installed in the same space. In other locations, new stand-alone facilities may be required because of the lack of space in the building.

The central steam plant will be decommissioned, abated (asbestos, lead paint, etc.), and demolished. The fuel oil system that serves as a second energy source for the central steam plant will have the inventory reduced through burning, and the remainder pumped out for removal. The tanks and piping will be removed and made available for reapplication or salvage. Finally, the steam pits that contain asbestos materials will be abated and abandoned in place. All steam and condensate piping will be abandoned in place.

[a] D&D costs are included in the Total Estimated Cost (TEC).

[b] The TEC and TPC reflect a rescission of 1 percent included in the Department of Defense Appropriations Act, 2006 (P.L. 109-148).

Project Justification:

The objective of Sandia's Technical Area – I (TA-I) Heating Systems Modernization (HSM) project is to prevent further degradation of the 50-year old, mission essential, TA-I heating utility by upgrading to a reliable, cost effective, safe and environmentally friendly heating system that mitigates risks and extends the useful life of this infrastructure to the year 2035. The project will eliminate the current deferred maintenance associated with the central steam plant and the steam/condensate distribution system, as well as the steam to hot water conversion equipment in the affected buildings. The environmental risk associated with operation of the central steam plant and the buried, leaking steam/condensate distribution system will be substantially mitigated as well.

The Sandia National laboratories Albuquerque facilities include five technical areas and several remote sites. These facilities include a total of 10,400 employees, contractors, and resident visitors. Technical Area – I (TA-I) houses 50% of this workforce in 3.6 million sq. ft. of buildings over a 320-acre site. The HSM project will upgrade the heating systems that serve approximately 50 buildings and 3.0 million sq. ft. throughout TA-I.

The anticipated deferred maintenance reduction associated with this project is $37.42 million.

The project has been and will be conducted in accordance with the project management requirements in DOE Order 413.3 "Program and Project Management for the Acquisition of Capital Assets" and DOE Manual 413.3-1, "Project Management for the Acquisition of Capital Assets."

Compliance with Project Management Order:

- Critical Decision – 0: Approve Mission Need – December 2003
- Critical Decision – 1: Approve Preliminary Baseline Range – March 2005
- External Independent Review Final Report – November 2005
- Critical Decision – 2: Approve Performance Baseline – November 2005
- Critical Decision – 3: Approve Start of Construction – 2Q FY07
- Critical Decision – 4: Approve Start of Operations – 2Q FY11

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2005	2,976	2,976[b]	2,107
2006	2,893[c]	2,893	3,762
2007	0	0	0
Total, Design (05-D-160)	5,869	5,869	5,869
Construction			
2007	14,500	14,500	13,386
2008	13,000	13,000	11,809
2009	12,000	12,000	14,000
2010	10,024	10,024	8,623
2011	0	0	1,706
Total, Construction	49,524	49,524	49,524
Total, TEC	55,393	55,393	55,393

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Preliminary and Final Design	5,869	N/A
Construction Phase		
Utilities	93	N/A
Buildings	25,243	N/A
Demolition	6,035	N/A
Standard Equipment	3,159	N/A
Inspection, Design and project liaison, testing, checkout and acceptance	4,438	N/A
Construction Management	3,717	N/A
Contingency	6,839	N/A
Total, Construction	49,524	N/A
Total, TEC	55,393	N/A

[a] Design funding was appropriated in 05-D-160, Project Engineering and Design.

[b] The FY 2005 appropriated amount of $3,000,000 was reduced by $24,000 to $2,976,000 by a rescission (P.L. 108-447).

[c] The FY 2006 appropriated amount of $3,000,000 was reduced by $106,440 to $2,893,560 by a rescission (P.L. 109-148).

Other Project Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Conceptual Planning	1,081	N/A
External Independent Review[a]	125	N/A
ES&H	1,636	N/A
Start-up	134	N/A
D&D Phase		
D&D for removal of the existing facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total D&D	N/A	N/A
Contingency for OPC other than D&D	202	N/A
Total, OPC	3,178	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)	5,869	0	0	0	0	0	0	5,869
TEC (Construction)	0	13,386	11,809	14,000	8,623	1,706	0	49,524
OPC Other than D&D	1,249	221	552	859	163	134	0	3,178
D&D Costs	0	0	0	0	0	0	0	0
Total Project Costs	7,118	13,607	12,361	14,859	8,786	1,840	0	58,571

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	2QFY2010
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	1QFY2010

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	1,659	0	36,389	0
Maintenance	450	0	8,596	0
Total Related funding	2,109	0	44,985	0

[a] Other Project Costs increased by $100,000 reflecting Congressional requirement for program to fund External Independent Review.

9. Required D&D Information

This project includes the potential for building small, utility buildings or building additions to house new boilers (up to 5,000 square feet based on the Conceptual Design). The existing central steam plant will be decommissioned, decontaminated and demolished as part of the project. The central steam plant includes 18,307 square feet of space. New construction will be offset with banked gross square footage (GSF) when excess facilities are demolished; when the older steam plant is eliminated, the GSF will then be banked. Thus at least 13,307 (18,307 less 5,000) square feet will be removed over and above the planned project space addition. Due to the nature of the project, the additions will occur first, as early as FY2007, while the removal will occur in FY2010.

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

Building 605, Steam Plant, at SNL NM

D&D Information Being Requested	Square Feet
Area of new construction	~5,000
Area of existing facility(ies) being replaced	18,307
Area of any additional space that will require D&D to meet the "one-for-one" requirement	N/A

10. Acquisition Approach

This project will be a design-bid-build acquisition. The Managing and Operating contractor will provide the direct project management, direct construction management and administer the design and construction contracts. Design services are being provided by an experienced, small business qualified engineering firm on a firm, fixed price basis. The design services contract was established based on best value to the government, considering qualifications and price. Construction services will be accomplished by multiple, small business, firm fixed price contracts awarded on the basis of competitive bids to pre-qualified contractors.

06-D-160, Project Engineering and Design (PED) – FIRP
Various Locations

1. Significant Changes

- **Y-12 Electrical Distribution System Upgrade, 06-03 (EDSU).** FY 2006 PED funds in the amount of $1,300,000 had been designated for this project. However, based on revised outyear FIRP funding, the Site has withdrawn the EDSU project and realigned the FY 2006 PED funding to the Potable Water System Upgrade (06-04). No additional PED data sheets will be submitted for this project.

- **Y-12 Potable Water System Upgrade, 06-04 (PWSU**).
  - With the realignment of $1,300,000 in FY 2006 EDSU PED funds, the FY 2006 PED funding for PWSU has increased from $1,800,000 to $3,100,000; PED for subsequent years has been reduced accordingly. The design TEC has increased by $800,000 consistent with better definition of scope which required additional design work.

  - The construction cost range has increased from $28,000,000 - $45,000,000 to $39,900,000 - $60,100,000 following preliminary design and an updated government estimate. The increase in construction cost is due to material cost increases, better definition of scope, additional security, and costs associated with working in limited access areas.

- The total estimated cost (TEC) of the PED decreased from $10,411,000 to $8,453,000 due to the following changes: withdrawal of the EDSU, increase in PWSU, and the FY 2006 rescission of 1 percent.

2. Design, Construction, and D&D Schedule*

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	1Q FY 2006	3Q FY 2007	2Q FY 2007	2Q FY 2010	N/A	N/A
FY 2007	2Q FY 2006	3Q FY 2008	1Q FY 2008	4Q FY 2010	N/A	N/A

* Note: This is a combined schedule representing earliest start and latest completion dates for all subprojects.

3. Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006	See below	See below	See below	See below	See below	See below
FY 2007	See below	See below	See below	See below	See below	See below

** Note: Preliminary estimates for each subproject are presented separately below.

4. Project Description, Justification, and Scope

This project provides for Architect-Engineering (A-E) services (Title I and Title II) for Facilities and Infrastructure Recapitalization Program (FIRP) construction projects, allowing designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). 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.

The FY 2006 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 Title I and II design and engineering efforts for each subproject are provided, as well as very preliminary estimates of the Total Estimated Cost (including physical construction) of each subproject.

FY 2006 Proposed Design Projects

06-01: High Pressure Fire Loop, Zone 12, PX

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		
1Q FY 2006	4Q FY 2006	TBD	TBD	1,686	TBD

Fiscal Year	Appropriations	Obligations	Costs
2006	1,686	1,686	1,316
2007	0	0	370

Due to substantial reductions in FY 2006 FIRP funding, this project is being supported through design only at this time.

The High Pressure Fire Loop (HPFL) – Zone 12 South Material Access Area project has been identified as a high priority project in the 2005 Pantex Plant Ten Year Comprehensive Site Plan (TYCSP).

The purpose of the HPFL project is to provide a reliable fire protection system to support Manufacturing and Infrastructure operations. The HPFL is a Safety-Class System as defined in the Authorization Basis and its Critical Safety function is to support the fire suppression systems to mitigate the consequence of a fire event and thereby prevent fires from progressing to more severe events. Supplying the necessary amount of water to the fire suppression systems performs this function. The HPFL is designed to provide water at a pressure, flow rate, and quantity to meet the demands of the fire suppression system in each facility. Additionally, this project will minimize DOE's risks associated with failures and eliminate the current deferred maintenance for the system. Failures in the existing system have increased over the past several years. Eleven failures have occurred since 1995 in the entire Zone 12 South system. Two of these failures were located in the section of Zone 12 South involved in this project. The latest of these two failures occurred in April 2002. Each failure resulted in downtime for the production facilities.

This project addresses those areas of the HPFL Zone 12 South Material Access Area system that are of questionable reliability due to aging, incompatible materials, and use of antiquated technologies. Specific areas to be addressed are:

- Pipe Line Replacement. Failures in the HPFL lines are occurring in the ductile iron sections that were installed in the 1970s and 1980s. This Project will replace the ductile in pipe loop, fire hydrants, and Post Indicator Valves (PIV) that tie the loop to each facility lead-in.

- Cathodic Protection Installation. The loop system will have cathodic protection installed to minimize degradation of ferrous components in contact with the soil.

A pipe inspection program is currently underway to identify at-risk pipe and see if selective replacement of those sections would be possible, thereby lowering the construction cost. If complete replacement of all pipe is required, the project's total estimated cost is expected to be near the upper end of the revised cost range. Installation of the new system will be buried parallel to the existing route when possible. Alternate routing may be required to circumvent Solid Waste Management Units and complications with facility interferences. This routing will be further evaluated during the Design Phase via computer modeling. Outages for facility tie-in and replacements will be coordinated with production to minimize facility outages. Road bores, where required, will be accomplished to avoid interruption of onsite transportation. Appropriate security and safety measures will be implemented to control access to the construction areas to prevent damage or injuries.

The anticipated deferred maintenance reduction associated with this project is estimated to be $700,000.

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:

- CD-0, Approve Mission Need: September 13, 2004
- CD-1, Approve Preliminary Baseline Range forecast: December 21, 2005
- CD-2, Approve Performance Baseline, forecast: TBD based on future program funding

06-02: Replace Main Switchgear, KC

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		
1Q FY 2006	1Q FY 2007	TBD	TBD	967	TBD

Fiscal Year	Appropriations	Obligations	Costs
2006	967[a]	967[a]	800
2007	0	0	167

Due to substantial reductions in FY 2006 FIRP funding, this project is being supported through design only at this time.

This project will replace the Main Switchgear with new equipment rated for at least 750 million volt-amperes (MVA). The Main Switchgear consists of four 13.8 kilovolt (kV), 2000 amp frame breakers and twenty-six 13.8 kV, 1,200 amp frame breakers. This project will also replace approximately 50,000 feet of underground 13.8 kV cables and inspect the cable tunnel and duct banks for repair and/or replacement.

The 30-year service life of the existing switchgear was reached in 1999 and is reflected in the FY 2003 Deferred Maintenance Baseline. Approximately eight miles of 13.8 kV cables will reach the end of their service life in 2009. The ability to obtain repair parts is becoming difficult since the switchgear is obsolete and new replacement parts are no longer available. In addition, a preliminary fault study reveals that the existing equipment is over taxed, and that the short circuit rating of the breakers is exceeded under certain loading conditions or configurations of the north and south buses.

A reliable supply of electrical power is required, 24 hours per day and year-round, to support the Kansas City Plant (KC) mission. Medium voltage power is supplied at 13.8 kV from the Kansas City Power and Light substation to the main switchgear. The electric power is distributed from the main switchgear to the government owned substations, located throughout the Federal Complex, via very long runs of three conductor cables.

The potential for cable failures continues to place the plant at risk. In FY 2001, one of the primary cables faulted and interrupted power to approximately one third of the facility, including the west powerhouse. The number and frequency of system failures will increase as the system components continue to age.

Failure of the single point main switchgear system will result in the inability of KC to achieve the mission. Manufacturing and manufacturing support operations will stop when complete system failure occurs. In addition to the direct schedule impact, very large scrap costs are anticipated, depending on the extent and length of the power outage. Damage to other infrastructure and equipment will also occur as a result of long-term power failure. Fire protection systems, security systems and life safety systems will be compromised by extended power outages.

[a] FY 2006 appropriated amount of $1,025,000 was reduced by $58,110 to $966,890 by a rescission (P.L. 109-148).

All electrical power to the Federal Complex flows through the Main Switchgear. There are no other alternatives to meet the electrical power requirements for the Federal Complex.

The anticipated deferred maintenance reduction associated with this project is estimated to be $6,430,000.

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:

- CD-0, Approve Mission Need: September 1, 2004
- CD-1, Approve Preliminary Baseline Range forecast: November 26, 2005
- CD-2, Approve Performance Baseline, forecast: TBD based on future program funding

06-03: Electrical Distribution System Upgrade (EDSU), Y-12

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		
N/A	N/A	N/A	N/A	N/A	N/A

Fiscal Year	Appropriations	Obligations	Costs
2006	1,300[a]	0[a]	0
2007	0	0	0

This subproject was withdrawn and FY 2006 funding has been reallocated to the Potable Water System Upgrade.

06-04: Potable Water System Upgrade, Y-12

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
Design Work Initiated	Design Work Completed	Physical Construction Start	Physical Construction Complete		
2Q FY 2006	1Q FY 2008	1Q FY 2008	4Q FY 2010	5,800	39,900 – 60,100

Fiscal Year	Appropriations	Obligations	Costs
2006	1,800	3,100[b]	2,400
2007	2,700	2,700	3,000
2008	0	0	400

[a] FY 2006 PED funds in the amount of $1,300,000 had been designated for this project. However, based on revised outyear FIRP funding, the Site has withdrawn the EDSU project and realigned the FY06 PED funding to the Potable Water System Upgrade (06-04).

[b] FY2006 PED funds in the amount of $1,300,000 had been designated for the EDSU project was realigned for the FY06 PED funding to the Potable Water System Upgrade (06-04).

This subproject includes the preliminary and final design for the proposed Potable Water System Upgrades (PWSU) project which supports the Y-12 National Security Complex mission by making needed repairs and upgrades to increase reliability of the potable water distribution system and meet regulatory requirements. This project directly supports the Y-12 mission including the Stockpile Stewardship Program and supports the recommendation of the December 2001 Nuclear Posture Review to revitalize the defense infrastructure. The project will increase system reliability, enhance worker health and safety, provide Y-12 control and monitoring of water supplies; and reduce the deferred maintenance backlog by an estimated $25 million dollars. Potable water is a "mission-essential" utility which supports the operation and protection of every facility and process at Y-12. Without this project, Y-12 will experience an ever-increasing risk of system failure, which can have serious impacts on the plant mission and the health and safety of the workers and the public.

The project will include: 1) correcting system deficiencies within the existing potable water distribution system, 2) operational modifications providing Y-12 control and monitoring of water entering the Y-12 distribution system to ensure adequate water flow and pressure to support current and future operational needs, and 3) providing enhanced cross connection control between the potable water system and non-potable water systems.

Correction of system deficiencies will include inspection and selective repair or replacement of distribution mains, replacement of potable and fire water building supply lines, replacement of obsolete fire hydrants.

For the operational modifications, one of the following options would be selected during the conceptual design to supply water from the pumping stations to the plant distribution system.

- The pumping stations would directly feed primary water to the distribution grid; the existing storage tanks located on Chestnut Ridge would provide a secondary water source.

- The pumping stations would feed the existing storage tanks which would provide both primary and secondary water. The distribution grid would be fed from the tanks via new supply lines.

- The pumping stations would supply new tanks located on Pine Ridge which would supply primary and secondary water to the distribution grid via new supply lines.

Completion of the PWSU Project will eliminate approximately $25 million in deferred maintenance costs associated with the water distribution system at Y-12. A project risk was identified that could impact the amount of deferred maintenance buydown. If the pipe inspection program indicates that more pipe should be replaced than funding allows, some DM may remain. Complete replacement of all potentially identified at-risk piping would increase the project preliminary estimate to the upper end of the cost range.

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:

- CD-0, Approve Mission Need: August 20, 2004
- CD-1, Approve Preliminary Baseline Range forecast: 2Q FY2006
- CD-2/3A, Approve Performance Baseline, forecast: 4Q FY2006

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2006	5,753[a]	5,753[a]	4,516
2007	2,700	2,700	3,595
2008	0	0	342
Total, Design (06-D-160)	8,453	8,453	8,453
Total TEC	8,453	8,453	8,453

6. Details of Project Cost Estimate

This data sheet addresses only design phase costs, project construction funding requests will be submitted separately consistent with DOE Order 413.3 requirements.

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	8,453	10,411
Construction Phase		
Site Preparation	0	0
Equipment	0	0
All other construction	0	0
Contingency	0	0
Total, Construction	0	0
Total, TEC	8,453	10,411

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	4,678	N/A
Start-up	150	N/A
External Independent Review[b]	125	N/A
Offsetting D&D		
D&D for removal of the offsetting facility	0	N/A
Other D&D to comply with "one-for-one" requirements	0	N/A
D&D contingency	0	N/A
Total, D&D	4,953	N/A
Contingency for OPC other than D&D	2,650	N/A
Total, OPC	7,603	N/A

[a] FY 2006 appropriated amount was reduced $58,110 by a rescission (P.L. 109-148).

[b] Other Project Costs increased by $125,000 per project reflecting Congressional requirement for program to fund External Independent Review.

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	4,516	3,595	342	0	0	0	0	8,453
OPC Other than D&D ..	4,953	550	540	750	810	0	0	7,603
Offsetting D&D Costs ..	0	0	0	0	0	0	0	0
Total, Project Costs	9,469	4,145	882	750	810	0	0	16,056

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter).....	N/A
Expected Useful Life (number of years).....	N/A
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	0	0	0	0
Maintenance	0	0	0	0
Total Related funding	0	0	0	0

9. Required D&D Information

N/A

10. Acquisition Approach

Design services including design build, will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, and production, etc. concerns.

06-D-601, Electrical Distribution System Upgrade
Pantex Plant, Amarillo, Texas

1. Significant Changes

- Revised acquisition strategy to specify that the construction contract will be a federally managed and proposed pursuing small business contract.

- Increase in TEC (construction and contingency) of $2,329,000 based on External Independent Review (EIR) findings, subsequent Independent Cost Review (ICR), and increase in cost of materials.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	1Q FY 2005	4Q FY 2006	4Q FY 2006	3Q FY 2008	NA	NA
FY 2007	2Q FY 2005	4Q FY 2006	4Q FY 2006	4Q FY 2008	NA	NA

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	9,700	1,000	0	10,700	11/05	9,630-13,380
FY 2006	9,687 [a]	1,000	0	10,687	11/05	9,630-13,380
FY 2007	11,976[b]	1,125	0	13,101[b]	12/05	13,141

4. Project Description, Justification, and Scope

The Electrical Distribution System Upgrade project has been identified as a high priority project in the Pantex Plant Ten Year Comprehensive Site Plan. A key element of the site infrastructure is the electrical power distribution system. This project addresses three areas of the electrical distribution system that are of questionable reliability due to code noncompliance, aging equipment, and unavailability of replacement parts. Specifically the three areas are as follows:

- Ground Fault and Surge Arrestor Upgrade: A short circuit/coordination study of the Pantex Plant's 12470, 480, and 208-volt distribution systems completed in 1994 identified substations and equipment that had ground fault/coordination deficiencies in violation of the National Electrical Code. These codes were adopted subsequent to Pantex electrical distribution equipment installation and require substations and distribution equipment to be protected from ground faults and line

[a] The TEC was reduced to $9,687,000 due to the FY2005 rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] The TEC and TPC reflect an increase based on EIR findings, subsequent ICR, and increase in cost of materials. This is partially offset by a FY 2006 rescission of 1 percent.

surges. The project design and construction will bring Pantex substations into compliance with the National Electrical Code.

- Overhead Electrical Power Line Replacement: The existing overhead primary pole and underground secondary lines are over 30 years old. Lines are deteriorating to the point that a major fault or weather incident could destroy lines affecting critical facilities, systems and equipment, and potentially cause a major outage to the Pantex plant.

- Facility Standby Diesel Generator Upgrade: Facility generators and Uninterruptible Power Supplies (UPS) will be replaced that have operations and maintenance problems due to their age, obsolescence and difficulty in obtaining parts as the equipment ages. Facilities utilizing these generators and UPS have been deemed critical or mission essential, to Pantex Plant operations.

The deferred maintenance reduction associated with this project is $2.970 million (FY 2003 baseline).

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – October 2003

- Critical Decision – 1: Approve Preliminary Baseline Range – September 2004

- Critical Decision – 2: Approve Performance Baseline – December 2005

- External Independent Review Final Report – December 2005

- Critical Decision – 3: Approve Start of Construction – 4Q FY 2006

- Critical Decision – 4: Approve Start of Operations – 4Q FY 2008

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design [a]			
2005	1,587[b]	1,587 [b]	900
2006	0	0	400
2007	0	0	287
Total, Design (05-D-160)	1,587	1,587	1,587
Construction			
2006	3,960[c]	3,960[c]	200
2007	6,429	6,429	6,900
2008	0	0	3,289
Total, Construction	10,389	10,389	10,389
Total TEC	11,976	11,976	11,976

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	1,587	1,587
Construction Phase		
Site Preparation	0	0
Equipment	0	0
All other construction	8,804	6,430
Contingency	1,585	1,670
Total, Construction	10,389	8,100
Total, TEC	11,976	9,687

[a] The TEC includes the cost of preliminary and final design ($1,600,000) which was appropriated in 05-D-160-03, Project Engineering and Design (PED).

[b] The FY 2005 appropriated amount of $1,600,000 was reduced by $12,650 to $1,587,350 by a rescission (P.L. 108-447).

[c] The FY 2006 appropriated amount of $4,000,000 was reduced by $40,000 to $3,960,000 by a rescission (P.L. 109-148).

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	700	700
External Independent Review[a]	125	0
Start-up	100	100
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	200	200
Total, OPC	1,125	1,000

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	1,300	287	0	0	0	0	0	1,587
TEC (Construction)	200	6,900	3,289	0	0	0	0	10,389
OPC Other than D&D	1,025	50	50	0	0	0	0	1,125
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	2,525	7,237	3,339	0	0	0	0	13,101

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2008
Expected Useful Life (number of years)	25
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	560	560	14,000	N/A
Maintenance	200	200	5,000	N/A
Total Related funding	760	760	19,000	N/A

9. Required D&D Information

N/A

[a] Other Project Costs increased by $125,000 reflecting Congressional requirement for program to fund External Independent Review.

10. Acquisition Approach

This project will be a design-bid-build acquisition. The design services (Title I, II, and III will be accomplished by an outside A-E firm and the contract will be administered by the Managing and Operating (M&O) Contractor (BWXT Pantex, LLC). The construction services of this project will be performed by an outside small business construction contractor operating under a contract to be awarded on the basis of competitive bids. The construction contract will be tentatively administered by DOE/NNSA. The M&O contractor will administer the design contract and may perform the Construction management services. Best value practices will be used for design and construction services.

06-D-602, Gas Main and Distribution System Upgrade
Pantex Plant, Amarillo, Texas

1. Significant Changes

- The project cost for the Gas Main and Distribution System Upgrade (GMDSU) has increased following a program-directed Independent Cost Review. There is an increase of $1,000,000 in management contingency to cover landowner risks associated with livestock or crop loss, as well as a $2,145,000 increase in construction cost due to material cost increases, better definition of gas line routing and increases in material quantities, and additional security and support resources. This is a preliminary estimate and the performance baseline will be established following completion of preliminary design.

- Due to the need for an Environmental Assessment, the project design completion date has been extended to the 2nd Qtr. FY 2007.

- The procurement strategy for this project has changed from a design-bid-build to a design-build contract. The design-build strategy is considered best suited for a project of this nature, will reduce design/construction cycle time, and can be supported with the revised funding profile.

- Due to the change in procurement strategy, PED funds provided under 05-D-160 will be used for the design portion of the design-build subcontract. While the construction cost has increased, the design costs have remained unchanged with no need for additional PED.

- The project TPC has risen from $6,361,000 to $8,819,000. Per Title 50 USCA § 2744, *Limits on construction projects*, this data sheet constitutes formal notification of cost increases greater than 25 percent. No construction funds will be used until the requirements of Title 50 USCA § 2744 have been satisfied. Additionally, no construction funds will be used until the Performance Baseline has been validated.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2005	1Q FY 2005	3Q FY 2006	3Q FY 2006	4Q FY 2007	N/A	N/A
FY 2006	2Q FY 2006	3Q FY 2006	3Q FY 2006	3Q FY 2008	N/A	N/A
FY 2007	4Q FY 2005	2Q FY 2007	1Q FY 2007	2Q FY 2008	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	4,800	1,570	0	6,370	11/05*	3,700 – 5,970
FY 2006	4,791 [a]	1,570	0	6,370	2/06*	3,700 – 5,970
FY 2007	7,899 [b]	920	0	8,819 [b]	6/06*	7,700 – 10,214

* No construction funds will be used until the Performance Baseline has been validated.

4. Project Description, Justification, and Scope

The Gas Main and Distribution System Upgrade project has been identified as a high priority project in the 2004 Pantex Ten Year Comprehensive Site Plan (TYCSP). The existing gas distribution system was installed in the 1940s, and consists of schedule 40 carbon steel pipe and high-density polyethylene (HDPE) pipe in diameters ranging from ½ inch to 12 inches. This project addresses those areas of the gas main and distribution system that are of questionable reliability due to aging and use of old technologies. Specific areas of concern are as follows:

- Pipe Line Replacement / Upgrade
  Failures in the gas main and distribution lines are occurring in the ductile iron pipe sections that were installed in 1940s. This project will replace all steel / metal pipelines with high-density polyethylene plastic pipe.

- Upgrade of Appurtenances
  Instrumentation required to regulate and meter the natural gas flow from the supplier will be upgraded with the latest technological devices. The installation of one Motor Operated Isolation Valve (MOIV) with remote operation capability will allow for the isolation of the gas main at the Pantex Plant boundary. This will provide quick shutdown capability should an incident occur that requires gas isolation.

- Cathodic Protection Installation
  Sacrificial anodes for the valves and connection rings will provide cathodic protection for the new pipeline. The existing deep well anode beds associated with the existing metal pipeline will be abandoned in-place.

The Pantex Plant is a critical resource in the NNSA nuclear weapons mission, and the Gas Main and Distribution System Upgrade is a Facilities and Infrastructure Recapitalization Project (FIRP) Line Item project designed to extend the life of the gas distribution system, reduce operational impacts, and reduce maintenance.

The anticipated deferred maintenance reduction associated with this Project is $3.1 million.

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[a] The TEC was reduced to $4,791,000 due to the FY2005 rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] The TEC reflects a rescission of $37,000 (1 percent) included in the Department of Defense Appropriations Act, 2006 (P.L. 109-148).

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – November 2003
- Critical Decision – 1: Approve Preliminary Baseline Range – October 14, 2005
- External Independent Review Final Report – 3Q FY06
- Critical Decision – 2/3: Approve Performance Baseline, and
  Approve Start of Construction – 3Q FY2006 *
- Critical Decision – 4: Approve Start of Operations – 3Q FY2008 *

* Performance baseline has not been validated and milestones are based on preliminary design cost.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2005	1,091[b]	1,091[b]	50
2006	0	0	550
2007	0	0	491
Total, Design (05-D-160)	1,091	1,091	1,091
Construction			
2006	3,663[c]	3,663[c]	500
2007	3,145	3,145	4,000
2008	0	0	2,308
Total, Construction	6,808	6,808	6,808
Total TEC	7,899	7,899	7,899

[a] Design funding was appropriated in 05-D-160, Project Engineering and Design (PED).

[b] The FY 2005 appropriated amount of $1,100,000 was reduced by $9,000 to $1,091,000 by a rescission (P.L. 108-447).

[c] The FY 2006 appropriated amount of $3,700,000 was reduced by $37,000 to $3,663,000 by a rescission (P.L. 109-148).

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	1,091[a]	1,100
Construction Phase		
Site Preparation	65	65
Equipment	0	0
All other construction	4,480	2,335
Contingency	2,263	1,300
Total, Construction	6,808	3,700
Total, TEC	7,899	4,800

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	553	553
External Independent Review (EIR)[b]	125	0
Start-up	195	195
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	47	47
Total, OPC	920	795

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	600	491	0	0	0	0	0	1,091
TEC (Construction)	500	4,000	2,308	0	0	0	0	6,808
OPC Other than D&D	625	100	195	0	0	0	0	920
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	1,725	4,591	2,503	0	0	0	0	8,819

[a] The FY 2005 appropriated amount of $1,100,000 was reduced by $9,000 to $1,091,000 by a rescission (P.L. 108-447).

[b] Other Project Costs increased by $125,000 reflecting Congressional requirement for program to fund External Independent Review.

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter).....	3Q FY 2008
Expected Useful Life (number of years)	25
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	143	200	4,844	0
Maintenance	40	50	1,748	0
Total Related funding	183	250	6,592	0

9. Required D&D Information

N/A

10. Acquisition Approach

NNSA is proposing a small business set aside design-build acquisition, to be administered by DOE/NNSA. The small business design-build firm will provide Title I, II, and III services, and the M&O contractor is tentatively planned to perform the Construction management support services. The design-build contract will be awarded by DOE/NNSA on the basis of competitive bids, utilizing best value practices.

06-D-603, Steam Plant Life Extension (SPLE) Project
Y-12 National Security Complex, Oak Ridge, Tennessee

1. Significant Changes

- The project cost for the Steam Plant Life Extension (SPLE) has increased following a program-directed Independent Cost Review. There is an increase in construction cost due to material cost increases and clean air permitting requirements. Additionally, the completed Architect/Engineer (A/E) Title I Design has provided a better definition of scope, including upgrading the Steam Plant Control System ($4,109,000), Feedwater and Wastewater Systems ($1,180,000), additional security costs associated with working in limited access areas ($1,000,000), and more detailed testing ($1,524,000). Scope was addressed as a result of the External Independent Review to repair the east and west stacks ($425,000). The AE Title I Design estimate shows the TEC approximately $11.2M higher than the conceptual estimate, but still within the upper end of the cost range established at CD-1. These increases are partially offset by a rescission of 1 percent included in the Department of Defense Appropriations Act 2006.

- The planned design completion date has been extended by approximately 2 years to allow for design of baseline approved scope items during construction.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2006	3Q FY 2005	4Q FY 2006	3Q FY 2007	1Q FY 2010	N/A	N/A
FY 2007	2Q FY 2005	3Q FY 2008	3Q FY 2007	1Q FY 2010	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006	44,867	5,363 [a]	N/A	50,230	12/05	47,700-60,000
FY 2007	56,099[b]	5,358	N/A	61,457[b]	11/05	61,457

[a] Two Baseline Change Proposals were executed to increase the Other Project Costs (OPC) funds.

[b] The TEC and TPC reflect a rescission of 1 percent included in the Department of Defense Appropriations Act 2006, P.L. 109-148).

4. Project Description, Justification, and Scope

Project Description

The objective of the Steam Plant Life Extension (SPLE) Project is to refurbish the existing steam service to ensure the reliability and affordability of this "mission essential" utility service in support of NNSA and other DOE missions at the Y-12 National Security Complex. The end-of-life for the existing steam plant is currently projected to be nominally year 2010.

This project directly supports the recommendation of the December 2001 Nuclear Posture Review to revitalize the defense infrastructure to increase confidence in the deployed forces, eliminate unneeded weapons, and mitigate the risks of technological surprise. It directly contributes to the DOE Strategic Plan's Defense Strategic Goal: To protect our national security by applying advanced science and nuclear technology to the Nation's defense. It also supports achievement of DOE General Goal 1 of Nuclear Weapons Stewardship: Ensure our nuclear weapons continue to serve their essential deterrence role by maintaining and enhancing the safety, security and reliability of the U.S. nuclear weapons stockpile.

In FY 2007, the project will award all purchase orders on the major long lead procurement items. The security fence around the steam plant will be constructed. The project will also award a major portion of the construction subcontract and kickoff construction activities on the steam plant. The initial focus will be on work in the coal yard and establishing the new control system. This will be followed by the first boiler system outage and repairs/replacements.

Justification

The existing steam plant has been operating continuously since its construction in 1954. A service life extension upgrade completed in the mid-1980s extended the life of three of the four boilers (boilers 1, 2, and 4) and supporting auxiliaries to about 2010 (boiler 3 was not upgraded). The steam plant has undergone no other significant modifications or upgrades.

In its current condition, the plant is approaching the end of its useful life. An inspection in FY2003 found boiler 4 to be in good condition. Boilers 1 and 2 have a history similar to that of boiler 4 and are also judged to be in reasonable condition. Boiler 3 has been placed in safe shutdown and is planned to remain out of service due to reduced steam production requirements and significant costs for restoring it to a safe and reliable operating condition. Some components of the auxiliary equipment, including the coal-handling system, feedwater system, forced-draft system, induced-draft system, ash-handling systems, electrical systems, and the plant instrumentation and control systems, are antiquated and in various states of deterioration. These components are deemed to be unreliable, technologically obsolete, and inefficient. Spare parts for many systems are not readily available.

For Y-12 to continue to meet its mission, the existing steam-generating capability must be replaced or restored to a condition that will provide a reliable, cost-effective source of steam to the Y-12 National Security Complex.

If the SPLE Project is not completed by 2010, failure of the existing steam service will occur, and major restoration actions will be required to restore service. Failure of steam service would potentially result in loss of mission capability at Y-12.

Scope

This project includes the repair and/or replacement of existing boiler and auxiliary systems and components. Major scope elements include the following: Boiler systems, coal receiving and handling system, forced-draft system, induced-draft system, feedwater system, wet and dry ash handling systems, steam plant wastewater system (SPWTF), steam plant control system, steam plant electrical system, and steam plant structural system.

Completion of this project will eliminate $21.97 million in deferred maintenance costs associated with the steam plant facility at Y-12.

FY 2007 funding will be utilized to initiate fixed price construction work, and some procurement activity.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – November 2003
- Critical Decision – 1: Approve Preliminary Baseline Range – October 2004
- External Independent Review Final Report – November 16, 2005
- Critical Decision – 2: Approve Performance Baseline – November 22, 2005
- Critical Decision – 3: Approve Start of Construction – 2Q FY 2007
- Critical Decision – 4: Approve Start of Operations – 1Q FY 2010

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design[a]			
2005	2,976	2,976[b]	2,583
2006	7,644	7,644	7,000
2007	648	648	900
2008	0	0	785
Total, Design (PED No. 05-D-160)	11,268	11,268	11,268
Construction			
2006	722[c]	722[c]	560
2007	17,811	17,811	16,100
2008	15,020	15,020	13,178
2009	11,278	11,278	13,000
2010	0	0	1,993
Total, Construction	44,831	44,831	44,831
Total TEC	56,099	56,099	56,099

6. Details of Project Cost Estimate

Total Estimated Costs

	(dollars in thousands)	
Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	11,268	10,620
Construction Phase		
Site Preparation	0	0
Equipment	4,800	5,300
All other construction	31,038	20,544
Contingency	8,993	8,403
Total, Construction	44,831	34,247
Total, TEC	56,099	44,867

[a] Design accomplished in 05-D-160, Project Engineering and Design (PED).

[b] The FY 2005 appropriated amount of $3,000,000 was reduced by $24,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[c] The FY 2006 appropriated amount of $729,000 was reduced by $7,290 by a rescission of 1 percent included in the Department of Defense Appropriations Act 2006, P.L. 109-148.

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	1,066	1,100
External Independent Review[a]	125	0
Start-up	3,952	2,679
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	215	834
Total, OPC	5,358	4,613

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)	9,583	900	785	0	0	0	0	11,268
TEC (Construction)	560	16,100	13,178	13,000	1,993	0	0	44,831
OPC Other than D&D	2,665	728	1,045	600	320	0	0	5,358
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs[b]	12,808	17,728	15,008	13,600	2,313	0	0	61,457

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	1Q FY 2010
Expected Useful Life (number of years)	22
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	3,800	3,800	83,600	0
Maintenance	3,300	3,300	72,600	0
Total Related funding	7,100	7,100	156,200	0

9. Required D&D Information

N/A

[a] Other Project Costs increased by $125,000 reflecting Congressional requirement for program to fund External Independent Review.

[b] The project is still in the preliminary design phase. The cost estimate is a preliminary estimate subject to change once the performance baseline is approved by the Acquisition Executive at the completion of the preliminary design.

10. Acquisition Approach

Overall project direction and responsibility for this project resides with the NNSA. NNSA has assigned day-to-day management of project activities to the Y-12 management and operating (M&O) contractor, BWXT Y-12, including design, procurement, construction, and commissioning.

The M&O will be responsible for the management of all design activities. Preliminary design (Title I), final design (Title II), and Title III/construction support for the overall scope of work will be performed primarily by fixed price Architect/Engineer (A/E) subcontractors. BWXT Y-12 Engineering will perform Title I, II and III for the Steam Plant Wastewater Treatment Facility subproject and other small items.

A specialty control systems subcontractor working with the A/E and the construction subcontractor will design and supply the control systems equipment and components. The M&O will procure long lead equipment based on performance specifications provided by the overall A/E subcontractor. The construction subcontractor will procure normal construction materials and commodities.

The M&O will be responsible for the management of all construction, installation, and demolition. To the extent practical, construction will be performed using a subcontract that is awarded based on fixed-price competitive bidding. When allowed by labor standards, M&O maintenance forces will provide tie-ins and other support to the construction subcontractor. The A/E and the M&O will perform Title III/construction support with support from the control systems subcontractor and vendors.

The M&O will perform all transition to operations activities including the preparation of operating and maintenance procedures, training of the M&O staff, startup testing of facilities, transition, and all readiness assessments. Subcontractors and vendors may be used to provide task-based support for these activities.

05-D-160, Project Engineering and Design (PED) – FIRP
Various Locations

1. Significant Changes

- The estimated cost of the PED has increased from $19,274,000 to $19,815,000 due to higher than expected AE costs for the Steam Plant Life Extension at Y-12 which was partially offset by a 1 percent rescission enacted by P.L. 109-148.

- The planned design completion date for the Steam Plant Life Extension project has been extended to 3Q FY 2008 to allow for design of baseline approved scope, from 2nd Qtr. FY 2007.

- Due to the need for an Environmental Assessment, the project design completion date for the Gas Main and Distribution System Upgrade project at Pantex has been extended to the 3rd Qtr. FY 2006.

2. Design, Construction, and D&D Schedule*

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2005	1Q FY 2005	1Q FY 2007	3Q FY 2006	4Q FY 2011	N/A	N/A
FY 2006	4Q FY 2004	4Q FY 2006	3Q FY 2006	4Q FY 2011	N/A	N/A
FY 2007	2Q FY 2005	3Q FY 2008	4Q FY 2006	2Q FY 2011	N/A	N/A

* This is a combined schedule representing earliest start and latest completion dates for all subprojects.

3. Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	N/A	N/A	N/A	N/A	N/A	N/A
FY 2006	N/A	N/A	N/A	N/A	N/A	N/A
FY 2007	N/A	N/A	N/A	N/A	N/A	N/A

** *Note: Preliminary estimates for each subproject are presented separately below.*

4. Project Description, Justification, and Scope

This project provides for Architect-Engineering (A-E) services (Title I and Title II) for Facilities and Infrastructure Recapitalization Program (FIRP) construction projects, allowing designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). 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.

The FY 2005 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 Title I and II design and engineering efforts for each subproject are provided, as well as very preliminary estimates of the Total Estimated Cost (including physical construction) of each subproject.

FY 2005 Proposed Design Projects

05-01: TA I Heating System Modernization, SNL

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		
2Q FY 2005	3Q FY 2006	2Q FY 2007	2Q FY 2011	5,869	55,393

Fiscal Year	Appropriations	Obligations	Costs
2005	2,976[a]	2,976[a]	2,107
2006	2,893[b]	2,893[b]	3,762
2007	0	0	0

This project supports Architect-Engineering (A-E) services required to develop and complete preliminary and final (Title I and Title II) design for the proposed Sandia National Laboratories Tech Area I Heating System Modernization. Through this design effort, the Heating System Modernization feasibility will be validated in detailed design drawings and specifications. Detailed estimates of construction costs based on the approved design will be developed and working drawings, specifications, and construction schedules, including procurements, will be completed. The products of this design effort will be sufficiently complete and of such sufficient quality to enable procurement of long-lead items and construction to be initiated in fiscal year 2007 when construction funding is received. Construction funding for this project is included in line item 07-D-253.

Space heating, domestic water heating, and process heating requirements at Sandia National Laboratories (SNL) Tech Area 1 are presently served from SNL's Central Steam Plant and steam distribution system. The ability to supply heating energy to the buildings within Tech Area 1 is critical to SNL's successful operation to meet the laboratory's mission. Tech Area 1 is home to a substantial portion of SNL's work force and therefore, any disruption in steam heating system service has significant ramifications to ongoing critical SNL missions.

[a] The FY 2005 appropriated amount of $3,000,000 was reduced by $24,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] The FY 2006 appropriated amount of $3,000,000 was reduced by $106,440 by a rescission of 1 percent included in the Department of Defense Appropriations Act, 2006 (P.L. 109-148).

The Steam Plant and portions of the distribution system are more than 50 years old. Significant capital upgrades are necessary over the next several years to ensure continued reliable service and to achieve desired reductions in deferred maintenance. Design phase activities began as scheduled in FY 2005.

The anticipated deferred maintenance reduction associated with this project is $37.42 million.

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:

- CD-1, Approve Preliminary Baseline Range: March 9, 2005
- CD-2, Approve Performance Baseline: November 22, 2005

05-02: Steam Plant Life Extension Project, Y-12

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		
2Q FY 2005	3Q FY 2008	3Q FY 2007	1Q FY 2010	11,268	56,099

Fiscal Year	Appropriations	Obligations	Costs
2005	2,976 [a]	2,976 [a]	2,583
2006	7,644	7,644	7,000
2007	648	648	900
2008	0	0	785

The proposed project includes the repair and/or replacement of existing boiler and auxiliary systems and components. Major scope elements include the following: boiler systems, coal receiving and handling system, forced-draft system, induced-draft system, feed water system, wet ash system, dry ash system, Steam Plant Waste Water Treatment Facility, steam plant control room, steam plant facility (electrical), and steam plant facility (structural).

This subproject provides for preliminary and final (Title I and Title II) design for the proposed Steam Plant Life Extension Project (SPLEP) at the Y-12 National Security Complex. The project will upgrade, modify and/or replace components and systems of the steam generating facility to correct deficiencies related to capacity, physical condition, efficiency, reliability, operations, maintenance and compliance. Line item 06-D-603 includes the construction funding for this project.

A robust and reliable source of steam is critical to protect Y-12's production and storage capabilities in support of the Defense Programs Stockpile Stewardship mission and other programmatic missions. The existing steam generation system has many deficiencies, which jeopardize Y-12's ability to reliably meet its mission.

The Y-12 steam plant was built in 1954 and consists of four boilers, each rated at 200,000 lbs/hour at 235 psig and 500 ^{0}F. The boilers are capable of being fueled with either coal or natural gas. Auxiliary

[a] The FY 2005 appropriated amount of $3,000,000 was reduced by $24,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

systems including feed water, coal handling, combustion air, flue gas, ash handling, and the associated utilities, electrical and instrumentation systems are provided to support plant operation.

Much of the existing equipment has deteriorated and is at the end of its useful life. A significant amount of the instrumentation is antiquated, inoperable, or unreliable. The systems are inefficient and unreliable due to their age and the state of disrepair. Maintenance is difficult and expensive due to the age, condition of the equipment and difficulty in acquiring spare parts.

Completion of this project will eliminate approximately $21.97 million in deferred maintenance costs associated with the steam plant facility at Y-12. The project cost has increased due to emergent issues. Based on a program-directed Independent Cost Review, there is an increase in construction cost due to material cost increases, better definition of scope, additional security costs associated with working in limited access areas, and clean air permitting requirements. The AE Title I Design estimate shows the construction costs to be approximately $8.9M higher than the conceptual estimate, but still within the upper end of the cost range set by CD-1.

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:

- CD-1, Approve Preliminary Baseline Range: October 20, 2004
- CD-2, Approve Performance Baseline: November 22, 2005

05-03: Electrical Distribution System Upgrade (EDSU), Pantex

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		
2Q FY 2005	4Q FY 2006	4Q FY 2006	4Q FY 2008	1,587	11,976

Fiscal Year	Appropriations	Obligations	Costs
2005	1,587[a]	1,587[a]	900
2006	0	0	400
2007	0	0	287

The Electrical Distribution System Upgrade project has been identified as a high priority project in the 2004 Pantex Plant Ten Year Comprehensive Site Plan (TYCSP). A key element of the site infrastructure is the electrical power distribution system. This project addresses three areas of the electrical distribution system that are of questionable reliability due to code non compliance, aging and/or unavailability of spare parts. Specifically the three areas are as follows:

- Ground Fault and Surge Arrestor Upgrade (GFSAU).
  A short circuit/coordination study of the Pantex Plant's 12470, 480, and 208-volt distribution systems completed in 1994 identified substations and equipment that had ground fault/coordination deficiencies in violation of the National Electrical Code. These codes were adopted subsequent to

[a] The FY 2005 appropriated amount of $1,600,000 was reduced by $13,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

Pantex electrical distribution equipment being installed and require substations and distribution equipment be protected from ground faults and line surges. The project design brings 11 substations (and any additionally identified substations) into compliance with the National Electrical Code.

- Overhead Electrical Power Line Replacement
  The existing overhead primary pole and underground secondary lines are in many cases over 30 years old, and lines are deteriorating to the point that a major fault or weather incident could destroy lines, critical facilities, systems and equipment, potentially causing major outage to the Plant or unacceptable portions thereof. It is estimated that 14 miles of overhead lines and 1 mile of underground line need to be replaced. Over the past 18 months 12 poles have failed and had to be replaced. The rate of replacement is expected to increase as the system continues to age.

- Facility Standby Diesel Generator Upgrade (FSDGU).
  This subproject will replace 6 facility generators and uninterruptible power supplies (UPS) that have operational and maintenance problems due to their age, obsolescence and difficulty in obtaining parts as this equipment ages. Problems will become more frequent and more likely to affect the ability of Pantex to meet mission requirements. Facilities utilizing these generators have been deemed critical or mission essential to the Plant's operations. These facilities will continue to experience operational and maintenance problems with the possibility of facility shut down until reliable generators are installed.

  The cost of maintaining the UPSs has averaged over $250,000 per year over the four year period of 1999-2002. As the UPSs reach their normal life expectancy these costs will continue in increase.

The total maintenance costs associated with the electrical distribution system has continued to rise from $290,000 in FY 1996 to over $590,000 in FY 2002. This trend is expected to continue as the equipment and facilities age.

Line item 06-D-601 includes the construction funding for this project. The anticipated deferred maintenance reduction associated with this project is $2.97 million.

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:
- CD-1, Approve Preliminary Baseline Range: September 13, 2004
- CD-2, Approve Performance Baseline: December 21, 2005

05-04: Gas Main and Distribution System Upgrade (GMDSU), Pantex

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		
4Q FY 2005	2Q FY 2007	1Q FY 2007	2Q FY 2008	1,091	7,700 – 10,214

Fiscal Year	Appropriations	Obligations	Costs
2005	1,091 [a]	1,091 [a]	50
2006	0	0	550
2007	0	0	491

Reliable gas service is required for Pantex operations. The Gas Main and Distribution System Upgrade project has been identified as a high priority project in the 2004 Pantex Ten Year Comprehensive Site Plan (TYCSP). The existing gas distribution system was installed in the 1940s and consists of schedule 40 carbon steel pipe and high-density polyethylene pipe in diameters ranging from ½" to 12". This project addresses those areas of the gas main and distribution system that are of questionable reliability due to aging and use of old technologies. Specific areas of concern are as follows:

- Pipe Line Replacement
  Failures in the gas main and distribution lines are occurring in the ductile iron pipe sections that were installed in 1940s. This project will replace steel / metal pipelines with high-density polyethylene plastic pipe.

- Upgrade of Appurtenances
  Instrumentation required to regulate and meter the natural gas flow from the supplier will be upgraded with the latest technological devices. The installation of a Motor Operated Isolation Valve (MOIV) with remote operation capability will allow for the isolation of the gas main at the Pantex Plant boundary. This will provide quick shutdown capability should an incident occur that requires gas isolation.

- Cathodic Protection Installation
  Sacrificial anodes for the valves and connection rings will provide cathodic protection for the new pipeline. The existing deep well anode beds associated with the existing metal pipeline will be abandoned in-place.

The Pantex Plant is a critical resource in the NNSA nuclear weapons mission. The Gas Main and Distribution System Upgrade is a Facilities and Infrastructure Recapitalization Project (FIRP) Line Item project designed to extend the life of the gas distribution system, reduce operational impacts, and reduce maintenance.

Line item 06-D-602 includes the construction funding for this project. The anticipated deferred maintenance reduction associated with this Project is $3.1 million.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

This project has changed from the original concept of design-bid-build to a design-build contract. PED funds will be used for the design portion only of the design-build contract.

[a] The FY 2005 appropriated amount of $1,100,000 was reduced by $9,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

Milestones, in compliance with project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets:

- CD-0, Approve Mission Need: November 20, 2003
- CD-1, Approve Preliminary Baseline Range, forecast: October 14, 2005
- CD-2/3, Approve Performance Baseline, forecast: 3rd Qtr FY2006

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2005	8,631[a]	8,631[a]	5,640
2006	10,537[b]	10,537[b]	11,738
2007	648	648	1,759
2008	0	0	679
Total, Design (05-D-160)	19,816	19,816	19,816
Total TEC	19,816	19,816	19,816

6. Details of Project Cost Estimate[c]

This data sheet addresses only design phase costs, project construction funding requests will be separately submitted consistent with DOE Order 413.3 requirements.

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	19,816	19,274
Construction Phase		
Site Preparation	0	0
Equipment	0	0
All other construction	0	0
Contingency	0	0
Total, Construction	19,816	19,274
Total, TEC	19,816	19,274

[a] The FY 2005 appropriated amount of $8,700,000 was reduced by $68,787 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] The FY 2006 appropriated amount of $10,644,000 was reduced by $106,440 by a rescission of 1 percent included in the Department of Defense Appropriations Act, 2006 (P.L. 109-148).

[c] This cost estimate is based upon direct field inspection and historical cost estimate data, coupled with parametric cost data and completed conceptual studies and designs, when available. The cost estimate includes design phase activities only. Construction activities will be requested as individual line items upon completion of Title I and II design.

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	3,400	3,469
ES&H	1,636	200
External Independent Reviews[a]	500	N/A
Start-up	4,381	3,205
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	664	1,484
Total, OPC	10,581	8,358

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	17,378	1,759	679	0	0	0	0	19,816
OPC Other than D&D	5,564	1,099	1,842	1,459	483	134	0	10,581
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	22,942	2,858	2,521	1,459	483	134	0	30,397

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	N/A
Expected Useful Life (number of years)	N/A
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	0	0	0	0
Maintenance	0	0	0	0
Total Related funding	0	0	0	0

9. Required D&D Information

N/A

10. Acquisition Approach

Design services will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, production, and proliferation, and other concerns.

[a] Other Project Costs increased reflecting Congressional requirement for program to fund External Independent Review.

05-D-601, Compressed Air Upgrades Project
Y-12 National Security Complex, Oak Ridge, Tennessee

1. Significant Changes

- Deferred maintenance costs associated with the compressed air facilities was reduced from $17,500,000 to $13,227,000. A compressor, which was due to be replaced by this project, failed early and had to be rebuilt. The rebuild (accomplished with operating funds) was credited for the full DM replacement cost of the compressed air train. This emergency repair does not affect the cost or schedule of this project. This rebuilt compressor is still planned for replacement by CAUP, since its expected design life does not meet project requirements, the remaining support equipment is near failure, and it cannot be integrated into the central system.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2005	1Q FY 2004	3Q FY 2005	2Q FY 2005	4Q FY 2006	N/A	N/A
FY 2006	1Q FY 2004	1Q FY 2006	4Q FY 2005	4Q FY 2007	N/A	N/A
FY 2007	1Q FY 2004	4Q FY 2005	4Q FY 2005	3Q FY 2007	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC [a]	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	18,141	3,064	0	21,205	0	N/A
FY 2006	18,778[b]	3,220	0	21,998 [b]	0	N/A
FY 2007	18,041[c]	3,220	0	21,261 [c]	21,393	N/A

4. Project Description, Justification, and Scope

Project Description

This project provides funding for the construction of the Compressed Air Upgrades Project (CAUP). Project Engineering and Design funding under line 04-D-203 was provided for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and Title II) design of CAUP. The design effort was completed during FY 2005.

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[a] The TEC includes the cost of preliminary and final design ($3,970,000) which was appropriated in 04-D-203, Project Engineering and Design (PED), Various Locations.

[b] The TEC was reduced to $18,778,000 and the TPC was reduced to $21,998,000 because of the FY 2005 rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[c] The PED effort has experienced an under run of $640,000, reducing the TEC to $18,138,000 and the TPC to $21,358,000 and less than the Validated Performance Baseline. These were further reduced by $97,410 resulting from an FY 2006 rescission of 1 percent included in the Department of Defense Appropriations Act, 2006 (P.L. 09-148).

The objective of this project is to rehabilitate the existing compressed air capability at the Y-12 National Security Complex (NSC) to maintain a reliable, cost-efficient compressed air capability for the current and future buildings and facilities at the Y-12 NSC that will in turn ensure continued operation of Y-12's production facilities.

Justification

The Y-12 NSC requires a robust and reliable source of compressed air to accomplish its production and storage missions. Critical functions of the compressed air system include the following:

- pneumatic control of production and manufacturing processes,
- pneumatic control of heating, ventilating, and air conditioning systems,
- cooling applications in selected manufacturing processes,
- operation of pneumatic pumps, valves, and air lift circulators,
- supporting the operation of air bearings, and
- mixing and sparging of storage tanks

The loss of these capabilities jeopardizes Y-12's ability to meet its mission.

Y-12 currently must rehabilitate the existing compressed air capability to maintain a reliable, cost-efficient compressed air capability that will in turn ensure continued operation of Y-12's production facilities. The existing compressed air system at Y-12 is unreliable and inefficient to operate due to the age and physical condition of the equipment and facilities, distributed design of facilities, and the lack of an integrated control system to manage the operation of the systems. A significant amount of corrective maintenance is required to maintain operations. Outages involving the loss or reduction of system pressures below the allowable minimums occur on average every two weeks. These pressure excursions require that non-essential uses of compressed air be curtailed until equipment can be brought back on-line. The average duration of an instrument air outage is 30 minutes.

Without the project, Y-12's compressed air capability is at risk of failure, which can adversely impact Y-12's missions by disrupting service and increasing cost.

Scope

The CAUP will provide three new compressed air trains to be installed in Building 9767-13. The new trains will consist of compressors, air dryers, receivers and associated filters, heat exchangers, and interconnecting piping. An integrated control system will be provided for local operation. The control system will be connected to the existing Y-12 Utility Management System for monitoring and remote control. Supporting utilities will include electrical power, cooling water, and brine. These utilities will be supplied from existing systems which serve Building 9767-13.

The air will be delivered from the new compressor trains to users via the existing distribution systems. Some building upgrades are required to meet this project's required design life. Existing ventilation systems will be replaced by this project. Cooling Tower 9409-13 will also be upgraded; new pumps and control valves will be provided to increase operability and extend design life. Facilities that become

surplus because of the project will be placed in safe shutdown and transferred to the Infrastructure Reduction Program for disposition.

FY 2007 funding will be utilized for completion of construction.

Completion of this project will eliminate approximately $13.2 million in deferred maintenance costs associated with the compressed air facilities at Y-12.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – December 23, 2002
- Critical Decision – 1: Approve Preliminary Baseline Range – September 1, 2003
- External Independent Review Final Report – August 31, 2004
- Critical Decision – 2/3a: Approve Performance Baseline – September 10, 2004
- Critical Decision – 3b: Approve Start of Construction – July 7, 2005
- Critical Decision – 4: Approve Start of Operations – 4Q FY 2007

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design [a]			
2004	2,997[b]	2,997[b]	290
2005	973[c]	973[c]	2,976
2006	0	0	64
Total, Design (PED No. 04-D-203)	3,970	3,970	3,330
Construction			
2005	4,365[d]	4,365 [d]	1,524
2006	9,644	9,644[e]	10,281
2007	702	702	2,906[f]
Total, Construction	14,711	14,711	14,711
Total TEC	18,681	18,681	18,041

6. Details of Project Cost Estimate

Total Estimated Costs

	(dollars in thousands)	
Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	3,330[a]	3,970
Construction Phase		
Site Preparation	0	0
Equipment	2,048	2,749
All other construction	10,221	8,629
Contingency	2,442	3,430
Total, Construction	14,711	14,808
Total, TEC	18,041	18,778

[a] Design Funding was appropriated in 04-D-203, Project Engineering and Design (PED), Various Locations.

[b] The FY 2004 appropriated amount of $3,019,000 was reduced by $22,000 to $2,997,000 by a rescission (P.L. 108-199).

[c] The FY 2005 appropriated amount of $981,000 was reduced by $8,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[d] The FY 2005 appropriated amount of $4,400,000 was reduced by $35,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[e] The FY 2006 appropriated amount of $9,741,000 was reduced by $97,410 by a rescission of 1 percent included in the Department of Defense Appropriations Act, 2006 (P.L. 109-148).

[f] PED costs have under run TEC obligations by $640,000.

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	850	1,070
Start-up	1,890	1,681
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	0	0
Contingency for OPC other than D&D	480	469
Total, OPC	3,220	3,220

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	3,330	0	0	0	0	0	0	3,330
TEC (Construction)	11,805	2,906	0	0	0	0	0	14,711
OPC Other than D&D	2,366	854	0	0	0	0	0	3,220
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	17,501	3,857	0	0	0	0	0	21,261

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2007
Expected Useful Life (number of years)	20
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	441	360	7,407	7,200
Maintenance	0	0	0	0
Total Related funding	441	360	7,407	7,200

9. Required D&D Information

Excess facilities will be demolished under the FIRP Disposition subprogram. Facilities demolished gross square footage (GSF) will be added to the site's "banked" GSF.

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

No new construction; no one-for-one offset required.

D&D Information Being Requested	Square Feet
Area of new construction -- None	N/A
Area of existing facility(ies) being replaced -- None	N/A
Area of any additional space that will require D&D to meet the "one-for-one" requirement -- None	N/A

10. Acquisition Approach

Overall project direction and responsibility for this project resides with the NNSA. NNSA has assigned day-to-day management of project activities to the Y-12 management and operating (M&O) contractor, BWXT Y-12, including design, procurement, construction, and commissioning.

The M&O contractor will perform preliminary design. To the extent practical, final design and major procurement will be performed by an engineering/procurement (E/P) subcontractor awarded on the basis of the best value to the government. Construction will be performed to the extent practical using subcontracts that are awarded based on fixed-price competitive bidding.

Environmental Projects and Operations

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Environmental Projects and Operations – Program			
Long-Term Response Actions/Long-Term Stewardship	0	0	17,211
Total, Environmental Projects and Operations – Program	**0**	**0**	**17,211**

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Environmental Projects and Operations – Program				
Long-Term Response Actions/Long-Term Stewardship	17,518	17,805	18,099	18,400
Total, Environmental Projects and Operations – Program	**17,518**	**17,805**	**18,099**	**18,400**

Description

The mission of the Environmental Projects and Operations Program (EPO) is to continue to reduce risks to human health and the environment at National Nuclear Security Administration (NNSA) sites and adjacent areas, by operating and maintaining environmental cleanup systems installed by the Office of Environmental Management, and performing long-term environmental monitoring activities and analyses in a cost-effective manner that assures compliance with federal, state, and local requirements and integrates a responsible environmental stewardship program with the NNSA's stockpile stewardship and national security efforts.

Beginning in FY 2007, NNSA will be responsible for the funding and management of Long-Term Response Actions/Long-Term Stewardship (LTRA/LTS), which includes activities such as groundwater treatment; environmental monitoring of surface water, ground water, soils, and landfill remedies; reporting and liaison requirements for various states and surveillance/monitoring of contaminated decommissioned buildings that have not been demolished upon completion of Environmental Management program cleanup mission. These LTRA/LTS activities will be funded within the Weapons Activities appropriation within the EPO Program.

The NNSA, working in concert with other Federal agencies, states, and affected stakeholders, will execute its LTRA/LTS projects in a cost effective, compliant and safe manner consistent with end states that support the nuclear weapons complex mission. The NNSA's business strategy for accomplishing its new LTRA/LTS responsibilities will be integrated into the NNSA's business model and Planning, Programming, Budgeting, and Evaluation (PPBE) process. The NNSA EPO Program will adopt and adapt key initiatives similar to those of the NNSA's Facilities and Infrastructure Recapitalization Program. Specifically, the Program will: establish and manage site LTRA/LTS baselines and prioritize actions to reduce risk and ensure the successful accomplishment of the LTRA/LTS activities; ensure continued consistency between remediation end states and site end uses, ensure stakeholder interaction; implement a budget structure that provides clarity of financial integration with program performance in accordance with the DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets.*

Benefits

Under NNSA, this Program will continue the operation of installed remediation systems and other actions taken to accelerate environmental risk reduction as appropriate during the LTRA/LTS period, thereby maintaining progress in the cleanup of the environmental legacy at NNSA Sites in accordance with applicable environmental laws and regulations and in consultation with affected stakeholders and tribal governments. The successful execution of these LTRA/LTS activities will have a direct impact on the success of the NNSA's Stockpile Stewardship Program in that they contribute to the environmentally safe and effective operation of the NNSA Sites.

Major Outyear Considerations

The EPO program was established to ensure environmental compliance and LTRA/LTS activities at NNSA sites are being met and managed in support the overall goals of the ongoing programs within Weapons Activities appropriation. NNSA begins funding the LTRA/LTS activities in FY 2007 for three sites, Kansa City Plant (KCP), Lawrence Livermore National Laboratory (LLNL)-Main Site, and Sandia National Laboratories (SNL), to meet post-closure regulatory requirements. The program goal is to continue to reduce risks to human health and the environment at NNSA Sites and adjacent areas, by operating and maintaining environmental clean up systems installed by the Office of Environmental Management, and performing long term environmental monitoring activities and analyses in a cost effective manner that assures compliance with federal, state, and local requirements and integrates a responsible environmental stewardship program with the NNSA's Stockpile Stewardship and National Security efforts.

The funding in FY 2007 and FY 2008 is sufficient to meet the LTRA/LTS requirements for the three sites that will have completed environmental cleanup and enter the post cleanup phase. NNSA will need to revisit outyear requirements to support two additional sites requiring LTRA/LTS starting in FY 2009. The current outyear funding profile will not permit EPO to achieve its regulatory requirement of conducting the necessary Operating and Maintenance functions and ensuring that installed remedies remain protective of human health and the environment at all five LTRA sites starting in FY 2009. NNSA will be evaluating these outyear requirements during the FY 2008 through FY 2012 Planning and Programming process.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results.
There were no related targets.	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Annual percentage of environmental monitoring and remediation deliverables that are required by regulatory agreements to be conducted at NNSA sites that are on schedule and in compliance with all acceptance criteria (Annual Output)	N/A	N/A	N/A	N/A	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 by regulatory agreements.
Cumulative cost reduction in actual costs of performing annual environmental monitoring deliverables at NNSA sites as compared to annual planned costs using Earned Value Management controls (Efficiency)	N/A	N/A	N/A	N/A	N/A	T : 2%	T: 4%	T: 6%	T: 8%	By 2012, achieve a cumulative 10% cost reduction in actual costs of performing annual environmental monitoring deliverables at NNSA sites as compared to annual planned costs using Earned Value Management controls.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Long-Term Response Actions/Long-Term Stewardship

The NNSA has the responsibility for the formulation and execution of the LTRA/LTS budget when the Office of Environmental Management (EM) mission is completed at the NNSA sites. The LTRA/LTS includes activities such as ground water treatment, the environmental monitoring of surface and ground water, soils and landfill remedies, reporting and liaison activities required by various states, and the surveillance/monitoring of contaminated decommissioned buildings that have not been demolished upon completion of the EM mission at the site. The LTRA/LTS activities required in FY 2007 will be conducted at the Kansas City Plant (KCP), Lawrence Livermore National Laboratory (LLNL)-Main Site, and Sandia National Laboratories (SNL) sites where environmental cleanup activities were completed by the Office of Environmental Management in FY 2006. LLNL-Site 300 and the Pantex Plant are planned to begin LTRA/LTS activities in FY 2009.

KCP LTRA/LTS **0** **0** **1,697**

The LTRA/LTS activities at KCP cover all activities required to continue to protect human health and the environment and is based on remediation work accomplished through FY 2006. It focuses on maintenance of all remedies put into place by that time. The cleanup activities at the KCP are regulated by a Resource Conservation and Recovery Act (RCRA) Post Closure Permit issued by the Missouri Department of Natural Resources. The Permit lists 43 release sites, 42 of which have been addressed to date under RCRA corrective action and either undergone remediation, been deemed suitable for institutional controls, or have been determined to require no further action. In FY 2007, LTRA/LTS activities cover program management and oversight and the administration of environmental restoration project activities, in addition to the operation and maintenance of a treatment and monitoring system. The KCP's RCRA Post Closure Permit requires monitoring of both ground and surface water, and the maintenance and upkeep of a comprehensive ground water monitoring system consisting of over 190 individual wells. The purpose is to ensure that ground water contaminant plumes derived from historical plant operations are contained, and do not impact ground water and surface waters adjacent to the KCP. This Permit requires the operation of a ground water treatment system to capture and treat ground water contaminated with volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs). Ten interceptor wells, a ground water seepage collection system to prevent ground water migration into a National Pollutant Discharge Elimination System (NPDES) permitted outfall, and 18 building footing tile drains are used to contain contaminated ground water. Storm sewers will be maintained to keep contamination from past release sites from entering the system and reaching nearby waterways. The Permit also requires institutional controls and maintenance of three RCRA caps. Also included in this request is the cost to support the Agreement In Principle with the State of Missouri.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
LLNL LTRA/LTS	**0**	**0**	**12,556**

Past operations at the LLNL Main Site, which involved the handling and storage of hazardous materials, resulted in the release and subsequent migration of contaminants into the soil and ground water. The major contaminants are VOCs, primarily trichloroethylene. The LLNL-Main Site restoration project completed in FY 2006 consisted of activities to remediate contamination from past operations; controlling contaminated ground water migration; and effectively remediating soil and ground water where contaminants exceed regulatory limits to protect human health, the environment, and beneficial uses of natural resources by conducting cost-effective, science-based, state-of-the-art environmental remediation. Also, past operations at the LLNL-Site 300 have resulted in the release of hazardous and radioactive materials, primarily from surface spills, leaching from unlined landfills and pits, high explosive test detonations, and previous disposal of waste fluids in lagoons and dry wells. Plans are to implement all remedial actions required by regulatory decision documents by the end of FY 2008. The cleanup activities at Site 300 will reduce the risks, overall liability, and mortgage at Site 300 associated with 37 distinct ground water plumes contaminated with VOC's, high explosives, nitrate, perchlorate, tritium, and/or depleted uranium.

In FY 2007, the LTRA/LTS activities performed at the Main Site will include: facility operation and maintenance (O&M) of treatment systems, continued regulatory interactions and compliance, soil vapor and ground water monitoring and wellfield O&M, 3-D modeling as a cost-effective means to estimating future VOC concentrations and risk to human health and the environment, optimize remediation, evaluate the effectiveness of cleanup, relay progress of cleanup to the Stakeholders, maintaining the data information system that is required to support planning, collection, tracking, verification, validation, reporting, interpretation and use of data, implementation of new/optimized remedial actions as necessary and program management. The LTRA/LTS activities for Site 300 are similar to those being performed at the Main Site and are included in the outyear funding profile. However, those activities and funding are not planned to begin until FY 2009.

Pantex LTRA/LTS	**0**	**0**	**0**

In FY 2007 no activities are planned to support the LTRA/LTS activities at the Pantex Plant. The LTRA/LTS activities are planned to begin at the Pantex Plant in FY 2009.

SNL LTRA/LTS	**0**	**0**	**2,958**

In FY 2007, the SNL LTRA/LTS includes all activities necessary to protect human health and the environment during operation of installed cleanup systems at legacy release sites where contamination remains. This project will focus on maintenance of remedies at 265 Environmental Restoration release sites at SNL/New Mexico (NM) and ground water monitoring at SNL/California (CA) beginning in FY 2007. In addition to routine ground water, vadose zone, and cover monitoring, SNL LTRA/LTS activities include: management to implement LTRA/LTS, site and environmental monitoring, institutional controls, information management, and public participation and outreach.

Total, LTRA/LTS	**0**	**0**	**17,211**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Long-Term Response Actions/Long-Term Stewardship	
KCP LTRA/LTS	
▪ The increase is necessary to fund LTRA activities at KCP beginning in FY 2007.	+1,697
LLNL LTRA/LTS	
▪ The increase is necessary to fund LTRA activities at LLNL-Main Site beginning in FY 2007, also for planning purposes, funding will be required for LLNL Site 300 in FY 2009.	+12,556
Pantex LTRA/LTS	
▪ LTRA activities will begin at Pantex in FY 2009. No funding is required in FY 2007, however, for planning purposes, funding will be required in FY 2009 for LTRA.	0
Sandia LTRA/LTS	
▪ The increase is necessary to fund LTRA activities at SNL beginning in FY 2007.	+2,958
Total Funding Change, Long-Term Response Actions/Long-Term Stewardship	**+17,211**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
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 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**	**0**

Safeguards and Security

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Safeguards and Security (S&S)			
Defense Nuclear Security			
Operations and Maintenance (Homeland Security)	615,973	666,690	665,701
Construction (Homeland Security)	36,708	40,590	0
Overseas Combating Terrorism (OCT)	0	0	0
Subtotal, Defense Nuclear Security	652,681	707,280	665,701
Offset for S&S Work for Others	-30,000	-32,000	-33,000
Total, Defense Nuclear Security with Offset	622,681	675,280	632,701
Cyber Security (Homeland Security)	99,248	90,471	88,711
Total, Safeguards and Security with Offset	721,929	765,751	721,412

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Safeguards and Security (S&S)				
Defense Nuclear Security				
Operations and Maintenance (Homeland Security)	612,843	605,144	639,323	679,222
Construction (Homeland Security)	65,134	84,366	62,000	34,175
Subtotal, Defense Nuclear Security	667,977	689,510	701,323	713,397
Offset for S&S Work for Others	-34,000	-35,000	-36,000	-37,000
Subtotal, Defense Nuclear Security with Offset	643,977	654,510	665,323	676,397
Cyber Security (Homeland Security)	90,292	91,769	93,285	94,838
Total, Safeguards and Security with Offset	734,269	746,279	758,608	771,235

Description

This program will provide protection for National Nuclear Security Administration (NNSA) personnel, facilities, nuclear weapons, and information from a full spectrum of threats, most notably from terrorism, which has become of paramount concern post the September 11, 2001, attacks in the Homeland.

The Safeguards and Security GPRA unit is comprised of two subprograms: Defense Nuclear Security managed by NNSA's Associate Administrator for Defense Nuclear Security and Cyber Security managed by the NNSA Chief Information Officer.

The FY 2007-2011 budget request proposes that the Physical Security portion of NNSA's Safeguards and Security GPRA unit be renamed "Defense Nuclear Security" to distinguish this program and

associated funding from the cyber security efforts. Two separate funding controls are requested. The entire Safeguards and Security program is a Homeland Security related activity.

Benefits

Within the Safeguards and Security program, the **Defense Nuclear Security** Program makes unique contributions to Program Goal 01.39.00.00. Physical Security constitutes the largest funding allocation of the NNSA security effort and includes (1) Protective Forces – a site's front-line protection, consisting primarily of armed uniformed officers; (2) Physical Security Systems – provides intrusion detection and assessment barriers, access controls, tamper protection monitoring, and performance testing and maintenance of security systems; (3) Transportation – security for intra-site transfers of special nuclear materials (including safe havens), weapons, and other classified material that is not funded through NNSA's Secure Transportation Asset; (4) Information Security – provides protection for the classification and declassification of information, critical infrastructure, technical surveillance countermeasures (TSCM), and operations security; (5) Personnel Security – encompasses the processes for administrative determination that an individual is eligible for access to classified matter, or is eligible for access to, or control over, special nuclear material or nuclear weapons; and (6) Materials Control and Accountability (MC&A) – provides for the control and accountability of special nuclear materials. Defense Nuclear Security also includes the following construction projects: 05-D-170-01, Project Engineering and Design (PED), Nuclear Materials Safeguards and Security (S&S) Upgrades, Phase II, LANL; 05-D-170-02, PED, Security Improvements Project, Y-12; and 5-D-701, Security Perimeter Project.

NNSA continues to maintain its **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 implementation guidance and by addressing the increasing number of requirements issued by OMB. Design for, and initial development of the expanded Los Alamos National Laboratory classified network was completed and will support conversion of the laboratory to diskless operation beginning in FY 2006.

Program Assessment Rating Tool (PART)

PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The Department has incorporated feedback from OMB into the FY 2007 Safeguards and Security Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2006, OMB re-assessed the Safeguards and Security Program. OMB gave the Safeguards and Security program scores of 60 percent on the Purpose and Design Section, 88 percent on the Strategic Planning Section, 100 percent on the Program Management Section, and 73 percent on the Results

Section. OMB rated the program 77 percent, its second highest category of "Moderately Effective." This represents a significant improvement over the FY 2004 OMB PART assessment of the program, which resulted in a rating of 59 percent or "Adequate." Per OMB's recommendations in FY 2004, the program has improved the meaningfulness and measurability of its performance measures. OMB was satisfied with both the program's new measures and the progress the program has made in achieving results against these new measures.

The FY 2006 OMB PART resulted in additional OMB recommendations, which the program is aggressively working to implement. They are (1) improve program design and resource allocation to make sure that post-September 11, 2001, threats are addressed as cost-effectively as possible; (2) improve contractors commitment to achieving program goals and targets; and (3) demonstrate improved efficiencies. The program is addressing these recommendations by measuring the progress in implementing post-September 11, 2001, security upgrades that meet the 2003 Design Basis Threat; and implementing solutions to reduce the time it takes to process Q-clearances for both contractor and federal employees.

Defense Nuclear Security

Major FY 2005 Achievements

The Defense Nuclear Security Program took the following actions to improve the security posture across the weapons complex:

- The first class of Defense Nuclear Security interns (future leaders) was hired and began their 18 months of training;
- A new structure for addressing Personnel Security programs was established at the Service Center and, as a result, the clearance backlog is being reduced and timelines are being addressed;
- The Nuclear Materials Safeguards and Security Phase I project was completed at the Los Alamos National Laboratory on time and under budget;
- The Office of Security Oversight was established in March of 2005;
- Vulnerability Assessments (VA) were conducted at NNSA sites to validate upgrades for the 2003 Design Basis Threat; and
- Site Assistance Visits (SAV) reviews were conducted at all NNSA sites in concert with representatives from the DOE Office of Security and Safety Performance Assurance to identify technological upgrades that could be used to meet 2004 Design Basis Threat, as an offset to more expensive protective force increases.

Los Alamos National Laboratory

- Obtained additional Security Police Officers and enhanced their capabilities through training and arming.

- Increased materials control and accountability activities to facilitate Category I Special Nuclear Material de-inventory of TA-18, and allow for significantly decreased security in FY 2006.

Y-12 National Security Complex

- Installed outer barriers and detection systems around existing Special Nuclear Material (SNM) storage facilities and consolidated other SNM onsite locations.

- Deployed new advanced (remotely operated) weapons and armor piercing rounds.

- Deployed Advanced Concept Armored Vehicles (ACAV) and replaced one third of protective force vehicles with new vehicles.

- Moved approximately 67,000 classified items into compliant storage; 10,000 items have been packaged and are pending shipment to the Nevada Test Site.

- Instituted site-wide procedures for Security Locks and Keys, requiring routine detailed inventories, and substantially reduced the number of security keys on site by 90 percent.

Nevada Test Site

- Increased security posture to Category I protection at the Device Assembly Facility (DAF) to enable de-inventory efforts at LANL TA-18.

- Through an aggressive and rigorous training program, Wackenhut Services, Inc., Protective Forces at DAF at the Nevada Test Site were staffed up from 108 to 195 Security Police Officers in order to meet the new missions of the Nevada Test Site.

- Upgraded the security systems at DAF to provide increased detection and assessment capability.

Pantex

- Installed the Local Area Network Material Accountability System, a standardized nuclear material accounting system, to facilitate tracking and control of nuclear material inventories.

- Implemented the 2003 Design Basis Threat through increased detection assessment, protective forces, and armament.

Sandia National Laboratory

- Implemented all upgrades to Technical Area V to comply with the 2003 Design Basis Threat.

Lawrence Livermore National Laboratory

- Implemented enhancements to the Super Block Protected Area physical perimeter to extend detection and delay, hired an additional vulnerability assessment analyst to increase onsite

Vulnerability Assessment capabilities, hired additional Security Police Officers, and modified vaults to enhance security features.

Major Outyear Considerations

Defense Nuclear Security will focus on deployment of new technologies to supplement protective forces.

The reengineering effort for NNSA personnel security will provide improvements for its security clearance process.

Ongoing activities will maintain strong control and accountability of special nuclear material, increase experience and knowledge base of scarce highly-specialized technical resources, and expand efforts to implement a risk management-based approach to materials control and accountability.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Provide technical support to the Counter-Terrorism Task Force strategic review of S&S DOE-wide, including cyber security. (MET GOAL)	Assess line management's progress in implementing Integrated Safeguards and Security Management. (MET GOAL)
Develop a strategic framework for responsive and effective security methodology following the September 11, 2001, events. (MET GOAL)	Complete implementation of "Higher Fences" to enhance the protection of certain Restricted Weapons Data with DOE and DoD. (FMFIA) (MET LESS THAN 80% OF TARGET)
Complete the milestones listed in the corrective action plans for the Departmental Challenge of Security and Counterintelligence. (FMFIA) (MET GOAL).	

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of Physical Security reviews conducted by the Office of Independent Oversight and Performance Assurance (OA) at NNSA sites that resulted in the rating of "effective" (based on last OA review at each site over 6 physical security topical areas)	N/A	R: 53% T: 80%	R: 72% T: 65%	T: 70%	T: 75%	T: 80%	T: 85%	T: 90%	T: 95%	By 2011, achieve an effective rating on 95% of OA Physical Security reviews.
Annual average calendar days per applicant for NNSA Service Center to complete the processing needed to grant Q Security Clearance for federal and contractor employees in the NNSA complex, other than Headquarters (does not include days for Office of Personnel Management or the Federal Bureau of Investigation to conduct background checks) (Efficiency)	N/A	N/A	R: 100 T: 85	T: 110	T: 110	T: 107	T: 107	T: 102	T: 102	By 2015, reduce average number of days for Service Center to process Q Security Clearance to 90 days; 90 days is OPM Standard (Baseline is 110 days in FY 2005).
Cumulative percentage of progress, measured in milestones completed, towards implementation of May 2003 Design Basis Threat (DBT) Policy at NNSA sites	N/A	N/A	R: 78% T: 12.5%	T:100	N/A	N/A	N/A	N/A		By 2006, complete all milestones for May 2003 DBT Policy.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Physical Security	**615,973**	**666,690**	**665,701**

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.

Preliminary analyses have identified critical security enhancements needed at NNSA sites for continuation of activities already begun. Vulnerability Assessments will be completed in FY 2006 to validate the level of enhancements necessary at NNSA sites.

During FY 2007, the DNS Program will focus on eliminating or mitigating identified vulnerabilities across the weapons complex. Measures will include additional protective force training, acquiring updated weapons and support equipment, improving physical barrier systems and standoff distances, and reducing the number of locations with "targets of interest." Physical security systems will be upgraded and deployed to enhance detection and assessment, add delay and denial capabilities, and to improve perimeter defenses at several key sites.

NNSA's activities will focus on full integration of security requirements and ensure we build security in and not have to add it on after the fact. We will focus on consolidation of Special Nuclear Material (SNM) holdings, utilization of enhanced technologies and minimization of ongoing and costly protective force personnel costs.

▪ **Protective Forces**	**340,135**	**334,483**	**427,620**

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 defensive tactics and procedures to protect site interests. The increase for ongoing support will maintain additional 2003 DBT protective forces hired during FY 2006. 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.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Congressionally Directed Activity	**0**	**25,000**	**0**

The Conference Report provided $25 million for Pantex protection measure actions in support of the 2003 Design Basis Threat (DBT) effort.

Congressionally Directed Activity	**30,000**	**60,000**	**0**

The Conference Report provided $60 million for Y-12 protection requirements for compliance with the 2003 DBT.

- **Physical Security Systems** **72,193** **53,696** **64,000**

  Physical Security Systems provide intrusion detection and assessment capabilities, access controls, tamper protection monitoring, and performance testing and maintenance of security systems according to the approved site performance testing plan. We will focus on life cycle replacement of our 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** **845** **890** **908**

  Includes all security-related transportation budget estimates for intra-site transfers of special nuclear material (including safe havens), weapons, and other classified material that is not funded in the Secure Transportation Asset account (STA).

- **Information Security** **25,477** **21,398** **25,145**

  Information Security provides protection for the classification and declassification of information, critical infrastructure, technical surveillance countermeasures (TSCM), and operations security. Through periodic reviews of classified and sensitive information, Information Security ensures proper document marking, storage and protection of information.

- **Personnel Security** **25,555** **27,041** **28,200**

  Personnel Security encompasses the processes for administrative determination that an individual is eligible for access to classified matter, or is eligible for access to, or control over, Special Nuclear Material or nuclear weapons. Although the NNSA is responsible for ensuring that all personnel with access to NNSA sites (including current employees, new hires, and visitors) have been appropriately reviewed for access to classified and sensitive matter and materials, the actual NNSA security clearance reviews by the Federal Bureau of Investigation and/or the Office of Personnel Management are budgeted for in the Office of Security budget. Personnel Security represents all other functions of the personnel security process in the NNSA, including badge office operations, Human Reliability Program administration and visitor control programs. In accordance with the NNSA Reengineering effort, the NNSA Service Center has the lead for NNSA Personnel Security initiatives.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **Materials Control and Accountability** ..	**27,018**	**26,889**	**27,940**

Materials Control and Accountability (MC&A) provides for the control and accountability of special nuclear materials and other accountable nuclear materials through measurements, quality assurance, accounting, containment, surveillance, and physical inventory. MC&A is complementary to physical protection requirements and functions as a primary deterrent against unauthorized use or diversion of Special Nuclear Material. MC&A is also responsible for tracking movements of accountable nuclear materials between sites and reporting those movements to a national level tracking system.

▪ **Program Management**.....	**86,750**	**109,293**	**83,888**

Program Management provides direction, oversight and administration, planning, training, and development for security programs. Activities include 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 development of annual performance baselines for each site's security program, is in place.

▪ **Technology Deployment, Physical Security**	**8,000**	**8,000**	**8,000**

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. The technology deployment effort will focus on promising, emerging technologies that will provide operational efficiencies for the NNSA security program.

Construction	**36,708**	**40,590**	**0**

The Construction program includes the cost of new and ongoing line-item construction projects that support the safeguards and security mission within the nuclear weapons complex. Funding provided in FY 2006 will sustain ongoing projects under 05-D-170, Project Engineering and Design, to continue design in FY 2007 for two subprojects: Nuclear Materials Safeguards and Security Upgrades (NMSSUP), Phase II to upgrade and replace the existing physical security system at the Los Alamos National Laboratory; and the Y-12 Security Improvements Project (SIP).

Total, Defense Nuclear Security	**652,681**	**707,280**	**665,701**

Cyber Security

Major FY 2005 Achievements

Design for, and initial development of the expanded Los Alamos National Laboratory classified network was completed during FY 2005. Some conversion of laboratory activities to diskless operation was completed during FY 2005. Full implementation of the expanded network design will facilitate and support conversion of the laboratory to diskless operation beginning in FY 2006. Other FY 2005 accomplishments include:

- maintenance of the cyber security posture of NNSA sites despite increasing numbers, complexity, and sophistication of cyber attacks on the nuclear weapons complex;
- limited the number of successful penetrations of NNSA unclassified computer systems and networks;
- continued to respond to and implement the increasing number of requirements set by OMB through the Federal Information Security Management (FISMA) legislation;
- successfully developed and deployed the core security services to support an NNSA-wide enterprise secure network that connects all NNSA locations and facilitates controlled sharing of the data necessary to accomplish the NNSA national security missions;
- developed and deployed an automated tool to facilitate development, approval, certification, and accreditation of NNSA cyber security plans, and
- enhanced the Multi-Platform Trusted Copy (MPTC) tool.

Major Outyear Considerations

The Cyber Security program will sustain the NNSA infrastructure and upgrade elements that will counter cyber threats from external and internal attacks using the latest available technologies.

The Red Network project is expected to be completed and ongoing activities for the continuation of the Integrated Cyber Security Initiative, which include development and deployment of the NNSA enterprise-wide secure network (ESN).

Ongoing activities in support of the Department's classified diskless at the workstation operations and continued support of extraordinary infrastructure and conversion activities at Federal and contractor facilities.

Lastly, this program will maintain NNSA information systems against cyber attacks through backup and restoration of critical computer systems, networks, and information assets.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of Cyber Security reviews conducted by the Office of Independent Oversight and Performance Assurance (OA) at NNSA sites that resulted in the rating of "effective" (based on last OA review at each site over 2 Cyber Security topical areas)	N/A	R: 83% T: 80%	R: 57% T: 80%	T: 57%	T: 57%	T: 57%	T: 57%	T: 57%	T: 57%	Annually, achieve an effective rating on at least 57% of OA Cyber Security reviews.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Cyber Security (Homeland Security)	**99,248**	**90,471**	**88,711**

Cyber Security implements policies and procedures for information protection and the design, development, integration, and deployment of all Cyber Security-related and infrastructure components of the Stockpile Stewardship Program and other activities at NNSA landlord sites. The Cyber Security Plan addresses the level of security required for information and equipment in the cyber structure. During FY 2007 the Cyber Security Program will continue to support the cyber security infrastructure within, and between, all NNSA federal offices and contractor locations. The infrastructure activities will upgrade elements to address the latest cyber threats from both external and inside attacks as well as, deploying the latest available cyber security technologies to meet the NNSA mission and performance requirements of the mission activities. The infrastructure activities include support for on-going operation of the unclassified cyber security, classified cyber security, communications security, and TEMPEST programs within each NNSA contractor location. During FY 2007, we will review and update, as needed, the NNSA cyber security policies and practices, and solutions for enterprise-wide user authentication, authorization, public key infrastructure, and other secure enterprise-wide services, such as, enterprise-wide secure e-mail, file sharing, and user collaboration tools. The Integrated Cyber Security Initiative (ICSI) program will update identification of information assets and information flows of national security information across the NNSA enterprise. The ICSI program will continue implementation of enterprise-wide security services and include enhanced intrusion detection systems.

In FY 2005, the potential for inappropriate handling of Classified Removable Electronic Media (CREM) continues to be a concern and the highly publicized incidents of CREM handling requires acceleration of work already underway to move NNSA to a diskless-at-the-workstation architecture for classified computing.

The Department has focused ongoing efforts to transition its classified computing to diskless-at-the-workstation operations. Ongoing conversion efforts are primarily funded through classified computing accounts. In FY 2007, NNSA requests $9.8 million to support extraordinary conversion activities throughout the Department.

▪ **Infrastructure Program**.....	**56,845**	**46,716**	**56,776**

The infrastructure program supports the cyber security operations and activities at NNSA landlord sites. The cyber security operations and activities provide a foundation that includes detection of intrusions (hackers and other forms of attacks), vulnerability scanning and correction within each site, implementation of Department and NNSA cyber security policies and practices, and continuous improvement of network and computing system cyber security technologies. The infrastructure program provides the personnel and cyber security technology (hardware and software) to maintain a cyber security posture that complies with all Department and NNSA policies while addressing the increasing number and complexity of cyber security threats.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Congressionally Directed Activity	**20,000**	**20,000**	**0**

The Conference Report earmarked $20 million for the Los Alamos expansion of Red Network Project, and $13.6 million was provided. The full earmark was funded by reducing base program activities.

Congressionally Directed Activity	**0**	**1,900**	**0**

The Conference Report earmarked $1.9 million for Sandia National Laboratories to support the DOE-wide public key infrastructure effort.

- **Integrated Cyber Security** **20,403** **19,855** **20,135**

  The Integrated Cyber Security Initiative (ICSI) provides the definition, planning, and design efforts for the development and deployment of the NNSA enterprise-wide secure network (ESN). ICSI supports: (1) the ESN Test and Certification Laboratory for the security evaluation and testing of ESN components in an isolated, non-production, controlled environment; (2) the Need-to-Know Project to define, demonstrate, test, and deploy software products to manage need-to-know access to all information and computing resources across the ESN; (3) the Authentication Project to define, demonstrate, test, and deploy software products to authenticate all NNSA users who participate in the ESN; (4) the Authorization Project to define, demonstrate, test, and deploy software products to manage user identities and authorizations to use information and computing resources across the ESN; (5) the Information Assets Project to identify the electronic information assets and flow of these assets across the ESN; (6) the Enterprise Directory Services Project to define, demonstrate, test, and deploy software products that provide a enterprise-wide directory repository for information related to the management of the ESN and information assets; (7) the Enterprise Lexicon Project to define and disseminate standard term, definitions, and meta-date for all ESN information assets and activities; (8) the Enterprise Intrusion Detection Project to define, develop, demonstrate, test, and deploy state-of-the-art systems for the detection of anomalous activities, such as hackers and attempts at unauthorized penetration, throughout the ESN; (9) the Enterprise System Management Project to define, develop, demonstrate, test, and deploy software products for the management and support of on-going ESN operation and user activities; and (10) the NNSA Cyber Security Education and Awareness Project to develop, maintain, and deliver continuously updated cyber security information to all NNSA and NNSA contractor personnel.

- **Technology Application, Cyber Security** **2,000** **2,000** **2,000**

  Technology Deployment will deploy technology to address both short and long-term solutions to specific cyber security needs at NNSA sites. The research and technology development efforts will focus on emerging technologies that will provide cost-effective improvements to the NNSA Defense Nuclear Security's Safeguards and Security program. In FY 2007, additional specific technologies will be identified for further research and technology development.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
▪ **Classified Diskless Workstation Operations**	**0**	**0**	**9,800**

Activities to transition the Department's classified computing to diskless at the workstation operations will continue. FY 2007 funding will be allocated across the Department, at federal and contractor facilities, to support extraordinary infrastructure and conversion activities that cannot be supported within currently planned program and site funding levels.

Total, Cyber Security.....	**99,248**	**90,471**	**88,711**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
▪ **Defense Nuclear Security**	
Protective Forces: Increase for ongoing protective forces hired in FY 2006 in support of the 2003 DBT and Advanced Technology weapons including Remotely Operated Weapons Systems (ROWS) upgrades.	**+93,137**
Congressionally Directed Activity	
The decrease is associated with the FY 2006 Congressional increase for Physical Security at Pantex and reflects the program's expectation to be in compliance with the 2003 DBT policy.	**-25,000**
The decrease is associated with the FY 2006 Congressional increase for Physical Security at Y-12 and reflects the program's expectation to be in compliance with the 2003 DBT policy.	**-60,000**
Physical Security Systems: The increase supports ongoing upgrades to existing physical security systems, as well as systems maintenance, and improvements to compensate for life-cycle concerns.	**+10,304**
Transportation: Continues to support the movement and consolidation of Special Nuclear Material inventories pending implementation of DBT enhancements at facilities.	**+18**
Information Security: The increase is largely attributable to the need for increased efforts to properly document and store classified and sensitive information.	**+3,747**
Personnel Security: The increase supports the administrative processing of clearances.	**+1,159**
Materials Control and Accountability (MC&A): The increase supports maintenance of Special Nuclear Material inventories and materials measurement procedures. The Department's materials consolidation initiative has resulted in short-term increases in inventorying and the need for establishment of MC&A programs at new locations.	**+1,051**
Program Management: The decrease reflects efficiencies and improvements in management processes.	**-25,405**
Construction	
The decrease supports phased continuation costs for one design subproject in line item 05-D-170, Project Engineering and Design.	**-40,590**
Total, Defense Nuclear Security.....	**-41,579**

	FY 2007 vs. FY 2006 ($000)
▪ **Cyber Security (Homeland Security)**	
Infrastructure Program: This increase will support operations and activities at NNSA sites.	**+10,060**
Integrated Cyber Security: The increase reflects the transition of the NNSA enterprise-wide network efforts from definition and design to deployment consistent with the program plan.	**+280**
Classified Diskless Workstation Operations: The increase reflects initiation of centrally funded conversion activities to complement other ongoing activities throughout the Department.	**+9,800**
Congressionally Directed Activity	
The decrease is associated with the FY 2006 Congressional addition for the Infrastructure Program and reflects the programs expectation of completion of the Red Network Project.	**-20,000**
Congressionally Directed Activity	
The decrease is associated with the FY 2006 Congressional addition for Integrated Cyber Security and reflects completion of the program's initial support of the DOE-wide effort.	**-1,900**
Total, Cyber Security	**-1,760**
Total Funding Change, Safeguards and Security	**-43,339**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	19,952	20,551	21,168
Capital Equipment	9,739	10,031	10,332
Total, Capital Operating Expenses	**29,691**	**30,582**	**31,500**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	21,803	22,457	23,131	23,825
Capital Equipment	10,642	10,961	11,290	11,629
Total, Capital Operating Expenses	**32,445**	**33,418**	**34,421**	**35,454**

Construction Projects

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
05-D-170 Project Engineering and Design, (PED), VL	74,590	0	16,866	40,590	0	
05-D-701, Security Perimeter Project, LANL	19,842	0	19,842	0	0	
Total, Construction			**36,708**	**40,590**	**0**	

Outyear Construction Projects

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
05-D-170 PED, Y-12	17,134	0	0	0
08-D-260, NMSSUP II, LANL	48,000	46,000	49,000	30,000
09-D-xxx, SIP, Y-12	0	36,866	7,000	0
09-D-xxx, Security PIDAS Upgrade, Pantex	0	1,500	6,000	4,175
Total, Construction	**65,134**	**84,366**	**62,000**	**34,175**

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

Summary Outyear

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Construction Project at Target	65,134	84,366	62,000	34,175
Total, Construction Projects	**65,134**	**84,366**	**62,000**	**34,175**

05-D-170, Project Engineering and Design (PED) – S&S, Various Locations

1. Significant Changes

Security Improvement Project (SIP)

- NNSA has reevaluated its defense nuclear security and programmatic mission strategy for the Y-12 National Security Complex. This reevaluation has led to changes to the Security Improvements Project (SIP) scope eliminating the immediate requirement for a new PIDAS. The remaining SIP scope provides an Argus, and central and secondary alarm systems resulting in a reduced total estimated project cost.

- The Project Engineering and Design (PED) funding reflects an increase with new resources identified in FY 2008. The increase for PED is a result of having inadequate design resources previously identified in the FY 2006 PED data sheet to successfully execute the preliminary and final design. Although the scope was reduced (e.g. eliminated PIDAS), the additional PED funding is needed to support the design based on the revised scope.

Nuclear Materials Safeguards and Security Phase II

Nuclear Materials Safeguards and Security Upgrade Project (NMSSUP) Phase II project schedule was delayed and scope has changed based on the November 2005 Design Basis Threat (DBT). The revised scope provides for exterior perimeter protection of the existing Plutonium (PF-4) Building and planned Chemistry and Metallurgy Research Replacement (CMRR) facilities, and other TA-55 infrastructure. The revised scope eliminated the immediate need for interior physical security protection system improvements (detection, delay, etc.) for PF-4 Building.

- Conceptual design was initiated in late FY 2003 for Nuclear Materials Safeguards and Security Upgrades Project, Phase II (NMSSUP II) at the Los Alamos National Laboratory. This conceptual design was estimated to cost approximately $2.3 million and was scheduled to be complete in early FY 2005; however, changes in the Design Basis Threat (DBT) have caused delays and cost increases. The cost of the conceptual design for the NMSSUP II is now estimated at approximately $4.0 million with completion in April 2006. There is no need for additional resources to support this increase in conceptual design costs. The project was placed on hold in August 2005 until Conceptual Costs were validated and Congress was notified of need to exceed $3 million in conceptual design. Notification to Congress was made in December 29, 2005. Project resumption is expected in February 2006. As a result of this hold, design completion and construction start are later than originally planned.

- Other project costs (OPCs) increased from $12.0 million to $25 million due primarily to the change in threat from the 2003 DBT to the 2005 DBT. Specifically, the increase in OPC costs is due to changes regarding the alternative analysis, more extensive authorization basis analysis regarding proposed technologies, and work controls and planned training (extensive) including instructional training for lethal technologies.

- DOE has switched its planned acquisition approach to reflect a Design-Build strategy that may recoup part of the schedule slippage.

2. Design, Construction, and D&D Schedule*

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2005	2Q FY 2005	1Q FY 2007	2Q FY 2007	1Q FY 2012	N/A	N/A
FY 2006	3Q FY 2005	1Q FY 2007	2Q FY 2007	2Q FY 2011	N/A	N/A
FY 2007[a]	3Q FY 2006	2Q FY 2008	1Q FY 2008	4Q FY 2012	N/A	N/A

* Note: This is a combined schedule representing earliest start and latest completion dates for all subprojects. Critical decision schedules are presented for each subproject below.

3. Baseline and Validation Status**

(dollars in thousands)

TEC	OPC, except D&D Costs	D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate

** Note: Preliminary estimates for each subproject are presented separately below.

4. Project Description, Justification, and Scope

Project Description:

This project provides for Architect-Engineering (A-E) services (Title I and Title II) for Defense Nuclear Security construction projects, allowing designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). This project also allows for the similar design efforts under a design/build acquisition strategy. 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. In the case of using a design/build acquisition strategy, the design effort included in this project is the processing of the design/build Request for Proposal and the subsequent design efforts by the selected design/build team.

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 cost estimate and schedule.

The 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 Title I and II design and engineering efforts for each subproject are provided, as well as very preliminary estimates of

[a] FY 2007 schedule presented reflects the NMSSUP Phase II project because the Preliminary Design starts earlier and the Physical Construction completes later than the SIP. Specific critical decision milestones for the two "various locations" projects are presented on subsequent pages.

the Total Estimated Cost (including physical construction) of each subproject. The final Total Estimated Cost and Total Project Cost for each project described below will be validated and the Performance Baseline will be established at Critical Decision 2 following completion of preliminary design.

FY 2005 Design Projects

05-01: Nuclear Materials Safeguards and Security Upgrades (NMSSUP) Phase II, 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		
1Q FY 2006	2Q FY 2008	2Q FY 2008	4Q FY 2012	45,000[a]	125,000 - 230,000

Fiscal Year	Appropriations	Obligations	Costs
2005	10,000	0	0
2006	34,590[a]	44,590	5,000
2007	0	0	39,590

This subproject provides for design of the proposed Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II. The objective of the NMSSUP Phase II is to upgrade and replace the existing exterior perimeter, physical security intrusion, detection, assessment, and delay systems at the LANL. The upgrades and replacement are required in order to address the new Design Basis Threat and Secretary of Energy mandated denial protection for the Laboratory's key nuclear facilities that house and process Category I quantities of Special Nuclear Materials. It is also the proposed site for consolidation of the nuclear missions for the laboratory, including the Chemistry and Metallurgy Research Replacement Project.

NMSSUP Phase II project includes the upgrade or replacement of the existing exterior detection, delay, access control, and security equipment for TA-55. These systems will be integrated with the Argus security control system that has been installed under NMSSUP Phase I.

Compliance with Project Management Order

- Critical Decision – 0; Approve Mission Need – August 2003
- Critical Decision – 1; Approve Preliminary Baseline Range – 3Q FY 2006
- External Independent Review – 4Q FY 2006
- Critical Decision – 2; Approve Performance Baseline – 1Q FY 2007
- Critical Decision – 3; Approve Start of Construction –2Q FY 2008
- Critical Decision – 4; Approve Start of Operations – 4Q FY 2012

[a] The FY 2006 appropriated funding for this subproject of $35,000,000 was reduced by $410,000 by a rescission of one percent in accordance with the DOD Appropriations Act, 2006, P.L. 109-148.

05-02, Security Improvements Project, Y-12

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 2006	3Q FY 2007	1Q FY 2008	2Q FY 2009	30,000[a]	100,000-150,000

Fiscal Year	Appropriations	Obligations	Costs
2005	6,866[a]	0	0
2006	6,000	12,866	3,000
2007	0	0	9,866
2008	17,134	17,134	17,134

This subproject provides for preliminary and final (Title I and Title II) design for the proposed Security Improvements Project at the Y-12 National Security Complex (NSC).

The SIP will provide a new hardened Central Alarm Station (CAS) building that meets the requirements in the October 2004 Design Basis Threat (DBT). This facility will be designed to incorporate the Argus security control system. The existing Secondary Alarm Station (SAS) is located in a building that has reached its useful life and is scheduled for decommissioning. The project will convert the existing CAS into the new SAS once the new CAS is built and systems are operational.

The project will also replace the current access control, assessment, detection, and response systems with Argus to meet NNSA requirements for the implementation of this security system across the NNSA complex. Implementing Argus will allow Y-12 to be integrated with the rest of the NNSA complex and allow Y-12 to take advantage of common maintenance and support provided for Argus. Argus also provides capabilities needed to meet DBT requirements that the current Y-12 system cannot currently meet.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need January 7, 2004
- Critical Decision – 1: Approve Preliminary Baseline Range 3Q FY 2006
- External Independent Review Final Report: – 2Q FY 2007
- Critical Decision – 2: Approve Performance Baseline – 3Q FY 2007
- Critical Decision – 3: Approve Start of Construction – 1Q FY 2008
- Critical Decision – 4: Approve Start of Operations – 4Q FY 2009

[a] The FY 2005 appropriated funding for this subproject of $17,000,000 was reduced by $134,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2005	16,866[a]	12,866	0
2006	40,590[b]	44,590	8,000
2007	0	0	49,456
2008	17,134	17,134	17,134
Total, TEC (05-D-170)	74,590[a]	74,590	74,590

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Preliminary and Final Design	75,000	57,866
Construction Phase		
Site Preparation	0	0
Equipment	0	0
All other construction	0	0
Contingency	0	0
Total, Construction	303,000	350,000
Total, TEC	378,000	407,866

Other Project Costs

(dollars in thousands)

Cost Element	Current Costs	Previous Costs
Conceptual Planning	4,800	3,200
Start-up	0	0
D&D Phase		
D&D for removal of the existing facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total D&D	0	0
Contingency for OPC other than D&D	0	0
Total, OPC	44,000	31,000

[a] The FY 2005 appropriation of $17,000,000 was reduced by $134,000 based on a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] The FY 2006 appropriated funding was reduced by $410,000 based on a rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148).

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	8,000	49,456	17,134	0	0	0	0	74,590
TEC (Construction)	0	0	0	0	0	0	0	0
OPC Other than D&D	21,000	4,000	3,000	9,000	3,000	4,000	0	44,000
D&D Costs	0	0	0	0	0	0	0	0
Total Project Costs	29,000	53,456	20,134	9,000	3,000	4,000	0	118,590

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2012
Expected Useful Life (number of years)	20
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

SIP scope includes construction of a new Central Alarm Station with approximately 4,000 gross square feet (gsf). The one-for-one off set requirement will be met with Y-12 banked gsf.

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

N/A

D&D Information Being Requested	Square Feet
Area of new construction	4,000
Area of existing facility(ies) being replaced	N/A
Area of any additional space that will require D&D to meet the "one-for-one" requirement	N/A

10. Acquisition Approach

Design or design build services will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, production, and proliferation, etc. concerns.

05-D-701, Security Perimeter Project
Los Alamos National Laboratory, Los Alamos, New Mexico

1. Significant Changes

- The performance baseline has been validated for this design/build project, however, the scope had to be reduced to assure the FY 2005 Congressionally approved appropriation was not exceeded. The scope reduction was required due to a rapid increase in fuel and material costs and due to an increase in the backlog of construction work in northern New Mexico. The Los Alamos Ski Hill Connector Road was eliminated from the scope and the project mission objective to support implementation of the Design Basis Threat (DBT) remains valid.

- The security perimeter project is a key component of NNSA security strategy for protection of the existing Plutonium Facility-4 (PF-4) and planned Chemistry and Metallurgy Research Replacement (CMRR) CAT-I facilities at the LANL. Continued support of this national nuclear security project is necessary in order to support the LANL DBT Implementation Plan in response to the 2003/2005 DBT.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2004	2Q FY 2004					
FY 2005						
FY 2006		2Q FY 2006	1Q FY 2006			
FY 2007			4Q FY 2005	3Q FY 2007	N/A	N/A

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
Design/Construct						
FY 2005	19,842[a]	4,024	N/A	23,866	0	24,024
FY 2006	19,842[a]	4,024	N/A	23,866	0	24,866
FY 2007	19,842[a]	4,490	N/A	24,332	24,400	0

4. Project Description, Justification, and Scope

The Security Perimeter Project (SPP) 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, threat early warning to TA-55 to address the 2005 Design Basis Threat (DBT), protection strategies, and security requirements.

[a] The FY 2005 appropriated funding for this project of $20,000,000 was reduced by $158,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

These missions, as they currently exist and as they are planned in the future, require a reliable defense nuclear 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 for the adversaries both in terms of the quantity of materials and the forms. The SPP plays a key role in the support of this mission by providing an early warning to TA-55 of a security threat to support a new protection strategy for the TA-55 site.

Project Description:

This project includes the following key elements:

Access Control Stations

Primary vehicle access into the core area of LANL will occur at the access control stations. Two new stations will be constructed, and existing stations will be modified to accomplish this goal. These stations will control access, provide areas for more in depth screening or searches, provide space for queuing of vehicles into and out of the stations, provide a single point for isolation of the site, and act as a primary interface area with the general public. The capability to process visitors and the general public, in limited size vehicles, will be accommodated at the new access control stations. New access control stations will be installed off of East Jemez Road and on West Jemez Road, east of the intersections with Camp May Road. The Pajarito Road access control stations installed under an earlier General Plant Project will be modified to provide weather protection for the guards.

Road Closures

In order to assure that vehicle traffic flows through the access control stations, Diamond Drive must be permanently closed to unscreened vehicle traffic by physical separation of the road. Vehicle barriers will be provided at specific points to protect critical areas. The commuter bus area and existing parking lots must be accommodated. Emergency vehicle access will be maintained where required to assure response times remain low to assure life and property saving actions can be taken in a timely manner.

Ski Hill Road – Deleted.

Relocation and Demolition

Minor relocation and demolition of existing structures, approximately 175 parking spaces, a bus lot, an old radio shop building, and utilities will occur but will depend on the exact routing of roads and structures. Final routing of the roads will not occur until detailed design, but the general route is defined.

These staffed access control stations will allow closure of several temporary guard posts currently located within the TA-3 area. Diamond Drive must be permanently closed to unscreened traffic just south of the existing bridge across Los Alamos Canyon. The east access control station road will require some improvements at the intersections with the north bypass road and with Diamond Drive. The west access control station road will require some improvements on West Jemez Road. Vehicle access from public parking lots and roads will be blocked by the use of barriers and road closures in order to prevent vehicles from bypassing the access control stations.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – September 2003
- Critical Decision – 1: Approve Preliminary Baseline Range – December 2003
- Critical Decision – 2: Approve Performance Baseline – August 3, 2005
- External Independent Review: July 26, 2005
- Critical Decision – 3: Approve Start of Construction – August 3, 2005
- Critical Decision – 4: Approve Start of Operations – 3Q FY 2007

5. Financial Schedule

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2005	1,715	1,715	365
2006	0	0	1,350
2007	0	0	0
Total Design	1,715	1,715	1,715
Construction			
2005	18,127	18,127	1,300
2006	0	0	16,327
2007	0	0	500
2008	0	0	0
Total Construction	18,127	18,127	18,127
Total, TEC	19,842	19,842	19,842

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate Costs	Previous Estimate Costs
Preliminary and Final Design	1,715	2,488
Construction Phase		
Site Preparation	3,295	4,016
Equipment	294	3,250
All other construction	11,658	6,944
Contingency	2,880	3,302
Total, Construction	18,127	17,512
Total, TEC	19,842	20,000

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate Costs	Previous Estimate Costs
Conceptual Planning	3,390	2,924
Start-up	1,000	1,000
D&D Phase		
D&D for removal of the existing facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total D&D	0	0
Contingency for OPC other than D&D	100	100
Total, OPC	4,490	4,024

7. Schedule of Project Costs

	Prior Years	FY 2004	FY 2005	FY 2006	FY 2007	Total
TEC (Design)	0	0	365	1,350	0	1,715
TEC (Construction)	0	0	1,300	16,327	500	18,127
OPC Other than D&D	2,962	270	158	650	450	4,490
D&D Costs	0	0	0	0	0	0
Total Project Costs	2,962	270	1,823	18,327	950	24,332

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	3Q FY 2007
Expected Useful Life (number of years)	20
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	583	4480	11,660	89,600
Maintenance	3,750	420	75,000	8,400
Total Related funding	4,333	4,900	86,660	98,000

9. Required D&D Information

N/A

10. Acquisition Approach

NNSA has assigned management and execution of this project to LANL. LANL will issue a design-build, fixed-price subcontract.

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 atomic energy defense, 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, [$1,631,151,000] *$1,726,213,000* to remain available until expended.

Explanation of Change

The only change from the language proposed in FY 2006 is the proposed funding amount.

Defense Nuclear Nonproliferation

Threat and Response: The convergence of heightened terrorist activities and the ease of moving materials, technology and information across borders has made the potential of terrorism involving weapons of mass destruction (WMD) the most serious threat facing the Nation. Preventing WMD from falling into the hands of terrorists is the top national security priority of this Administration. The FY 2007 budget request for Defense Nuclear Nonproliferation represents an effort to protect the United States (U.S.) and its allies from this threat.

Funding Profile by Subprogram

(dollars in thousands)

	FY 2005 Current Appropriation	FY 2006 Original Appropriation	FY 2006 [a] Adjustments	FY 2006 Current Appropriation	FY 2007 Request
Defense Nuclear Nonproliferation and Verification					
Nonproliferation Research and Development	219,836	322,000	-3,220	318,780	268,887
Nonproliferation and International Security	143,764	75,000	-750	74,250	127,411
International Nuclear Materials Protection and Cooperation	403,451	427,000	-4,270	422,730	413,182
Global Initiatives for Proliferation Prevention	40,675	40,000	-400	39,600	0
HEU Transparency Implementation[a]	20,784	19,483	-195	19,288	0
Elimination of Weapons-Grade Plutonium Production	67,331	176,185	-1,762	174,423	206,654
Fissile Materials Disposition	619,060	473,508	-4,735	468,773	637,956
Offsite Recovery Project	7,540	0	0	0	0
Global Threat Reduction Initiative	0	97,975	-980	96,995	106,818
Subtotal, Defense Nuclear Nonproliferation	**1,522,441**	**1,631,151**	**-16,312**	**1,614,839**	**1,760,908**
Use of Prior Year Balances	-14,475	0	0	0	-34,695
Total, Defense Nuclear Nonproliferation	1,507,966	1,631,151	-16,312	1,614,839	1,726,213

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Public Law Authorization:

P.L. 108-148, The Consolidated Appropriations Act, 2006

[a] This budget request includes an across-the-board rescission of 1 percent for FY 2006 in accordance with the Department of Defense Appropriations Act 2006, P.L. 109-148.

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	279,439	293,924	311,551	324,034
Nonproliferation and International Security	132,458	134,706	138,835	146,990
International Nuclear Materials Protection and Cooperation	403,351	444,405	530,723	542,859
Elimination of Weapons Grade Plutonium Production	182,017	139,363	24,949	0
Fissile Materials Disposition	642,853	654,469	710,178	737,976
Global Threat Reduction Initiative	120,619	129,085	115,635	116,649
Total, Defense Nuclear Nonproliferation	**1,760,737**	**1,795,952**	**1,831,871**	**1,868,508**

Major Outyear Considerations

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Defense Nuclear Nonproliferation	**1,760,737**	**1,795,952**	**1,831,871**	**1,868,508**

NNSA describes major outyear considerations at each GPRA-Unit level within this appropriation.

Mission

The Defense Nuclear Nonproliferation 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 the 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.

Beginning in FY 2005, the cost of conducting External Independent Reviews (EIRs) for Capital Asset Projects greater than $5 million within the Nonproliferation & Verification R&D, Elimination of Weapons Grade Plutonium and Fissile Materials Disposition programs, are funded within program. Examples of EIRs include conducting Performance Baseline EIRs prior to Critical Decision-2 (CD-2) to verify the accuracy of costs and schedule baseline estimates and conducting Construction/Execution Readiness EIRs, which are done for all Major System projects prior to CD-3. These funds, which are managed by the Office of Engineering and Construction Management, are exclusively used for EIRs directly related to these projects funded within these programs. Beginning in FY 2007, the EIR business line will be financed via the Working Capital Fund to achieve parity on how EIRs are funded and to standardize the administration of these critical activities.

Funding for a proportional share of NNSA's annual assessment required to pay for Defense Contract Audit Agency activities is included in this appropriation. The amount estimated for Defense Nuclear Nonproliferation is $333,846 for FY 2006 and $357,959 FY 2007, to be paid from program funding.

Benefits

The Defense Nuclear Nonproliferation program supports the NNSA and 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.

Strategic, General, and Program Goals

The Department's Strategic Plan identifies four strategic goals (one each for defense, energy, science, and environment aspects of the mission) plus seven general goals that tie to the strategic goals. The Defense Nuclear Nonproliferation appropriation supports the following goals:

Defense Strategic Goal: To protect our national security by applying advanced science and nuclear technology to the Nation's defense.

General Goal 2, Nuclear Nonproliferation: Provide technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance the 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.

Contribution to General Goal 2

Within the Defense Nuclear Nonproliferation appropriation, there are six programs, each of which makes a unique contribution to General Goal 2 as follows:

The Nonproliferation and Verification Research and Development program (Program Goal 02.40.00.00) contributes to General Goal 2 by developing new technologies to improve U.S. capabilities to detect and monitor nuclear weapons production, proliferation, and prohibited nuclear explosions worldwide.

The Elimination of Weapons-Grade Plutonium Production program (Program Goal 02.42.00.00) contributes to General Goal 2 by enabling the Russian Federation to permanently cease production of weapons-grade plutonium by replacing plutonium producing nuclear reactors with fossil-fueled power plants to provide alternative sources of heat and electricity and provide for the shutdown of the reactors.

The Nonproliferation and International Security program (Program Goal 02.44.00.00) now includes the former HEU Transparency program (Program Goal 02.41.00.00) and the former Global Initiatives for Proliferation Prevention (GIPP) (Program Goal 02.45.00.00). The Nonproliferation and International Security program contributes to General Goal 2 by preventing and countering Weapons of Mass Destruction (WMD) proliferation by providing policy and technical support to implement and monitor transparent WMD reductions; strengthen indigenous international safeguards and export controls systems in other countries; transition WMD expertise and infrastructure to peaceful purposes; and improve international and multinational international safeguards, export control, and interdiction regimes.

The International Nuclear Materials Protection and Cooperation program (Program Goal 02.46.00.00) contributes to General Goal 2 by working in Russia and other regions of concern to (1) secure and eliminate vulnerable nuclear weapons and weapons-usable material; and (2) install detection equipment at border crossings and Megaports to prevent and detect the illicit transfer of nuclear material.

The Fissile Materials Disposition program (Program Goal 02.47.00.00) contributes to General Goal 2 by eliminating surplus Russian plutonium and surplus U.S. plutonium and highly enriched uranium (HEU).

The Global Threat Reduction Initiative (GTRI) (Program Goal 02.64.00.00) contributes to General Goal 2 by identifying, securing, removing and/or facilitating the disposition of high-risk, vulnerable

nuclear and radiological materials around the world that pose a potential threat to the U.S. and the international community.

Funding by General and Program Goal

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Goal 2, Defense Nuclear Nonproliferation			
Program Goal 2.40 Nonproliferation and Verification Research and Development	219,836	318,780	268,887
Program Goal 2.44 Nonproliferation and International Security	143,764	74,250	127,411
Program Goal 2.46 International Nuclear Materials Protection and Cooperation	403,451	422,730	413,182
Program Goal 2.45 Global Initiatives for Proliferation Prevention	40,675	39,600	0
Program Goal 2.41HEU Transparency Implementation	20,784	19,288	0
Program Goal 2.42 Elimination of Weapons Grade Plutonium Production	67,331	174,423	206,654
Program Goal 2.47 Fissile Materials Disposition	619,060	468,773	637,956
Program Goal 2.64 Global Threat Reduction Initiative	0	96,995	106,818
Offsite Source Recovery Project	7,540	0	0
Subtotal, Defense Nuclear Nonproliferation	**1,522,441**	**1,614,839**	**1,760,908**
Use of Prior Year Balances	-14,475	0	-34,695
Total, Defense Nuclear Nonproliferation	**1,507,966**	**1,614,839**	**1,726,213**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding by General and Program Goal

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Goal 2, Defense Nuclear Nonproliferation				
Program Goal 2.40 Nonproliferation and Verification Research and Development	279,439	293,924	311,551	324,034
Program Goal 2.44 Nonproliferation and International Security	132,458	134,706	138,835	146,990
Program Goal 2.46, International Nuclear Materials Protection and Cooperation	403,351	444,405	530,723	542,859
Program Goal 2.42 Elimination of Weapons Grade Plutonium Production	182,017	139,363	24,949	0
Program Goal 2.47 Fissile Materials Disposition	642,853	654,469	710,178	737,976
Program Goal 2.64 Global Threat Reduction Initiative	120,619	129,085	115,635	116,649
Total, Defense Nuclear Nonproliferation	**1,760,737**	**1,795,952**	**1,831,871**	**1,868,508**

Means and Strategies

The Defense Nuclear Nonproliferation program will use various means and strategies to achieve its program goals, including numerous collaborative activities with a variety of partners. However, various external factors may impact our ability to achieve these goals.

The Defense Nuclear Nonproliferation program goal is to detect, prevent, and reverse the proliferation of Weapons of Mass Destruction (WMD). Our programs address the danger that hostile nations or terrorist groups may acquire weapons of mass destruction or weapons-usable material, dual-use production or technology, or WMD capabilities, by securing or eliminating vulnerable stockpiles of weapon-usable materials, technology, and expertise in Russia and other countries of concern.

The pursuit of nuclear weapons by terrorists and states of concern makes it clear that our threat detection 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 detection 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 our performance and effectiveness.

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 and Commerce. We continually leverage our considerable nuclear nonproliferation research and development base within the National Laboratory complex to achieve program goals. In addition, NNSA coordinates with the Nuclear Regulatory Commission on selected aspects of the fissile materials

disposition program, and works with the International Atomic Energy Agency to further international safeguards. The United States Enrichment Corporation (USEC) and the Tennessee Valley Authority are involved in the surplus U.S. Highly Enriched Uranium (HEU) disposition program 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 involved in some programs. Finally, we anticipate continued frequent collaborations with the Department of Homeland Security as that department fulfills its role in the national security arena.

Securing Nuclear Weapons and Material

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.

A number of major milestones for this cooperative program are on the near horizon and the FY 2007 budget ensures that sufficient funding will be available to meet these milestones. Security upgrades will be completed for Russian Navy nuclear fuel and weapons storage by the end of FY 2006 and for Rosatom facilities by the end of 2008--both two years ahead of the original schedule. Cooperation with the nuclear warhead storage sites of the Russian Strategic Rocket Forces and the Russian Ministry of Defense's 12th Main Directorate will be complete by the end of 2008.

Countering Illicit Supplier Networks

DOE has a long history of providing the technical edge within the interagency community in the various nuclear interdiction activities conducted by the U.S. Government. However, in light of the needed escalation in these activities catalyzed by the uncovering of A. Q. Khan's clandestine nuclear supply network, the Nonproliferation and International Security program must develop 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 must be able to communicate its value in context and in a timely manner to facilitate a wide range of counter proliferation and counterterrorism interdiction options.

This capability will require new tools and unprecedented access to information. The backbone of this capability would likely be comprised of various customized electronic database applications that exploit information and would support other capabilities. Other functions of this task may include providing rapid response to HQ on interagency requests for visas; assessing vulnerabilities to technology in the DOE complex and U.S. industry; tracking and updates on A. Q. Khan network off-shoots; State-to-state transfers and cooperation; supporting the new International Atomic Energy Agency (IAEA) role investigating proliferation networks; and, evaluating the impact of proliferation networks on how safeguards and export controls are and should be implemented.

Pre-Screening Cargo Containers for Nuclear and Radiological Materials

The world's shipping network, with millions of cargo containers in various stages of transit, could conceal nuclear and radiological materials. However, the busiest seaports also provide the opportunity for law enforcement officials to pre-screen the bulk of the cargo in the world trade system. Under the Megaports Initiative, DOE cooperates with international partners to deploy and equip key ports with the

technical 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 2007 budget supports the completion of 3 ports, which will increase to thirteen the number of ports participating in and equipped through the Megaports Initiative.

NNSA Support to Presidential Initiative for Radiation Detection Research and Development
The Proliferation Detection Program continues to provide basic and applied research in advanced materials for radiation detection sensors, special nuclear material movement, enrichment detection, and plutonium production detection. This work not only supports the nonproliferation mission, but also supports fundamental research necessary for Defense, Homeland Security and the Intelligence Community.

Capability Replacement Laboratory, Pacific Northwest National Laboratory
This project will construct 300,000 square feet of laboratories, offices and a Category 3 nuclear facility to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area.

Eliminating Russian Plutonium Production
The Elimination of Weapons Grade Plutonium Production Program will result in the permanent shutdown of three Russian nuclear reactors, which currently produce weapons-grade plutonium. These reactors, which are the last three reactors in Russia that produce plutonium for military purposes, also provide necessary heat and electricity to two Russian "closed cities" in the Russian nuclear weapons complex. This budget provides the funding needed to shutdown the three reactors through 1) refurbishment of an existing fossil-fuel (coal) power plant in Seversk by 2008; and 2) construction of a new fossil-fuel plant at Zheleznogorsk by 2011. This will eliminate the production of 1.2MT annually of weapons-grade plutonium. The program is of high effectiveness because plutonium that is never created does not have to be accounted for, does not need to be secured, and will not be available to be targeted by terrorists.

Disposing of Surplus U.S. and Russian Weapon-Grade Fissile Material
The Fissile Materials Disposition program disposes of inventories of surplus U.S. weapon-grade plutonium and highly-enriched uranium (HEU) and supports efforts to dispose of Russian surplus weapon-grade plutonium. The FY 2007 budget request supports construction at SRS of the U.S. MOX facility, the design of a training module for the Pit Disassembly and Conversion facility, the design of a Waste Facility and related plutonium disposition activities in Russia. It also provides funding for continuing efforts to dispose of surplus U.S. HEU, and supports other Fissile Materials Disposition program activities. These activities are of critical importance because they will ensure that surplus fissile materials in the U.S. and Russia are permanently disposed of, so that they can never fall into the hands of terrorists or rogue states.

Joint Action Plan for Cooperation on Security Upgrades of Russian Facilities
An agreement on Nuclear Security Cooperation was reached between the Presidents of the United States (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, Materials Protection Control and

Accounting (MPC&A) expertise training and protective force equipment. The FY 2007-2011 Future Years Nuclear Security Program (FYNSP) supports the implementation of this joint action plan.

Preventing a Possible Terrorist Attack Using Nuclear or Radiological Materials
The Global Threat Reduction Initiative program identifies, secures, removes and/or facilitates the disposition of high-risk, vulnerable nuclear and radiological materials and equipment around the world that pose a threat to the U.S. and to the international community.

In accordance with the Bratislava commitment, by the end of CY 2010 the Russian Research Reactor Fuel Return (RRRFR) program will complete the repatriation/disposition of about 1,600 kilograms of fresh and irradiated Russian-origin HEU that is currently stored outside of eligible reactor cores. By the end of CY 2013, the RRRFR program will complete the repatriation/disposition of a cumulative total of about 1,800 kilograms of fresh and irradiated Russian-origin material including all eligible material discharged from reactor cores following reactor conversion and after a necessary cooling period.

In FY 2005, the Office of Nuclear Energy transferred responsibility for conversion of seven domestic research reactors to the Office of Global Threat Reduction.

Budget Structure Change
The Nonproliferation and International Security NIS program has taken steps to incorporate feedback from OMB as a result of the FY 2005 Program Assessment Rating Tool (PART) review. One of the recommendations from the review emphasized reorganization to more properly align activities within the program. In the FY 2006 budget request, the program implemented phase I of this approach which led to the creation of a new Office of Global Threat Reduction Initiatives, with the mission to identify, secure, remove, and facilitate the disposition of high-risk, vulnerable nuclear and radiological material. As a result of this, several programs were transferred out of NIS. Now in FY 2007, the Office is implementing phase II of the recommendation to realign the program. The NIS program has realigned its programs into three Offices that incorporate the transfer of the HEU Transparency Implementation program and the Global Initiatives for Proliferation Prevention (GIPP) (formerly the Russian Transition Initiatives (RTI).

Global Partnership
The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, formed at the G-8 Kananaskis Summit in June 2002 has recommitted the G-8 nations (the U.S., Canada, France, Germany, Italy, Japan, Russia, and the United Kingdom) to address nonproliferation, disarmament, counter-terrorism, and nuclear safety issues. The G-8 leaders have pledged to devote up to $20 billion over ten years to support cooperative efforts, initially in Russia, and have invited other similarly motivated countries to participate in this partnership. The President has committed the U.S. to provide $10 billion over ten years to be matched by $10 billion from the other members, attesting to the belief that nonproliferation concerns are of the highest government priority; and therefore that this program's work is of paramount importance for the security of the nation and the world. The following table reflects the Department of Energy activities, by country and program.

There are three agencies that fund the $1.0 billion per year U.S. commitment to Global Partnership. The Department of Energy and Department of Defense carry the majority of this responsibility with the Department of State contributing a smaller portion. In FY 2006 through 2009, DOE contributes more than than 50 percent of the required interagency funding for Global Partnership. Although DOE projects a lower contribution in the outyears, over the course of the FYNSP, DOE contributes approximately

$490 million per year. The OMB monitors the coordination of the three agencies' contributions ensuring that the overall U.S. commitment is met.

US. Nonproliferation and Threat Reduction Assistance to Former Soviet States

($ in millions)

Summary by Country	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Russia	560.0	604.6	534.0	436.3	286.1	268.7
Kazakhstan	3.5	27.3	28.8	41.4	7.5	0
Ukraine	4.2	22.4	2.7	6.8	.2	0
Tajikistan	0	0	0	0	0	0
Uzbekistan	5.0	3.5	0	0	0	0
Azerbaijan	0	8.5	0	0	0	0
Georgia	0.1	8.6	0.1	0.1	0.1	0.1
Turkmenistan	0	0	0	0	0	5.3
Total, Russia & FSU	**572.8**	**674.9**	**565.6**	**484.6**	**293.9**	**274.1**

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 General 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 measure are 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) the Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART); (2) NNSA Administrator Program Reviews; (3) Program Managers Detailed Technical Reviews; (4) quarterly reporting of progress through the Department's JOULE performance tracking system; and (5) the NNSA Administrator's Annual Performance Report.

NNSA is using the OMB PART process to perform annual internal self-assessments of the management strengths and weaknesses of each NNSA program. Among other things, the PART 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 and reinforced by the President's Management Agenda. Independent PART assessments conducted by OMB provide additional recommendations to strengthen NNSA programs.

Each NNSA program is reviewed at least annually by the NNSA Administrator during the NNSA Administrator Reviews. These reviews involve all members of the NNSA Management Council to ensure progress and that recommendations are fully integrated 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. A second more detailed review of each program is conducted by the program managers. 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. NNSA sites are responsible and accountable for accomplishing the verification and validation of their own and their sub-contractors' performance data and results prior to submission to NNSA Headquarters.

The results of all of these reviews are reported quarterly in the Department's JOULE 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 measures 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.

Additionally, NNSA performs a validation of approximately 20 percent of its budget on an annual basis. A new two-step process was developed for use during FY 2006. This consisted of Phase 1: Validation of the Need for the Program's Proposed Activities (Program Review) and Phase 2: Pricing Validation of Selected Programs (Pricing Review).

Budget validation efforts focused 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 2007 process, Nonproliferation & Verification R&D (R&D) and HEU Transparency Implementation (HEU TIP) participated in Phase I. These reviews found the overall process for developing the budgets for FY 2007 satisfactory and the cost estimates were found valid and reasonable.

In addition, the General 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.

Program Assessment Rating Tool (PART)

The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews. The PART process links seamlessly with NNSA's PPBE concept, and we have initiated PART "self-assessments" for all NNSA programs as a prominent aspect of the annual program review cycle.

The current focus is to continue to refine outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security, energy security, and improved environmental conditions. The Department has incorporated feedback from OMB into the FY 2007 Defense Nuclear Nonproliferation Budget Request and the Department will take the necessary steps to continue to improve performance.

Results of PART assessments in prior years are summarized in the table below:

FY 2004	FY 2005	FY 2006	FY 2007
International Materials Protection and Cooperation – *Effective*	Elimination of Weapons Grade Plutonium Production (new program) – *Results Not Demonstrated (reassess in FY 2007 as Effective)*	Nonproliferation and International Security – *Effective*	Nonproliferation and Verification Research and Development (R&D) – *Moderately Effective*
			Global Initiatives for Proliferation Prevention (GIPP) – *Effective*

Major FY 2005 Achievements

Nonproliferation & Verification R&D

Transitioned state-of-the-art proliferation detection persistent surveillance airborne system (Sonoma) to Department of Defense under the rapid-results initiative to support war on terrorism efforts.

Supported a multi-agency national program developing an electro-optical system for detecting nuclear proliferation worldwide.

Completed a multi-agency test to characterize and validate advanced remote sensing instrumentation for detection of nuclear and other weapons of mass destruction proliferation.

Sustained and improved the Nation's operational nuclear explosion monitoring (NEM) system by:

Delivered operational space-based nuclear explosion monitoring sensors to the Air Force on a schedule that supports Air Force launch timelines – thus sustaining the nation's capability to monitor and report nuclear detonation that occurs on or above the Earth's surface.

Provide updated calibration and geophysical models to improve the monitoring performance of regional seismic stations, thus improving the nation's capability to monitor and report underground nuclear detonations in specific threat regions of the globe.

Completed development and testing of the next generation space-based optical explosion monitor, which was delivered to the Air Force in early FY 2006 and will be launched on a future Air Force satellite. This enhanced sensor has greater sensitivity and will improve the nation's monitoring capability for very small surface explosions. All future NEM payloads will incorporate the enhanced optical sensor.

Nonproliferation & International Security

Due to U.S. leadership and DOE efforts, the Nuclear Supplies Group (NSG) established procedures to suspend nuclear cooperation with countries that are in noncompliance with their safeguards agreements, and adopted measures to apply fallback safeguards if the IAEA can no longer undertake its safeguards mandate in a recipient state.

Since inception of the program, NNSA has trained over 1,000 officials from licensing, scientific/technical, customs, and border guard organizations on WMD commodity recognition, nonproliferation principles, license review, and multilateral export controls.

As part of the HEU Transparency program, thirty MTs of HEU is downblended annually. As of September 2005, the program has monitored the conversion of 255 MT of weapons-usable HEU. This represents the equivalent of 10,000 nuclear weapons permanently eliminated, per IAEA defined standards.

International Nuclear Materials Protection & Cooperation

Completed rapid Materials Protection Control and Accounting (MPC&A) upgrades to all 19 Strategic Rocket Forces sites and signed all comprehensive upgrade contracts.

Secured a cumulative total of 150 buildings in Russia containing weapons usable material or warheads.

Concluded Second Line of Defense Core Program country agreements with Ukraine and Slovenia and Megaports agreements with 7 countries

Completed installations of radiation detection equipment to detect the illicit trafficking of nuclear and other radiological materials at a cumulative total of 83 strategic transit/ bordering crossings, air and sea transshipment hubs in Russia and other countries and at 4 Megaports.

Commissioned Ministry of Defense MPC&A training and maintenance facility in Murmansk, Russia.

Trained a cumulative total of 5,400 students in Material, Control and Accounting related technologies and trained a cumulative total of 1,860 students in Physical Protection/Protective Force related technologies.

Elimination of Weapons-Grade Plutonium Production

At Seversk, the official ground-breaking ceremony for refurbishing an existing fossil-fueled facility occurred in April 2005. We see no major impediments to completing this project on-schedule in December 2008, thus eliminating 800 kilograms per year of weapons-grade plutonium production, and

shutting down two of the three production reactors. That is enough material for approximately 200 nuclear weapons annually.

Regarding the Zheleznogorsk project addressing the remaining third reactor, an October 2005 review by the DOE Deputy Secretary was conducted to review the project's costs and schedule Performance Baseline, and to prepare for the Start of Construction. The presented plan of implementation for this project would, assuming realization of the program's funding profile, support a December 2010 shutdown schedule to eliminate 400 kilograms per year of weapons-grade plutonium production.

Fissile Materials Disposition

The U.S. and Russia successfully completed negotiation on the liability protections protocol for the plutonium disposition program and in July the English and Russian texts of the protocol were conformed.

Russia has nearly completed site characterization and site preparation activities at the planned site of its Mixed Oxide (MOX) Fuel Fabrication Facility to be located in Seversk.

In March, the U.S. Nuclear Regulatory Commission (NRC) issued a construction authorization for the U.S. MOX facility based on its review of the facility design.

In March, the U.S. NRC issued a license amendment allowing Duke Power to irradiate four MOX fuel lead assemblies made from surplus U.S. weapon-grade plutonium. The lead assemblies, which were fabricated in France, are now being irradiated successfully, and are eliminating plutonium.

NNSA has downblended a cumulative total of 80 MT of surplus U.S. HEU for peaceful use as nuclear reactor fuel.

Global Threat Reduction Initiative (GTRI)

The U.S Radiological Thread Reduction (USRTR) Program has recovered more than 11,000 sources since 1997, containing nearly 100,000 curies of activity.

The International Radiological Threat Reduction (IRTR) Program has completed the recovery of approximately 1,500 sources with a cumulative activity of 132,000 curies from 16 sites in Russia.

Globally, the IRTR Program has completed physical security upgrades at 231 facilities containing vulnerable, high-risk radioactive materials and is in the process of finishing projects at an additional 211 locations in over 40 countries.

Under GTRI, the two fuel return programs supported the return to the U.S. of 449 spent fuel assemblies containing U.S.-origin enriched uranium from research reactors in Japan, Netherlands and Sweden, and the repatriation of Russian-origin fresh highly enriched uranium (HEU) fuel from research reactors in Uzebekistan, Czech Republic and Latvia and the conversion of research reactors or critical assemblies in the Czech Republic, the Netherlands, and Libya.

Historically Black Colleges and Universities (HBCU) Support

A research and education partnership program with the HBCU's and the Massie Chairs of Excellence was initiated by the Congress through earmarks in the Office of the Administrator appropriation in FY 2005 and FY 2006. 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 NNSA. The NNSA's goal is a stable $10 million effort annually. The majority of the efforts directly support program activities, and it is expected that programs funded by the Defense Nuclear Nonproliferation appropriation will fund research with the HBCU's totaling approximately $4 - $6 million in FY 2007, in areas including engineering, radiochemistry, material sciences and sensor development.

Nonproliferation and Verification Research and Development

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Nonproliferation and Verification R&D			
Operations and Maintenance (O&M)			
Proliferation Detection	106,544	177,471	148,204
Homeland Security-Related Proliferation Detection [Non-Add]	0	[49,500]	[48,708]
Nuclear Explosion Monitoring	101,931	125,424	106,601
Supporting Activities [a]	11,361	3,015	6,162
Subtotal, O&M	**219,836**	**305,910**	**260,967**
Construction	0	12,870	7,920
Total, Nonproliferation and Verification R&D	**219,836**	**318,780**	**268,887**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Nonproliferation and Verification R&D	**279,439**	**293,924**	**311,551**	**324,034**

Description

This program develops new technologies to improve United States (U.S.) capabilities to detect and monitor nuclear weapons production, proliferation, and prohibited nuclear explosions worldwide.

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 driving basic science discoveries and developing new technologies applicable to nonproliferation, homeland security, and national security needs.

Benefits

The Nonproliferation and Verification Research and Development program has three subprograms that make unique contributions to Program Goal 02.40.00.00.

[a] FY 2005, includes $5,000,000 within Supporting Activities to support the ongoing regulatory and environmental activities for 300 Area PNNL Replacement Facility at Hanford and a transfer of $4,127,000 to Small Business Innovation Research/Small Business Technology Transfer. The FY 2006 appropriation of $6,105,000 was reduced by a $3,090,000 rescission included in P.L. 109-148.

The Proliferation Detection subprogram advances basic and applied technologies for the nonproliferation community. Specifically, the subprogram develops the tools, technologies, techniques, and expertise for the identification, location, and analysis of the facilities, materials, and processes of undeclared and proliferant weapons of mass destruction programs and to prevent the diversion of special nuclear materials, including use by terrorists.

The Nuclear Explosion Monitoring subprogram builds the nation's operational sensors that monitor the entire planet from space to detect and report surface, atmospheric, or space nuclear detonations; and produces and updates the regional geophysical datasets enabling operation of the nation's ground based seismic monitoring networks to detect and report underground detonations.

The Supporting Activities elements include crosscutting support such as strategic initiatives and participation in DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

Major Outyear Considerations

The Nonproliferation and Verification Research and Development (R&D) outyear funding profile supports long term research and development leading to prototype demonstrations and detection systems for strengthening U.S. capabilities to respond to current and projected threats to national and homeland security posed by the proliferation of nuclear weapons and diversion of special nuclear material. The program interfaces directly with NNSA and DOE Programs as well as other U.S. governmental agencies to provide innovative tools, techniques, technologies, and capabilities to meet their nonproliferation, counter-proliferation, and counter-terrorism mission requirements.

The R&D funding profile also supports a joint effort with the DOE Office of Science (SC) and the Department of Homeland Security (DHS) to construct 335,000 gross square feet of laboratories, offices, and radiological or nuclear facilities to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of in the Hanford 300 Area. The existing facilities must be vacated by January 2011, so that the Department's Offices of Environmental Management (EM) contractor can complete remediation objectives by 2015. Previously, this project was on an accelerated completion schedule, but, further consideration by all Department organizations involved, and DHS, has lead to the development of a "most reasonable" and achievable project schedule.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from OMB into the FY 2007 Nonproliferation and Verification R&D Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2007, the OMB evaluated the Nonproliferation and Verification R&D program using the PART. The OMB gave the Nonproliferation and Verification R&D program very high scores of 100 percent on the Purpose and Design, and Program Management Sections; 90 percent on the Strategic Planning Section; and a 60 percent on the Program Results Section. Overall, the OMB rated the Nonproliferation and Verification R&D program 79 percent, its second highest category of "Moderately Effective". The OMB assessment found that the program has a clear and unique purpose, and has an excellent track record in delivering nonproliferation products and services on schedule and in accordance with customer requirements. In addition, OMB found that the program's performance measures are new and as such there has been only limited progress in terms of achieving these new measures. OMB also believes that the program should continue to strengthen its prioritization process to guide budget requests. In response to the OMB findings, the NNSA is developing an activity prioritization process to guide funding decisions. NNSA is also ensuring that the new performance measures are tied to documented R&D goals, operational expectations, technical milestones and decision/end points. The following tables for "Annual Performance Results and Targets" show that the program has revised its metrics toward more measurable key outcomes, as desired by PART process.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Demonstrate a chemical agent detection system in a subway system. (MET GOAL)	Demonstrate prototype commercial cargo inspection system to detect fissile materials and high explosives . (MET GOAL)
Start satellite sensor-payload assembly of operational nuclear explosion detection payloads for the next generation of Global Positioning System satellites scheduled for first launch in 2004. (MET GOAL)	Provide two assays for biological threat agents to the Center for Disease Control Laboratory Response Network. (MET GOAL)
Perform experiments of prototype, unmanned-aerial-vehicle-based Light Detection and Ranging (LIDAR) systems to detect proliferation. (MIXED RESULTS)	Demonstrate a fixed system to protect complex, key infrastructure facilities, components, and capabilities. (MET GOAL)
Field a demonstrated, deployable prototype biological threat system at the Winter Olympics. (MET GOAL)	

Annual Performance Results and Targets

(R= Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect Uranium-235 Enrichment activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document") (Long-term Outcome)	N/A	N/A	R: 3%	T: 10%	T: 15%	T: 20%	T: 25%	T: 30%	T: 50%	By 2016, demonstrate the next generation of technologies and methods to detect Uranium-235 Enrichment activities.
Cumulative percentage of progress toward demonstrating the next generation of technologies and methods to detect Plutonium Reprocessing activities. (Progress is measured against the baseline criteria and milestones published in the "FY 2006 R&D Requirements Document") (Long-term Outcome)	N/A	N/A	R: 3%	T: 10%	T: 20%	T: 25%	T: 30%	T: 50%	T: 65%	By 2015, demonstrate the next generation of technologies and methods to detect Plutonium Reprocessing activities.
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)	N/A	N/A	R: 5%	T: 10%	T: 20%	T: 27%	T: 33%	T: 60%	T: 80%	By 2013, demonstrate the next generation of technologies and methods to detect Special Nuclear Material movement.

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Annual index that summarizes the status of all NNSA nuclear explosion monitoring R&D deliveries that improve the nation's ability to detect nuclear explosions (Annual Output	N/A	N/A	N/A	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	Annually achieve timely delivery of NNSA nuclear explosion monitoring products (90% target reflects good on-time delivery. Index considers factors beyond NNSA's control and impact on customer schedules).
Cumulative percentage of active research projects for which an independent R&D peer assessment of the project's scientific quality and mission relevance has been completed during the second year of effort (and again within each subsequent three year period for those projects found to be of merit) (Efficiency)	R: 20%	R: 37% T: 40%	R: 100% T: 70%	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 2-3 year cycle.
Annual number of articles published in peer reviewed professional journals/ forums representing leadership in advancing science and technology knowledge (Annual Output)	R: 250	R: 202 T: 200	R: 283 T: 200	T: 200	T: 200	T: 200	T: 200	T: 200	T: 200	Annually, achieve goal of 200 articles published in peer reviewed professional journals/forums representing leadership in advancing science and technology knowledge.

Detailed Justification

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Nonproliferation and Verification R&D O&M

Proliferation Detection **98,544** **166,221** **148,204**

The Proliferation Detection (PD) program provides technical expertise and leadership toward the development of next generation nuclear detection technologies and methods to detect foreign nuclear materials and weapons production. The PD program develops the tools, technologies, and techniques used to detect, locate, and analyze the global proliferation of weapons of mass destruction with special emphasis on nuclear weapons technology and the diversion of special nuclear materials.

Additionally, the PD program provides technical know-how that has been developed and validated, to U.S. Government acquisition programs and the U.S. industrial base to support national 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. Partnerships with the industrial suppliers are often coordinated with user programs to facilitate successful outcomes. The PD program fosters long-term scientific innovation through sustained commitment to mission-focused technical areas that build "best-in-the-world" competence.

Homeland Security-Related Proliferation Detection..... **0** **49,500** **48,708**

The PD program applies the unique skills and capabilities of researchers at the NNSA and DOE national laboratories and plants to support non-proliferation research and development requirements. The PD program also conducts fundamental research in fields such as radiation detection which also support the Department of Homeland Security (DHS) and Intelligence Community. The PD program collaborates with academia and federal research programs to develop real-world system solutions based on classified insights into national security issues.

Congressionally Directed Activity..... **8,000** **11,250** **0**

In the FY 2006 appropriation, the Conference Report (109-275) accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-148) included $11.25 million relevant to the Proliferation Detection program. From within available funds, the conference agreement includes the following projects: $4,000,000 for portable high purity germanium detectors for incident response and radiation detection applications; $1,000,000 for the Offshore Detection Integrated System (OH); $750,000 for developing neutron dosimeter and Gamma-Beta Survey meter (OH); $500,000 for Mega Cargo Imaging program at the Nevada Test Site (NV); and up to $5,000,000 to support a chemical and biological detection research and development program in the NNSA.

Nuclear Explosion Monitoring..... **81,931** **101,424** **106,601**

The Nuclear Explosion Monitoring (NEM) program builds the Nation's operational treaty monitoring space sensors, 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 2005	FY 2006	FY 2007

The satellite-based segment of the program builds three distinct sensors and two "support" packages for each Global Positioning System (GPS) satellite. These packages constitute the Global Burst Detector payloads for monitoring atmospheric detonations. In addition to building the payloads, the program supports the integration, initialization, and operation of these payloads. The satellite segment also supports the maintenance, integration, and testing of the previously built high altitude detection system payloads on the Defense Support Program (DSP) satellites, and produces the high altitude follow-on sensors, the Space and Atmospheric Burst Reporting System (SABRS). The NEM program supports the engineering and development efforts to prepare the next generation sensors.

Due to the critical nature of GPS satellite deliveries and with the decrease in the NEM program budget, production of operational GPS Block II-F Global Burst Detector payloads will have priority. Design and preparation to support GPS Block III satellites will be reduced in scope. The current design and production of SABRS payloads for the Space-Based Infrared System (SBIRS) satellites will be halted and the SABRS payload work will be targeted for deployment on alternate host platforms.

The ground-based segment of the nuclear explosion monitoring research program provides classified, focused, applied research and engineering products integrated into a knowledge base, 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 (MOU) with U.S. monitoring 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. This classified knowledge base is developed in coordination with the installation of seismic stations by monitoring agencies. The NEM program also conducts a limited amount of applied research and system support to monitoring agencies in non-seismic ground-based detection technologies. The classified knowledge base systems integration function is performed at the national laboratories and is supplemented in part by research from open competition. Updates to the knowledge base supporting the operational needs of the country will be reprioritized and slightly decreased. The NNSA will seek to renegotiate previously agreed schedules for delivery of these knowledge base components to minimize impact on the national security. Core science and research underpinning NNSA's competence in ground-based nuclear explosion monitoring will be reduced in scope and schedules lengthened.

Congressionally Directed Activity **20,000** **24,000** **0**

In the FY 2006 appropriation, the Conference Report (109-275) accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-148), identified $24,000,000 to be used for ground based treaty monitoring and directed the Department to conduct a free and open competitive process for at least $7,500,000 of its research and development activities.

Supporting Activities **11,361** **3,015** **6,162**

Supporting activities provide crosscutting support for the two main subprograms (PD and NEM). These activities include strategic initiatives such as technology roadmapping and assessment, nonproliferation analysis and studies, Small Business Innovation Research (SBIR), Small Business Technology Transfer (STTR) programs, and university open competitions. In addition, other project costs (operating) to support joint effort with the DOE Office of Science to construct the Hanford 300 Area Replacement

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007

Facility at PNNL are included. Supporting Activities also support publication activities to enhance communications between the technologists in the DOE community, policymakers, and the general public.

Congressionally Directed Activity	**0**	**TBD**	**0**

In the FY 2006 appropriation, the Conference Report (109-275) accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-148) included $3.8 million that does not apply directly to the missions of either the Proliferation Detection or Nuclear Explosion Monitoring programs. From within available funds, the conference agreement includes the following projects: $2,500,000 for the UNLV Research Foundation to support nonproliferation activities at the Institute for Security Studies; $1,000,000 for the National Center for Biodefense at George Mason University (VA); and $300,000 for the Texas A&M Moscow Physics Institute-Nonproliferation and International Security Program (TX).

Total, Nonproliferation and Verification Research and Development O&M	**219,836**	**305,910**	**260,967**
Construction			
06-D-180, Physical Sciences Facility, PNNL (PED)	**0**	**12,870**	**3,700**
07-SC-05, Physical Sciences Facility, PNNL (Construction)	**0**	**0**	**4,220**

This project supports a joint effort with the DOE Office of Science to construct 335,000 gross square feet of laboratories, offices, and radiological or nuclear facilities to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area, which have to be vacated by January 2011. Approximately $3.7 million of the FY 2007 funds is needed to complete project engineering and design (PED) work started in FY 2006 due to the development of a more reasonable project schedule that allows for PED work to continue through FY 2007 and construction of the 300 Area Replacement Facility to begin in FY 2008, as revised jointly by EM and SC, NNSA, and DHS. NNSA draws upon PNNL capabilities in the 300 area to conduct science, technology, and analytical activities to prevent the proliferation of weapons of mass destruction, promote international nuclear safety, ensure compliance with international treaties and agreements and protect the Nation's critical infrastructure.

Total, Construction	**0**	**12,870**	**7,920**
Total, Nonproliferation and Verification Research and Development	**219,836**	**318,780**	**268,887**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
▪ **Proliferation Detection (Includes Homeland Security)**	
Decrease primarily reflects the impact of the Congressionally-directed one-time add for FY 2006 projects. .	**-29,267**
▪ **Nuclear Explosion Monitoring**	
Decrease primarily reflects the impact of the Congressionally-directed one-time add and direction for FY 2006 Nuclear Explosion Monitoring projects.	**-18,823**
▪ **Supporting Activities**	
Increase is due to the upgrade and expansion of technology for project management, offset by the rescission amount. .	**+3,147**
Subtotal Funding Change, Nonproliferation Verification R&D O&M	**-44,943**
▪ **Construction**	
Decrease is due to a delay in the implementation of the project to conform with the expected need date for the facility. A joint effort with the DOE Office of Science is underway to develop a more reasonable project schedule that allows for PED work to continue through FY 2007 and to begin constructing the 300 Area Replacement Facility at PNNL in FY 2008. .	**-4,950**
Total Funding Change, Nonproliferation Verification R&D	**-49,893**

Capital Operating Expenses & Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
General Plant Projects	490	505	520
Capital Equipment	27,479	28,303	29,153
Total, Capital Operating Expenses	**27,969**	**28,808**	**29,673**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	535	551	568	585
Capital Equipment	30,027	30,928	31,856	32,811
Total, Capital Operating Expenses	**30,562**	**31,479**	**32,424**	**33,396**

Construction Projects

	(dollars in thousands)					
	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
O6-D-180, Physical Sciences Facility, PNNL, (PED), VL[b]	27,486	0	0	12,870	3,700	0
07-SC-05, Physical Sciences Facility, PNNL, (Construction), VL[b]	180,000-245,000	0	0	0	4,220	TBD
Total, Construction			**0**	**12,870**	**7,920**	

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

[b] This is a joint project funded by two DOE programs, the Office of Science (SC) and NNSA and the Department of Homeland Security. This table reflects NNSA funding only except for the TEC.

Outyear Construction Projects

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
07-SC-05, Physical Sciences Facility, PNNL, (Construction), VL [a]	13,228	7,832	TBD	TBD
Total, Construction	**13,228**	**7,832**	TBD	TBD

[a] This is a joint project funded by two DOE programs, the Office of Science (SC) and NNSA and the Department of Homeland Security.

06-D-180, Physical Sciences Facility, Pacific Northwest National Laboratory Richland, Washington

1. Significant Changes

- FY 2006 Appropriation provided NNSA with additional funds to complete project engineering and design (PED) and initiate construction. Due to changes to the project schedule and conceptual design modifications of the Physical Sciences Facility, construction is now scheduled to begin in FY 2008. As a result, these changes have increased the total estimated PED costs to approximately $30 million.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2007	3Q FY 2006	1Q FY 2008	2Q FY 2008	4Q FY 2010	FY 2011	FY 2015

Decontamination and decommissioning (D&D) activities for the facilities being vacated in the 300 area will be conducted under a separate project managed by the Office of Environmental Management (EM). The dates listed are preliminary and will be updated as more information is known.

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	27,486[a]	N/A	N/A	27,486	2Q FY 2007[b]	27,486

4. Project Description, Justification, and Scope

This project will replace laboratory capability that is being lost in the Environmental Management Hanford 300 Area closure project. Two Department of Energy (DOE) programs, the Office of Science (SC) and National Nuclear Security Administration (NNSA), and the Department of Homeland Security (DHS) are jointly funding this project. The cost estimates are based on a preliminary baseline established by approval of Critical Decision 1, 1Q FY 2006.

This project will construct approximately 335,000 gross square feet of laboratories, offices, and a radiological or nuclear facility to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area. This area must be vacated by February 2011. The balance of the capabilities will be housed in leased facilities. The

[a] The TEC is for design only and includes funding appropriated under two DOE programs, SC and NNSA, and the DHS.

[b] No construction activities will be initiated until the Performance Baseline has been validated.

estimate range provided is based on preliminary estimates developed to support Critical Decision-1 (CD-1). Project Engineering and Design (PED) funds were received in FY 2004, 2005 and 2006. The FY 2006 Appropriation provided additional PED funding to complete project engineering and design (PED) and initiate construction on the project. Due to changes in the project schedule and modifications to the conceptual design of the Physical Sciences Facility, construction is now scheduled to begin in FY 2008. This project data sheet is requesting PED funds in FY 2007. SC, NNSA, and DHS will jointly fund this project. The allocation of costs among the three project sponsors was determined based upon the estimated net square footage of space required to perform research in support of each sponsors mission needs, as identified in the Justification of Mission Need, and refined during detailed programming studies by an architect engineer firm supporting preparation of the Conceptual Design Report (CDR). Sponsor shares of the Total Project Cost (TPC) will be as follows: SC – 44 percent; NNSA – 31 percent; DHS – 25 percent.

The Pacific Northwest National Laboratory (PNNL) is a multi-program U.S. Department of Energy (DOE) National laboratory and performs research that addresses all DOE strategic objectives. Science: PNNL plays a leading role in biological and environmental sciences and conducts significant programs in chemistry, chemical physics, materials science, nuclear science and technology, and computer and information science. National Security: PNNL provides nuclear science and technology and information analytics capabilities to prevent the proliferation of weapons of mass destruction, ensure compliance with international arms control treaties, and protect the Nation's critical infrastructure. Energy: the Laboratory provides the materials and chemical catalysis capability to develop technology for the energy systems of the future, and for environment, science, and technology for expedited cleanup and understanding complex environmental systems.

Currently, PNNL's 3,800 staff members conduct research activities on a consolidated Laboratory campus composed of 79 buildings with nearly two million square feet. Approximately one-third of that space (about 700,000 sq. ft.) is located in the Hanford Site 300 Area—a National Priority List waste site of aging, cold war facilities targeted by DOE for an aggressive clean-up effort to reduce costs and accelerate site closure. Facilities in the 300 Area represent 45 percent of PNNL's experimental laboratory space and house many capabilities important to accomplishing DOE strategic objectives.

The Hanford 300 Area is scheduled for complete demolition and cleanup by the DOE EM program over the next 8-12 years. The cleanup work will require removal of contaminated soil and waste plumes, which are around and beneath many of the existing buildings. The most efficient and economical method of cleanup will entail wholesale removal of the buildings and underground utility systems to get at and remove the contamination. This will result in the eviction and relocation of PNNL from the 300 Area. Limited transition out of the 300 Area is already underway, and PNNL staff and equipment have already been removed from several of the facilities and relocated to a newly leased office building and existing laboratory space. The current planning assumption, based on coordination with EM and information contained in the River Corridor Closure Contract request for proposal, is that most facilities currently occupied by PNNL must be vacated by early 2011. This will require that PNNL vacate 30 buildings (19 main facilities and associated annexes) in the 300 Area within the next 6 years.

Science programs at PNNL support research in chemical, materials, and environmental sciences, systems biology, and atmospheric sciences and global change. It is anticipated that these activities will

continue into the future at current levels of effort with possible growth in systems biology. The capabilities required include expertise and programs in biology, low dose radiation biology, environmental molecular chemistry, microbiology, biogeochemistry, subsurface science, systems biology, and biotechnology. These capabilities are needed to solve some of the nation's most pressing problems in energy production, carbon sequestration, national security, and environmental remediation. NNSA strategically invests in science, technology, and infrastructure to develop the essential capabilities to accomplish its mission. In support of the NNSA mission, PNNL conducts science, technology, and analytic activities in the 300 Area to prevent the proliferation of weapons of mass destruction, promote international nuclear safety, ensure compliance with international arms control treaties, and protect the Nation's critical infrastructure. The ultra-low level analytical laboratory provides a National asset to the NNSA user community. The PNNL staff skills, experience, and research equipment in the 300 Area are an integral part of the NNSA nonproliferation activities.

Continued support of ongoing and anticipated future research can be accommodated by construction of new facilities, including the one constructed under this project, totaling approximately 335,000 gross square feet. The new facilities may be located on government owned land adjacent to the north end of the main PNNL campus. New construction would offer an opportunity to design state-of-the-art facilities that would be safer, more functional and energy efficient than the current aged facilities. A truly integrated systems approach to considering research capabilities and multiple mission needs in a combined and integrated manner offers the prospect of multiple research programs sharing the multi-disciplinary capabilities. This approach would result in a more economical and efficient use of Federal funds in fulfilling the research requirements from which all of the sponsoring agencies and customers will benefit.

PNNL will continue to provide research capabilities to DHS in the ultra-trace, radiation detection, information analysis, certification, systems biology, chemistry and processing capabilities.

The project will be executed in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets, and DOE Manual 413.3-1, Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision–0: Approve Mission Need—Approved 4Q FY 2004
- Critical Decision–1: Approve Preliminary Baseline Range—1Q FY 2006
- External Independent Review Final Report—1Q FY 2007
- Critical Decision–2: Approve Performance Baseline—2Q FY 2007
- Critical Decision–3: Approve Start of Construction—1Q FY 2008
- Critical Decision–4A: Approve Start of Operations— 4Q FY 2010
- Critical Decision–4B: Approve Project Closeout— 2Q FY 2011

5. Financial Schedule

	Appropriations				Obligations				Costs			
	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total
Design by Fiscal Year												
PED												
2004		986[a]		986		986		986				
2005		4,960	2,000	6,960		4,960	2,000	6,960				
2006	12,870	2,970		15,840	12,870	2,970		15,840	5,326	3,916		9,242
2007	3,700			3,700	3,700			3,700	5,840	5,000	2,000	12,840
2008									4,629			4,629
2009									775			775
Total, Design ..	16,570	8,916	2,000	27,486	16,570	8,916	2,000	27,486	16,570	8,916	2,000	27,486

6. Details of Project Cost Estimate[bc]

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate	Previous Estimate
Preliminary and Final Design Costs	27,486	N/A

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate	Previous Estimate
Conceptual Planning	N/A	N/A
Start-up	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

[a] The Department received guidance that FY 2004 PED funds can be used for conceptual design studies that would normally be funded with operating expense funds. The funds were appropriated under the Office of Science project MEL-001.

[b] This cost estimate is based upon direct field inspection and historical cost estimate data, coupled with parametric cost data and completed conceptual studies and designs, when available.

[c] This data sheet is for design activities only. Construction activities are reflected in the Office of Science Project 07-SC-05.

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Outyears	Total
TEC (Design)								
NNSA	0	5,326	5,840	4,629	775	0	0	16,570
SC	0	3,916	5,000	0	0	0	0	8,916
DHS	0	0	2,000	0	0	0	0	2,000
Total PED	0	9,242	12,840	4,629	775	0	0	27,486

8. Related Operations and Maintenance Funding requirements

This data is in the 07-SC-05 construction project data sheet.

(Related Funding Requirements)[a]

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

Design and inspection of the facilities and equipment will be by the operating contractor and Architect-Engineer (A-E) subcontractor as appropriate.

[a] This data sheet is for design activities only. Cost related to items in this table are reflected in the Office of Science project 07-SC-05.

07-SC-05, Physical Sciences Facility, Pacific Northwest National Laboratory Richland, Washington

1. Significant Changes

- FY 2006 Appropriation provided NNSA with additional funds to complete project engineering and design (PED) and initiate construction, but because of changes to the project schedule and modifications to the conceptual design of the Physical Science Facility, construction is now scheduled to begin in FY 2008. These changes have increased the total estimated PED costs to approximately $30 million.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2007	3Q FY 2006	1Q FY 2008	2Q FY 2008	4Q FY 2010	FY 2011	FY 2015

Decontamination and decommissioning (D&D) activities for the facilities being vacated in the 300 area will be conducted under a separate project managed by the Office of Environmental Management (EM). The dates listed are preliminary and will be updated as more information is known.

3. Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, except D&D Costs	D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	180,000-245,000	20,000 - 25,000	N/A	TBD	2Q FY2007[a]	200,000 – 270,000

4. Project Description, Justification, and Scope

This project will replace laboratory capability that is being lost in the Environmental Management Hanford 300 Area closure project. This project is being funded by two Department of Energy (DOE) programs, the Office of Science (SC) and National Nuclear Security Administration (NNSA), and the Department of Homeland Security (DHS). The cost estimates are based on a preliminary baseline established by approval of Critical Decision 1, 1Q FY 2006.

This project will construct approximately 335,000 gross square feet of laboratories, offices, and a radiological or nuclear facility to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area. This area must be vacated by February 2011. The balance of the capabilities will be housed in leased facilities. The estimate range provided is based on preliminary estimates developed to support Critical Decision-1

[a] No construction activities will be initiated until the Performance Baseline has been validated.

(CD-1). Project Engineering and Design (PED) funds were received in FY 2004, 2005 and 2006. The FY 2006 Appropriation provided additional PED funding to complete project engineering and design (PED) and initiate construction on the project. Due to changes in the project schedule and modifications to the conceptual design of the Physical Sciences Facility, construction is now scheduled to begin in FY 2008. This project data sheet is requesting construction funds in FY 2007. The Physical Sciences Facility is a subset of the Capability Replacement Laboratories Major System project.

This project will be jointly funded by SC, NNSA, and DHS. The allocation of costs among the three project sponsors was determined based upon the estimated net square footage of space required to perform research in support of each sponsors mission needs, as identified in the Justification of Mission Need, and refined during detailed programming studies by an architect engineer firm supporting preparation of the Conceptual Design Report (CDR). Sponsor shares of the Total Project Cost (TPC) will be as follows: SC – 44 percent; NNSA – 31 percent; DHS – 25 percent.

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Currently, PNNL's 3,800 staff members conduct research activities on a consolidated Laboratory campus composed of 79 buildings with nearly two million square feet. Approximately one-third of that space (about 700,000 sq. ft.) is located in the Hanford Site 300 Area—a National Priority List waste site of aging, cold war facilities targeted by DOE for an aggressive clean-up effort to reduce costs and accelerate site closure. Facilities in the 300 Area represent 45 percent of PNNL's experimental laboratory space and house many capabilities important to accomplishing DOE strategic objectives.

The Hanford 300 Area is scheduled for complete demolition and cleanup by the DOE EM program over the next 8-12 years. The cleanup work will require removal of contaminated soil and waste plumes, which are around and beneath many of the existing buildings. The most efficient and economical method of cleanup will entail wholesale removal of the buildings and underground utility systems to get at and remove the contamination. This will result in the eviction and relocation of PNNL from the 300 Area. Limited transition out of the 300 Area is already underway, and PNNL staff and equipment have already been removed from several of the facilities and relocated to a newly leased office building and existing laboratory space. The current planning assumption, based on coordination with EM and information contained in the River Corridor Closure Contract request for proposal, is that most facilities currently occupied by PNNL must be vacated by early 2011. This will require that PNNL vacate 30 buildings (19 main facilities and associated annexes) in the 300 Area within the next 6 years.

Science programs at PNNL support research in chemical, materials, and environmental sciences, systems biology, and atmospheric sciences and global change. It is anticipated that these activities will continue into the future at current levels of effort with possible growth in systems biology. The capabilities required include expertise and programs in biology, low dose radiation biology, environmental molecular chemistry, microbiology, biogeochemistry, subsurface science, systems biology, and biotechnology. These capabilities are needed to solve some of the nation's most pressing problems in energy production, carbon sequestration, national security, and environmental remediation.

NNSA strategically invests in science, technology, and infrastructure to develop the essential capabilities to accomplish its mission. In support of the NNSA mission, PNNL conducts science, technology, and analytic activities in the 300 Area to prevent the proliferation of weapons of mass destruction, promote international nuclear safety, ensure compliance with international arms control treaties, and protect the Nation's critical infrastructure. The ultra-low level analytical laboratory provides a National asset to the NNSA user community. The PNNL staff skills, experience, and research equipment in the 300 Area are an integral part of the NNSA nonproliferation activities.

Continued support of ongoing and anticipated future research can be accommodated by construction of new facilities, including the one constructed under this project, totaling approximately 335,000 gross square feet. The new facilities may be located on government owned land adjacent to the north end of the main PNNL campus. New construction would offer an opportunity to design state-of-the-art facilities that would be safer, more functional and energy efficient than the current aged facilities. A truly integrated systems approach to considering research capabilities and multiple mission needs in a combined and integrated manner offers the prospect of multiple research programs sharing the multi-disciplinary capabilities. This approach would result in a more economical and efficient use of Federal funds in fulfilling the research requirements from which all of the sponsoring agencies and customers will benefit.

DHS will strategically invest in facilities to support its research needs, including investment at DOE laboratories if necessary, to develop and maintain the essential capabilities to accomplish its mission. PNNL will continue to provide research capabilities to DHS in the ultra-trace, radiation detection, information analysis, certification, systems biology, chemistry and processing capabilities.

The project will be executed in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets, and DOE Manual 413.3-1, Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision–0: Approve Mission Need—Approved 4Q FY 2004
- Critical Decision–1: Approve Preliminary Baseline Range—1Q FY 2006
- External Independent Review Final Report—1Q FY 2007
- Critical Decision–2: Approve Performance Baseline—2Q FY 2007
- Critical Decision–3: Approve Start of Construction—1Q FY 2008
- Critical Decision–4A: Approve Start of Operations— 4Q FY 2010

- Critical Decision–4B: Approve Project Closeout— 2Q FY 2011

5. Financial Schedule

(dollars in thousands)

	Appropriations				Obligations				Costs[a]			
	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total	NNSA	SC	DHS	Total
Design/Construction by Fiscal Year												
PED												
2004		986[b]		986		986		986				
2005		4,960	2,000	6,960		4,960	2,000	6,960				
2006	12,870	2,970		15,840	12,870	2,970		15,840	5,326	3,916		9,242
2007	3,700			3,700	3,700			3,700	5,840	5,000	2,000	12,840
2008									4,629			4,629
2009									775			775
Total, Design ..	16,570	8,916	2,000	27,486	16,570	8,916	2,000	27,486	16,570	8,916	2,000	27,486
Construction												
2006		1,980[c]		1,980		1,980		1,980		0		0
2007	4,220			4,220	4,220			4,220				0
2008	13,228	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
2009	7,832	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
2010	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
2011	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Total , Construction....	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Total, TEC[d]....	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

[a] Project estimates are preliminary.

[b] The Department received guidance that FY 2004 PED funds can be used for conceptual design studies that would normally be funded with operating expense funds.

[c] The FY 2006 Appropriation contained language that said these funds were provided to complete project engineering and design (PED) and initiate construction.

[d] Total TEC is still in a range between $200,000,000 and $270,000,000. The TEC will further be defined upon completion of PED and development of the project performance baseline.

6. Details of Project Cost Estimate

Total Estimated Costs

Cost Element	(dollars in thousands)	
	Current Estimate	Previous Estimate
Preliminary and Final Design Costs	27,486	N/A
Construction Phase		
Site Preparation	4,250	N/A
Equipment	4,750	N/A
All other construction	135,267	N/A
Contingency	29,141	N/A
Total, Construction	173,408	N/A
Total, TEC[a]	200,894	N/A

Other Project Costs[bc]

Cost Element	(dollars in thousands)	
	Current Estimate	Previous Estimate
Conceptual Planning	4,165	N/A
Start-up	13,651	N/A
Contingency for OPC other than D&D	5,025	N/A
Total, OPC	22,841	N/A

[a] Total TEC is a range between $200,000,000 and $270,000,000. The TEC will further be defined upon completion of PED and development of the project performance baseline.

[b] FY 2005 Conference Report H.R. 4818: The conferees provided an additional $5,000,000 for NNSA within Supporting Activities to support the ongoing regulatory and environmental activities for 300 Area replacement at PNNL that will allow PE&D to occur on an accelerated schedule.

[c] Other project costs are preliminary estimate.

7. Schedule of Project Costs[a] [b]

(dollars in thousands)

	Prior Years	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Outyears	Total
TEC (Design)								
NNSA	0	5,326	5,840	4,629	775	0	0	16,570
SC	0	3,916	5,000	0	0	0	0	8,916
DHS	0	0	2,000	0	0	0	0	2,000
Total PED	0	9,242	12,840	4,629	775	0	0	27,486
TEC (Construction)								
NNSA	0	0	0	TBD	TBD	TBD	TBD	TBD
SC	0	0	0	TBD	TBD	TBD	TBD	TBD
DHS	0	0	0	TBD	TBD	TBD	TBD	TBD
Total TEC (Const.)	0	0	0	TBD	TBD	TBD	TBD	TBD
OPC Other than D&D								
NNSA	3,201	549	165	TBD	TBD	TBD	TBD	TBD
SC	0	0	0	TBD	TBD	TBD	TBD	TBD
DHS	231	19	0	TBD	TBD	TBD	TBD	TBD
Total OPC other than D&D	3,432	568	165	TBD	TBD	TBD	TBD	TBD
Total Project Costs								
NNSA	3,201	5,875	6,005	TBD	TBD	TBD	TBD	TBD
SC	0	3,916	5,000	TBD	TBD	TBD	TBD	TBD
DHS	231	19	2,000	TBD	TBD	TBD	TBD	TBD
Total Project Costs	3,432	9,810	13,005	TBD	TBD	TBD	TBD	TBD

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2010
Expected Useful Life (number of years)	40
Expected Future start of D&D for new construction (fiscal quarter)	1Q FY 2050

[a] The Schedule of Project Costs represents the TPC for the entire project. Of this amount, 25 percent or $55,934,000 is expected to be funded through the DHS. The remaining portion will be funded by the DOE.

[b] Project estimates are preliminary.

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current estimate	Prior Estimate	Current estimate	Prior Estimate
Operations	6,000	N/A	395,000	N/A
Maintenance	3,700	N/A	245,000	N/A
Total Related funding	9,700	N/A	640,000	N/A

9. Required D&D Information

This project involves construction of new facilities to house capabilities being displaced by the closure of the 300 Area of the Hanford Site in Richland, Washington. As described in Section 4, the D&D costs are being funded by the DOE EM program over the next 8-10 years, and are not included in this estimate.

Name and site location of existing facilities to be replaced:

PNNL occupied facilities in the 300 Area of the Hanford Site in Richland, Washington

	Square Feet
Area of new construction	~335,000
Area of existing facility(ies) being replaced	~700,000
Area of any additional space that will require D&D to meet the "one-for-one" requirement	N/A

10. Acquisition Approach

Design and inspection of the facilities and equipment will be by the operating contractor and Architect-Engineer (A-E) subcontractor as appropriate. Technical construction will be done by a competitively bid lump sum contract administered by PNNL. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bidding. Project and construction management, inspection, coordination, testing and checkout witnessing, and acceptance will be performed by the PNNL operating contractor.

HEU Transparency Implementation

Funding Schedule by Activity

	FY 2005	FY 2006	FY 2007[a]
HEU Transparency Implementation			
HEU Transparency Implementation	20,784	19,288	0
Total, HEU Transparency Implementation	20,784	19,288	0

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Budget Structure Changes

These activities have been realigned to Nonproliferation and International Security. For FY 2007 this reflects a funding shift of $17,531,000 to the Office of Dismantlement and Transparency within the Office of Nonproliferation and International Security.

Global Initiatives for Proliferation Prevention

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007[a]
Global Initiatives for Proliferation Prevention			
Global Initiatives for Proliferation Prevention	40,675	39,600	0
Total, Global Initiatives for Proliferation Prevention	40,675	39,600	0

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Budget Structure Changes

These activities have been realigned to Nonproliferation and International Security. For FY 2007 this reflects a funding shift of $28,140,000 from Global Initiatives for Proliferation Prevention to the Office of Global Security Engagement and Cooperation within the Office of Nonproliferation and International Security.

Nonproliferation and International Security

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007[a]
Nonproliferation and International Security			
Dismantlement and Transparency	0	0	38,967
Global Security Engagement and Cooperation	0	0	50,232
International Regimes and Agreements	0	0	31,787
Treaties and Agreements	3,208	1,980	1,995
International Emergency Management Cooperation	3,967	4,789	4,430
Nonproliferation Policy	83,474	21,947	0
International Safeguards	30,869	25,923	0
Export Control	22,246	19,611	0
Total, Nonproliferation and International Security	143,764	74,250	127,411

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Beginning in FY 2007, Highly Enriched Uranium (HEU) Transparency and Global Initiatives for Proliferation Prevention (GIPP) have been realigned into the Dismantlement and Transparency and Global Security Engagement and Cooperation sub-categories above respectively.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Nonproliferation and International Security	132,458	134,706	138,835	146,990

Description

The Nonproliferation and International Security (NIS) goal is to prevent and counter weapons of mass destruction (WMD) proliferation by providing policy and technical support to implement and monitor transparent WMD reductions; strengthen indigenous international safeguards and export controls systems in other countries; transition WMD expertise and infrastructure to peaceful purposes; and improve international and multinational international safeguards, export control, and interdiction regimes.

The Nonproliferation and International Security (NIS) program has taken steps to incorporate feedback from OMB as a result of the FY 2005 Program Assessment Rating Tool (PART) review. One of the recommendations from the review emphasized the re-organization of activities within the program. In the FY 2006 budget request, the program implemented phase I of this approach in the creation of the Global Threat Reduction Initiatives with the mission to identify, secure, remove, and facilitate the disposition of high-risk, vulnerable nuclear and radiological material. As a result of this, several

[a] FY 2007 reflects the Office of Global Initiatives for Proliferation Prevention (formerly Russian Transition Initiatives) funding shift of $28,140,000 to the Office of Global Security Engagement and Cooperation and shift of the Office of HEU Transparency Implementation funding of $17,531,000 to the Office of Dismantlement and Transparency.

programs were transferred out of NIS. In FY 2007, the Office is implementing phase II of the recommendation to realign the program as described below within the "Benefits to Program Goals" section. The realignment consolidates NIS activities under three offices, and establishes a Policy Office to promote stronger integration among NIS programs and enhance NIS contributions to U.S. Government efforts to combat WMD proliferation.

The program will control export of items and technology useful for WMD; continue an augmented export control cooperation program involving emerging suppliers and high-traffic transit states; break up proliferation networks and improve international export control guidelines; develop verification technologies for countries of proliferation concern; implement international safeguards in conjunction with the International Atomic Energy Agency (IAEA); develop and implement policy in support of global nonproliferation regimes; provide the technical edge within the interagency in the various interdiction activities; develop and implement transparency measures to ensure that nuclear materials are secure; develop and implement innovative approaches to improve regional security, helping to transition WMD scientific communities in high-risk nations; and, conduct international emergency management and cooperation activities.

Benefits

Within the Nonproliferation and International Security program, five subprograms each make unique contributions to Program Goal 02.44.00. These five subprograms are the result of the realignment and combination of projects from components of the original three program areas (Nonproliferation and International Security, HEU Transparency Implementation and Global Initiative Proliferation Prevention).

The Dismantlement and Transparency (D&T) subprogram, established with components of the Nonproliferation Policy, International Safeguards, and HEU Transparency Implementation subprograms, provides policy and technical support for nonproliferation and arms control treaties and agreements that promote transparent Weapons of Mass Destruction (WMD) reductions; effective verification options for dismantlement of nuclear equipment, weapons and components; and developing monitoring equipment, technology and tools to ensure obligations of foreign governments are being met.

The Global Security Engagement and Cooperation (GSEC) subprograms, established with components of the Nonproliferation Policy, International Safeguards, Sister Laboratories, Export Control and Global Initiatives for Proliferation Prevention (formerly the Russian Transition Initiatives) subprograms, engage internationally to reduce instabilities in volatile regions, strengthen national nuclear safeguards and expert control systems, promote peaceful uses of nuclear energy, and redirect WMD expertise to non-weapons related activities.

The International Regimes and Agreements (IRA) subprogram, established with components of the Nonproliferation Policy, Export Control and International Safeguards offices, provides policy and technical support for IAEA safeguards, multilateral supplier regimes, nuclear interdiction efforts and nonproliferation treaties and initiatives designed to limit the spread of WMD and weapons-significant dual-use items and technologies; and ensures U.S. compliance with its nonproliferation obligations.

The Treaties and Agreements subprogram supports implementation of bilateral or multilateral, Presidentially-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level nonproliferation initiatives, agreements and treaties.

The International Emergency Management and Cooperation subprogram strengthens worldwide emergency management programs through information sharing, program coordination, and technical assistance to foreign governments and international organizations.

Major Outyear Considerations

The Nonproliferation and International Security outyear funding profile will continue to prevent and counter weapons of mass destruction (WMD) proliferation by providing policy and technical support, to implement and monitor transparent WMD reductions; strengthen indigenous institutional safeguards and export control systems in other countries; transition WMD expertise and infrastructure to peaceful purposes; and improve international and multinational international safeguards, export control, and interdiction regimes.

Program Assessment Rating Tool (PART)

The Department implemented the PART tool to evaluate selected programs. PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of PART provides a means by which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The Department has incorporated feedback from OMB into the FY 2007 NIS Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2006, the OMB evaluated the NIS program using the PART. OMB gave the NIS program scores of 100 percent on the Purpose and Design; Strategic Planning; and Program Management Sections; and 73 percent on the Program Results Section. Overall, the OMB rated the NIS program 87 percent, its highest category of "Effective." The OMB assessment found that the program has clear and unique purpose, and has demonstrated good progress in achieving its long-term and annual performance goals. In addition, OMB required that an independent evaluation be conducted to assess if the program is effectively achieving results. In response to the OMB findings, NNSA arranged for and conducted an independent evaluation.

For FY 2007 the OMB evaluated the Global Initiatives for Proliferation Prevention (GIPP) program, which is now a subprogram in NIS, using the PART. OMB gave the GIPP program very high scores of 100 percent on the Purpose and Design, Strategic Planning, and Program Management Sections and 87 percent on the Program Results Section. OMB attributed these scores to the fact that the GIPP program has a clear and unique purpose; is well managed; has clear, concise, meaningful, and measurable performance metrics; and has demonstrated good progress in achieving its long-term and annual goals. OMB's overall PART rating for GIPP is 93 percent, its highest category of "Effective."

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Developed and implemented lab-to-lab counter terrorism technology demonstrations at Russian Technical institutes. (MET GOAL)	Expedited the retrieval of spent nuclear fuel from Central Asia (MIXED RESULTS)
Conducted Field missions to North Korea to maintain status of spent fuel in the Nyongbyon spent fuel facility. (MET GOAL)	Worked with US Customs personnel to familiarize them with nuclear equipment, material, and technology, and to improve real-time analysis of suspect shipments. (MET GOAL)
Expanded cooperation with other states and U.S. Customs to improve export control capabilities. (MET GOAL)	Expanded bilateral physical protection visits, physical protection training, and the IAEA's International Physical Protection Advisory Service to help protect WMD Facilities around the world against terrorism attacks and sabotage. (MET GOAL)
Developed verification capabilities to support implementation of the U.S.-Democratic Peoples Republic of Korea Agreement Framework (MET GOAL)	Successfully complete and close down the Soviet-designed reactor safety program. (MIXED RESULTS)
Develop a small nuclear safety pilot program between the U.S. Department of Energy and the Vietnamese Atomic Energy Commission. (MET GOAL)	Evaluate and prioritize nuclear safety concerns at nuclear power plants, research reactors and non-reactor nuclear fuel cycle facilities, and prepare needs assessments for technology transfers of nuclear safety methods based on risk with potential participant countries. (MIXED RESULTS)
Engaged 2,500 former WMD scientists on cooperative commercial projects. (MET GOAL)	Enhance nonproliferation efforts in the Russian nuclear cities, and accelerate several Russian technology development efforts that have clear counter-terrorism or terrorism response applications under the Russian Transition Initiatives. (MET GOAL)
Sign an Agreement with the Russian Ministry of Atomic Energy for access to the closed nuclear cities. (MET GOAL)	

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative metric tons of Russian weapons-usable HEU that U.S. experts have confirmed as permanently eliminated from the Russian stockpile under the HEU Purchase Agreement (Long-term Outcome)	R: 193	R: 226	R: 255	T: 282	T: 312	T: 342	T: 372	T: 402	T: 432	By 2014, confirm that 500 metric tons of weapons-usable HEU has been permanently eliminated from the Russian stockpile.
Cumulative number of the GIPP target population of displaced Russian and FSU WMD experts who are currently employed in GIPP grants or long-term private sector jobs (and cumulative number who are employed in long-term private sector jobs resulting from GIPP grants) (Long-term Outcome)	R: 9,900 (2,300)	R: 11,200 (3,500)	R: 11,500 (3,800)	T: 11,800 (4,100)	T: 12,100 (4,400)	T: 12,400 (4,700)	T: 12,900 (5,200)	T: 13,400 (5,700)	T: 13,900 (6,200)	By 2015, employ 17,000 in grants or long-term private sector jobs.* By 2019, employ 11,000 in long-term private sector jobs resulting from grants.*
Cumulative percentage of non-USG (private sector and foreign government) project funding contributions obtained relative to cumulative USG GIPP funding contributions (Efficiency)	R: 50%	R: 60%	R: 65% T: 65%	T: 70%	T: 75%	T: 78%	T: 80%	T: 82%	T: 85%	By 2019, obtain non-USG funding contributions equal to 100% of the cumulative USG GIPP funding contributions.
Annual number of technologies transferred to international regimes and other countries to prevent and counter WMD proliferation and nuclear-related terrorism (Annual Output)	R: 1	R: 2	R: 1	T: 5	T: 5	T: 4	T: 5	T: 5	T: 3	Annually transfer targeted technologies to international regimes and other countries to prevent and counter WMD proliferation and nuclear-related terrorism.
Annual number of international and domestic experts (e.g., IAEA inspectors, export control officers, physical protection personnel) trained in nonproliferation to fulfill the President's policy delineated on 11 February 2004 and implement the U.S.-sponsored UN Security Council Resolution 1540 criminalizing proliferation (Annual Output)	R: 1,000	R: 1,305	R: 1,100	T: 1,160	T: 1,330	T: 1,300	T: 1,330	T: 1,300	T: 1,330	Annually train at least 1,000 experts.

* The NIS target population of 17,000 is derived from the original NAS estimate of 60,000 less attrition and those experts engaged by other United States Government (USG) and international programs. The 11,000 is derived from the target population of 17,000, less those employed by recovering Russian/FSU economies.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Dismantlement and Transparency	**0**	**0**	**38,967**

The Office of Dismantlement and Transparency negotiates, implements and strengthens U.S. nonproliferation and arms control treaties and agreements by promoting transparent WMD reductions, ensuring effective verification options, and developing associated transparency-monitoring tools. The office is responsible for the following program elements: U.S.-Russian Federation Plutonium Production Reactor Agreement; U.S.-Russian Federation Warhead Safety and Security Exchange Agreement; U.S.-Russian Federation Highly Enriched Uranium Purchase Agreement; the Chemical Weapons Convention; nuclear testing limitations; and policy development for the START Treaty and the Treaty of Moscow. Additionally, the office works closely with the International Atomic Energy Agency, and other bilateral partners to strengthen international safeguards and the nonproliferation regime by developing advanced technologies for the detection and verification of clandestine nuclear weapons programs and capabilities to verifiably dismantle them. The Office has also identified critical technologies that could be made available to support future inspections, including, but not limited to, radiation, effluent detection/monitoring, instrumentation, and environmental sampling and analysis.

- **Warhead Dismantlement and Fissile Material Transparency**..... **0** **0** **14,814**

  The Warhead Dismantlement and Fissile Material Transparency (WDT) program promotes transparent nuclear reductions through the negotiation and development of agreements and transparency options to provide confidence that Russian nuclear weapons are being dismantled and that excess fissile materials, including those removed from dismantled Russian nuclear weapons, are not used in the production of new nuclear weapons. The program also supports policymaking, negotiations, and implementation regarding the following arms control and nonproliferation regimes: the Threshold Test Ban Treaty (TTBT); Limited Test Ban Treaty (LTBT), and Chemical Weapons Convention (CWC). Additionally, as part of the Bratislava process, the program evaluates technologies based on transparency initiatives that could also be used to combat nuclear-related terrorism (e.g., nuclear material detectors), and works to develop these technologies to the specifications of end-user personnel responsible for this mission. Future initiatives that might contain the monitoring of nuclear warheads, nuclear warhead dismantlement, or fissile material resulting from dismantled nuclear warheads are evaluated and technologies to support these initiatives are examined. The program develops methodologies that could be used for warhead and fissile material transparency, and comprehensively evaluates the issues associated with potential monitoring regimes. In FY 2007, the Program will conduct four U.S.- Russian transparency visits under Plutonium Production Reactor Agreement (PPRA), complete the evaluation or further development of new technologies under Warhead Safety and Security Exchange (WSSX), develop and negotiate new projects with Russian institutes under the WSSX Agreement to develop and apply technologies to support U.S. efforts to combat nuclear terrorism and future nonproliferation and arms control activities and conduct Joint Coordinating Group meetings under the WSSX agreement.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **Nuclear Noncompliance Verification**	**0**	**0**	**6,622**

The Nuclear Noncompliance Verification program provides advanced safeguards technology applications to detect nuclear materials and activities, including undeclared nuclear programs in proliferant states, and to verify the dismantlement of those programs. This work is closely coordinated and frequently performed in conjunction within the Nonproliferation and Verification R&D program. These verification activities will be done in coordination with the IAEA, requiring significant U.S. involvement and contribution, particularly for new and emerging proliferation threats. The advanced safeguards approaches and technologies, such as environmental sampling and remote monitoring, enable the detection of undeclared nuclear activities and safeguard declared nuclear material more effectively and efficiently. Other specially designed tools and technologies will also be developed to address unique proliferation threats.

- **HEU Transparency Implementation**..... **0** **0** **17,531**

The HEU Transparency Program annually monitors the conversion of 30 MTs of weapons-grade HEU into about 900 MTs of LEU at four Russian processing facilities to provide confidence that the LEU being purchased under the HEU Purchase Agreement is derived from dismantled nuclear weapons and eliminated from Russian inventory.

Transparency monitoring activities have been defined by U.S./Russian agreements and include:

Conduct Special Monitoring Visits (SMVs), which are the primary means of obtaining transparency data and are the only way to retrieve Blend Down Monitoring System (BDMS) output reports. In FY 2007, NNSA plans to complete up to 24 visits to the four Russian facilities, requiring about 120 person trips by technical monitors. Provide monitoring and frequent access to the Ural Electrochemical Integrated Plant (UEIP) processing and down blending operations in Russia by staffing the Transparency Monitoring Office (TMO) in Novouralsk, Russia for part of the year, with pairs of technical experts performing 30-day rotations.

Maintain the installed BDMS equipment that provides continuous and independent measurements of HEU uranium hexaflouride (UF_6) down blending into LEU-UF_6 at blend-points in three dilution facilities (UEIP, Siberian Chemical Enterprise (SChE) and Electrochemical Plant, (ECP). Procure, replace, and dispose of radioactive sources (Cobalt-57 and Californium-252) required for the BDMS operations for each plant. The Cobalt-57 radioactive sources used in the equipment must be replaced and monitoring instruments recalibrated annually. The Californium-252 sources must be replaced every two years.

Install replacement hardware and computer software for the BDMS ECP in early FY 2007. Use and maintain the improved portable Non Destructive Assay instruments that the program provided previously to the four Russian sites for use by U.S. monitors to confirm 90 percent U-235 assay of material. Conduct annual inventory of natural uranium feedstock in storage cylinders at UEIP, which was supplied by U.S. Enrichment Corporation (USEC) for the equivalent Russian natural uranium in the LEU purchased. This effort fulfills requirements specified in the 1997 Feed Agreement.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Reimburse Russian facilities for costs of translations, transportation and other support provided to U.S. monitors during SMVs. Provide planning, logistical support and coordination with Russia's Federal Atomic Energy Agency (ROSATOM) for detailed logistical support of monitoring activities. Provide on-line training to monitors in existing technical modules and procedural requirements and health and safety procedures. Compile, archive and analyze transparency monitoring data. Prepare annual reports on HEU processing and HEU to LEU conversion rates and quantities. Support safety of U.S. monitors working in Russia by maintaining the program's health and safety plan, including radiation dosimetry, bioassay program and medical supplies.

Accommodate Russian monitoring in the U.S. at the Paducah Gaseous Diffusion Plant in Kentucky. Provide logistical and security assistance and associated support to Russian monitoring teams while monitoring operations at U.S. facilities. Compile and provide LEU accountability documents to ROSATOM in accordance with negotiated transparency agreements. Provide interpreters, translators, logistical, and technical support for Transparency Review Committee and other negotiating sessions in Russia and elsewhere. Continue to negotiate and evaluate ways to improve data collection, minimize costs, and increase efficiency.

Global Security Engagement and Cooperation **0** **0** **50,232**

The Office of Global Security Engagement and Cooperation works with international partners in a variety of activities, to strengthen export control systems, assist foreign countries to meet their nonproliferation obligations under the Nuclear Nonproliferation Treaty (NPT), develop technically effective approaches to regional security challenges, and help to transition WMD scientific communities in high-risk nations. These activities strengthen overall security within volatile regions, build indigenous capacity of states to implement and enforce nonproliferation obligations as stipulated by UNSCR 1540, address demand for WMD acquisition and proliferation, create partnerships that can lead to international stability, and reduce the risk of migration to states of WMD expertise to states of proliferation concern and terrorists.

- **Security Engagement** **0** **0** **7,242**

  Security Engagement, formerly Regional Security, covers the following regions: Middle East; South Asia; East Asia; and Central Asia. The program focuses on preventing the proliferation of weapons of mass destruction by developing technical solutions to regional security problems. The regional Secretary Engagement program also supports the Cooperative Monitoring Center (CMC) at Sandia National Laboratories. In FY 2007, the program plans to support new U.S. national security activities with China's nuclear nonproliferation as outlined in UNSCR 1540, advance the new U.S.-India Global Partnership in civil nuclear technology cooperation through activities that support UNSCR 1540, and demonstrate additional cooperative monitoring technologies in the CMC at Amman, including other Arab countries and Israel.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **International Cooperation**.....	**0**	**0**	**7,623**

The International Cooperation program counters the threat of nuclear proliferation through technical partnerships that support the goals of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The program develops and transfers advanced technologies under the aegis of bilateral international agreements to prevent and counter WMD proliferation and nuclear-related terrorism. The program also promotes the peaceful application of nuclear technology through bilateral "Sister Laboratory" arrangements. In FY 2007, the program will expand and advance these collaborations and continue this work with established international partners including China, Libya, and South Africa as well as with new partners such as India and Algeria.

▪ **International Nonproliferation Export Control Program**	**0**	**0**	**7,227**

The International Nonproliferation Export Control Program (INECP) works with partner governments in Russia, the Newly Independent States (NIS), South Asia, the Middle East, and East Asia to strengthen foreign national export control systems in countries and regions of proliferation concern. The program targets established and emerging suppliers and high-traffic transit countries or transit countries located near suppliers with inadequate controls.

An underlying objective of the program is to build technical communities that support national export control systems through cooperation with export license reviewers, outreach to industry and national scientific institutes, and assistance to enforcement agencies in identifying WMD-related technology. INECP activities are coordinated closely with the State Department-led Export Control and Related Border Security (EXBS) assistance initiatives.

▪ **Global Initiatives for Proliferation Prevention**	**0**	**0**	**28,140**

The Global Initiatives for Proliferation Prevention (GIPP) program helps prevent the proliferation of WMD expertise from regions of proliferation concern by redirecting displaced scientists and personnel with WMD know-how, into sustained, nonmilitary employment. GIPP achieves this objective by: (1) providing grants to experts with WMD expertise for applied research aimed at commercializing indigenous technologies in partners with U.S. private firms; and (2) providing grants to create new businesses leading to the diversification of the civilian economies of Russian close nuclear cities. These efforts were brought together in 2001 to sharpen their focus and place greater emphasis on engaging the private sector and garnering additional non-USG funding. In FY 2007, GIPP's main focus will remain in the countries of the FSU, while addressing other countries of proliferation concern, including Libya and Iraq.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
International Regimes and Agreements	**0**	**0**	**31,787**

The Office of International Regimes and Agreements (IRA) works to raise the barriers to the proliferation of WMD and strengthen the nonproliferation regime by providing policy and technical support to multilateral, bilateral and international nonproliferation regimes and agreements. IRA will negotiate, implement and strengthen multilateral regimes and conventions, international treaties, and institutions by promoting U.S. initiatives and efforts to limit the spread of nuclear, missile, chemical and biological weapons-significant items and technologies. In this regard, IRA will support the International Atomic Energy Agency (IAEA) safeguards efforts; multilateral supplier regimes (e.g. Nuclear Suppliers Group (NSG), Missile Technology Control Regime (MTCR), and Zangger Committee); technology transfer interdictions; effective physical protection standards; counter-proliferation and interdictions; and promote the universalization of the Nuclear Nonproliferation Treaty (NPT). IRA will also uphold and implement in the U.S. our safeguards, statutory export control licensing, and DOE complex technology security obligations. Finally, IRA will provide technical support to the U.S. enforcement and intelligence communities in their investigation of the movement of strategic exports and imports.

- **Interdiction/Enforcement** **0** **0** **2,970**

  The program provides critical technical guidance and policy support to the USG Interagency interdiction groups that discuss and make determinations on cases which involve an approach to foreign governments on preventing proliferation of specific nuclear, missile, or chemical/biological related commodities or technologies. This includes participation in the Nuclear Interdiction Action Group (NIAG), Missile Trade Analysis Group (MTAG), and Shield (chemical and biological technologies). DOE participates in these weekly interdiction meetings and offers critical technical support in identifying items and technologies of nuclear, missile, or chemical/biological concern for possible interdiction. DOE also participates in NSC-led Sub-PCC on interdiction matters. Additionally, DOE participates in and provides support to the USG's Proliferation Security Initiative (PSI). Given the new challenges associated with the WMD black market, the program will enhance technical support to the USG interagency by developing and identifying proliferators' possible choke points. The program will take advantage of existing technical knowledge and infrastructure at the DOE laboratories for traditional interdiction and apply them in a way that can allow for direct technical feed back to the USG's new and growing interdiction efforts and demands.

  Along the lines of enforcement, the program likewise provides training on WMD related technologies to USG enforcement agencies and offices. It cooperates with the Department of Homeland Security, in the area of export control enforcement through regional export controlled technology workshops and technical review of suspicious shipments for proliferation risk. In addition, the Department of Commerce (DOC), Office of Export Enforcement and the FBI attend the DHS regional workshops. The program shares technical proliferation assessments to identify export control vulnerabilities and critical technology needs of countries of proliferation concern; technical reference guides and the Proliferation Trade Control Directory (PTCD) for identification of vendors and export controlled goods for DHS and DOC inspection and interdiction of illegal shipments and to support DHS Shield America and DOC U.S. industry visits. In FY 2007, the program will enhance DOE national laboratory technical support to the USG interdiction groups, increase coverage of WMD technologies by the technical reference guides, and enhance the PTCD to provide

analytical products covering identification of foreign manufacturers and vendors globally, the quality of their WMD related items, and international trade flows to determine interdiction opportunities.

- **Global Regimes** **0** **0** **1,890**

The Global Regimes Program develops policy and provides program oversight on nuclear nonproliferation, international security, and nuclear treaties and agreements. Special emphasis is placed on issues pertaining to the NPT and Nuclear Weapons Free Zones, multilateral affairs centered at the Conference on Disarmament, including negotiations on a Fissile Material Cut-Off Treaty; the IAEA Technical Cooperation (TC) Program; and bilateral Agreements for Cooperation in the Peaceful Uses of Nuclear Energy (AEA Section 123). The Global Regimes Program also assists in the formulation of internationally-agreed upon conditions of supply for, and control lists of, nuclear export controlled materials, equipment, and technologies. The program provides policy and technical expertise on such treaties and agreements and ensures that their negotiation and implementation meet U.S. national security and foreign policy objectives and can be implemented at DOE/NNSA National Laboratories and other facilities. In FY 2007, the program will represent DOE/NNSA at the NPT PrepCom, continue efforts to enhance nonproliferation considerations in implementation of the IAEA TC Program, provide legislatively mandated technical assistance to potential negotiations supporting Agreements for Cooperation, and represent DOE/NNSA is potential negotiations on a Fissile Material Cut-Off Treaty.

- **Nuclear Safeguards** **0** **0** **7,521**

The International Safeguards program has four main thrusts: 1) Safeguards Policy, 2) Voluntary Offer Agreement (VOA) implementation at DOE sites, 3) Preparations to implement the Additional Protocol (AP) at DOE sites, and 4) the Advanced Safeguards Initiative (ASI). Safeguards Policy supports ongoing efforts to develop safeguards policy positions in the interagency process, and to support the development of policy at the IAEA through the Director General's Standing Advisory Group on Safeguards Implementation. VOA Safeguards implementation meets our existing treaty obligations through application of safeguards at selected sites and maintains the DOE portion of the Eligible Facilities List. AP implementation efforts are necessary to prepare the DOE complex to meet new obligations once the President ratifies the U.S. AP. ASI develops new approaches and safeguards concepts and technologies to improve the effectiveness and efficiency of IAEA safeguards verification as an essential tool to combat proliferation in view of a dynamic and growing international fuel cycle.

- **Export Control Licensing Operations** **0** **0** **10,204**

Licensing Operations reviews and provides advice and recommendations on U.S. license applications for dual-use items and munitions that could have use in the development of nuclear, chemical, and biological weapons and delivery systems. For this purpose, the program maintains the Proliferation Information Network System (PINS), an automated, classified system for the review and assessment of dual-use and munitions licenses. As provided under law, the Export Control program participates in the following interagency license review groups: Advisory Committee on Export Policy (ACEP) Operating Committee (OC), Sub-Group on Nuclear Export Controls (SNEC), Nuclear Interdiction Action Group (NIAG), Missile Technology Export Committee (MTEC), Missile Trade Analysis Group (MTAG), and Shield Licensing covering chemical and biological

(dollars in thousands)

FY 2005	FY 2006	FY 2007

warfare related items and technologies, and Shield Interdiction. The program interacts closely with the Departments of Commerce, State and Defense on dual-use license application reviews; maintains, with the Department of Commerce, the "Nuclear Referral List," which identifies nuclear dual-use items requiring special attention; and cooperates with the Department of Homeland Security and Department of Commerce export enforcement officials on commodity assessments. Another major area of responsibility is administration of Secretarial authorizations for the transfer of U.S. nuclear technology, as provided under the Atomic Energy Act and the implementing regulations in 10 CFR Part 810. It also supports a wide range of activities to promote export control compliance across the DOE complex and the USG.

- **Export Control Multilateral** **0** **0** **3,568**

  The Multilateral Program provides technical and policy support to U.S. government diplomacy involving the NSG and the Non-Proliferation Treaty Exporters' (Zangger) Committee, the MTCR, the Australia Group (AG) for CBW related items, and the Wassenaar Arrangement for national security controlled items. The 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. The program developed and now operates a state-of-art NSG Information Sharing System (the NISS), a secure internet-based system that allows NSG members to share real-time information on nuclear related license denials to prevent proliferation of dual use items, and provides technical support to regime members. Finally, this program supports the USG interagency through it development of timely and topical reports on WMD proliferation risk and analysis of foreign proliferators programs. These projects conduct technical proliferation assessments to identify export control vulnerabilities and critical technology needs of countries of proliferation concern. In FY 2007 the program will continue to provide and support the interagency and the multilateral regime members.

- **International Nuclear Security** **0** **0** **5,634**

  The International Nuclear Security program conducts bilateral physical protection assessments, assisting the IAEA in its execution of International Physical Protection Advisory Service (IPPAS) missions, physical protection training, and the design and implementation of new physical protection guidelines in conjunction with the IAEA and other physical protection entities, such as those required in the recently revised Convention on the Physical Protection of Nuclear Materials (CPPNM). The program will coordinate with the Office of Global Threat Reduction Initiatives to provide assessment and training feedback to assist with future physical protection upgrades.

Treaties and Agreements **3,208** **1,980** **1,995**

The Treaties and Agreements subprogram supports implementation of bilateral or multilateral, Presidentially-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level nonproliferation initiatives, agreements and treaties.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

In addition, the program provides for unexpected, unplanned responses to requirements of an immediate nature based on unanticipated U.S. national security needs. Examples of unforeseen activities that have been funded in the past are: dismantlement and removal of nuclear materials from newly discovered clandestine WMD programs with Libya; a joint US-Russian counter-terrorism conference; a regional seminar to improve export control practices in Central Asia and the Caucasus; resources for WMD training to the Federal Law Enforcement Training Center.

International Emergency Management and Cooperation

- **International Emergency Management** **2,480** **4,789** **4,430**

  The International Emergency Management subprogram conducts information sharing and coordination with other foreign governments regarding emergency management cooperation. Current ongoing cooperation involves China, Brazil, Argentina, India, Pakistan, Japan, France, South Korea, Finland, Armenia, Sweden, Norway, and Russia. NNSA will continue liaison with, and participation in, international organizations (IAEA, EU, NATO, G8, and Arctic Council), exhibiting leadership, under assistance and cooperation agreements to provide effective early warning and notification, and consistent emergency plans and procedures. Differences between worldwide plume modeling and dispersion programs developed by the Atmospheric Release Advisory Capability (ARAC), Japan's WSPEEDI, EU's RODOS, and Russia's ROSHYDROMET will be researched, documented and harmonized. The ARAC plume modeling and graphic information system will be integrated into other systems (Japan's WSPEEDI, the European Union's RODOS) for a worldwide capability for nuclear/radiological incidents.

  The International Emergency Management supports the IAEA with radiation detectors and technical assistance for its emergency program and to address lost sources; supports emergency response cooperative activities between U.S. and Russia (EMERCOM, Russian Federal Agency for Atomic Energy (ROSATOM) (formerly the Russian Ministry of Atomic Energy), Ministry of Health) protecting the public and the environment from the consequences of nuclear/radiological incidents in Russia; assists Russia's ROSATOM in the development of emergency management procedures to enhance its Situation and Crisis Center network; conducts emergency tabletop drills and exercises involving nuclear facility workers and local and national government counterparts; and develops and conducts three training courses for nuclear facility emergency staff in Russia.

- **Kazakhstan BN-350 Reactor Shutdown**..... **1,487** **0** **0**

  This subprogram provides technical support for the multinational effort to permanently shut down the BN-350 breeder reactor in Kazakhstan. The deactivation of this facility, which was completed in FY 2005, eliminates a source of fissile material production in Central Asia. Draining the sodium coolant and processing the coolant into an environmentally safe material will accomplish the elimination of the source of fissile material production. Sodium is both flammable and explosive, and the coolant in the BN-350 reactor also contains significant levels of radioactive cesium.

  In FY 2006, funding is being made available to the Office of Nuclear Energy, Science and Technology (NE) for management and completion of this project per Memorandum of

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Understanding between Nuclear Energy and the National Nuclear Security Administration, dated November 9, 2004.			
In FY 2005, the Sodium Processing Facility (SPF) construction proceeded to process tanks and piping installation. The FY 2006 efforts supported the completion of the SPF and initiation of sodium processing into a stable form.			
Total, International Emergency Management and Cooperation	**3,967**	**4,789**	**4,430**
Nonproliferation Policy			
▪ **Reduced Enrichment for Research and Test Reactors (RERTR)**	**18,813**	**0**	**0**
Reflects the transfer of this activity to the Global Threat Reduction Initiative in FY 2006.			
▪ **Russian Research Reactor Fuel Return (RRRFR)**	**15,632**	**0**	**0**
Reflects the transfer of this activity to the Global Threat Reduction Initiative in FY 2006.			
▪ **Kazakhstan Spent Fuel**	**1,984**	**0**	**0**
Reflects the transfer of this activity to the Global Threat Reduction Initiative in FY 2006..			
▪ **Fuel Cycle Analysis**	**1,343**	**0**	**0**
Reflects the transfer of this activity to the Nuclear Safeguards program in FY 2006.			
▪ **Global Regimes**	**5,141**	**3,873**	**0**
Reflects realignment of this activity to the Office of International Regimes and Agreements.			
▪ **Regional Security**	**8,630**	**7,865**	**0**
Reflects realignment of this activity to the Office of Global Security Engagement and Cooperation.			
▪ **Warhead and Fissile Material Transparency**	**16,431**	**10,209**	**0**
Reflects realignment of this activity to the Office of Dismantlement and Transparency.			
▪ **Emerging Threats**	**11,000**	**0**	**0**
Reflects the transfer of this activity to the Global Threat Reduction Initiative in FY 2006.			
▪ **Foreign Research Reactor Spent Nuclear Fuel**	**4,500**	**0**	**0**
Reflects the transfer of this activity to the Global Threat Reduction Initiative in FY 2006.			
Total, Nonproliferation Policy	**83,474**	**21,947**	**0**

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Export Control			
▪ **Export Control Operations**	**15,341**	**13,797**	**0**
Reflects realignment of this activity to the Office of International Regimes and Agreements.			
▪ **International Nonproliferation Export Control Program**	**6,905**	**5,814**	**0**
Reflects alignment of this activity to the Office of Global Security Engagement and Cooperation.			
Total, Export Control	**22,246**	**19,611**	**0**
International Safeguards			
▪ **Safeguards Policy and Treaty Implementation**	**11,311**	**8,428**	**0**
Reflects implementation of the realignment to the Office of International Regimes and Agreements.			
▪ **International Cooperation**	**5,500**	**5,045**	**0**
Reflects implementation of the realignment to the Office of Global Security Engagement and Cooperation.			
▪ **Nuclear Noncompliance Verification**	**6,000**	**6,871**	**0**
Reflects implementation of the realignment to the Office of Dismantlement and Transparency.			
▪ **International Nuclear Security**	**8,058**	**5,579**	**0**
Reflects implementation of the realignment to the Office of International Regimes and Agreements.			
Congressionally Directed Activity	**See Below**	**TBD**	**0**
The Conference Report, 108-275, accompanying the Consolidated Appropriations Act, 2006 (P.L. 109-103) included, the conferees directed $10,000,000 for initiatives focused on removing nuclear weapons-usable materials from vulnerable sites around the world. The conferees direct the Department to provide $3,000,000 in grants to institutions of higher learning and non-profit entities for research related to nuclear nonproliferation and chemical and biological weapons detection. Each individual grant provided shall not exceed $250,000." For FY 2005 this was spread amongst various sub-categories.			
Total, International Safeguards	**30,869**	**25,923**	**0**
Total, Nonproliferation and International Security	**143,764**	**74,250**	**127,411**

Explanation of Funding Change

	FY 2007 vs. FY 2006 ($000)
▪ **Dismantlement and Transparency**	
The increase is due to the realignment of the Nonproliferation and International Security (NIS) program and the transfer of the HEU Transparency Implementation program into NIS.	**+38,967**
▪ **Global Security Engagement and Cooperation**	
The increase is due to the realignment of the NIS program and the transfer of the Global Initiatives for Proliferation Prevention (GIPP) program into NIS.	**+50,232**
▪ **International Regimes and Agreements**	
The increase is due to the realignment of the activities within the NIS program that includes the $3,000,000 for the enhanced interdiction activities and partially offset by a reduction in Nuclear Safeguards and Export Control Licensing programs.	**+31,787**
▪ **Treaties and Agreements**	
Maintains the support for emerging nonproliferation issues and development of future treaties and agreements work.	**+15**
▪ **International Emergency Management and Cooperation**	
The decrease reflects the completion of the Kazakhstan BN-350 Reactor Shutdown, completion of the emergency management assistance to Ukraine, and delaying completion of projects with China, India and Pakistan.	**-359**
Nonproliferation Policy	
The decrease is due to the realignment of the NIS program to Dismantlement and Transparency, Global Security Engagement and Cooperation, and International Regimes and Agreements.	**-21,947**
International Safeguards	
The decrease is due to the realignment of this activity within the NIS program to Dismantlement and Transparency, Global Security Engagement and Cooperation, and International Regimes and Agreements. .	**-25,923**
Export Control	
The decrease is due to the realignment of this activity within the NIS program to Global Security Engagement and Cooperation and International Regimes and Agreements. .	**-19,611**
Total Funding Change, Nonproliferation and International Security	**+53,161**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	425	438	451
Capital Equipment	3,147	3,242	3,339
Total, Capital Operating Expenses	**3,572**	**3,680**	**3,790**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	464	478	493	507
Capital Equipment	3,441	3,543	3,650	3,758
Total, Capital Operating Expenses	**3,905**	**4,021**	**4,143**	**4,265**

[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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

International Nuclear Materials Protection and Cooperation

Funding Schedule by Activity

(dollars in thousands)

	FY 2005[a]	FY 2006	FY 2007
Overseas Combating Terrorism			
International Nuclear Materials Protection and Cooperation			
Navy Complex	16,983	16,000	17,300
Strategic Rocket Forces/12th Main Directorate	71,835	120,189	129,245
Rosatom Weapons Complex	59,669	85,323	56,505
Civilian Nuclear Sites	86,010	46,847	21,200
Material Consolidation and Conversion	12,903	27,721	16,828
National Programs and Sustainability	56,013	29,700	48,131
Second Line of Defense	75,001	96,950	123,973
International Radiological Threat Reduction[b]	25,037	0	0
Total, International Nuclear Materials Protection and Cooperation	403,451	422,730	413,182

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
International Nuclear Materials Protection and Cooperation	403,351	444,405	530,723	542,859

Description

The program prevents nuclear terrorism by working in Russia and other regions of concern to (1) secure and eliminate vulnerable nuclear weapons and weapons-usable material; and (2) install detection equipment at border crossings and Megaports to prevent and detect the illicit transfer of nuclear material.

Benefits

Within the International Nuclear Materials Protection and Cooperation program (NMP&C), seven subprograms each make unique contributions to Program Goal 02.46.00.00.

An agreement on Nuclear Security Cooperation was reached between the Presidents of the United States (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 Materials Protection Control and

[a] Reflects $84 million from FY 2005 emergency supplemental provided by Public Law 109-013.

[b] Funds requested in Global Threat Reduction Initiative (GTRI) in FY 2006 and FY 2007.

Accounting (MPC&A) expertise training, and protective force equipment. The FY 2007-2011 Future Years Nuclear Security Program supports the implementation of this joint action plan.

The Navy Complex program element improves security of Russian Federation (RF) Navy warhead and weapons usable material by installing improved security systems at RF Navy nuclear warhead sites, RF Navy HEU fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These activities comprise a total of 50 sites: 39 Russian Navy nuclear warhead sites and 11 Russian Navy fuel and other nuclear material storage sites.

The Strategic Rocket Forces (SRF)/12th Main Directorate program element improves security of Russian Federation (RF) warheads by installing improved security systems at RF Strategic Rocket Forces and 12th Main Directorate nuclear warhead sites. A total of 25 SRF sites (at 11 bases) and 9 12th Main Directorate sites have been approved by the U.S. Government for MPC&A upgrades

The Rosatom Weapons Complex program element enhances U.S. national security by providing MPC&A upgrades to the Rosatom nuclear weapons, uranium enrichment, and material processing/storage sites. The Rosatom Weapons Complex is located in closed cities and is comprised of nine sites. The Civilian Nuclear Sites program element installs systems at 31 civilian nuclear sites (18 Russian and 13 Non-Russian).

The Material Consolidation and Conversion (MCC) program element reduces the complexity and the long-term costs of securing weapons-usable nuclear material. The MCC project is designed to significantly reduce the proliferation risk associated with weapons-usable nuclear materials by consolidating excess, non-weapons highly enriched uranium (HEU) and plutonium into fewer, more secure locations and converting highly enriched uranium into low enriched uranium (LEU).

The National Programs and Sustainability element enables the NMP&C program to implement a focused strategy to ensure that programs can be sustained in the Russia Federation (RF) and other partner countries, by establishing and implementing projects to develop regulations and inspection capabilities, site safeguards and security, training and regional support, site sustainability, and secure transportation and proforce upgrades.

The Second Line of Defense (SLD) Core program deploys radiation detection monitors at strategic transit and border crossings and at air and sea transshipment hubs in Russia and other countries to provide these governments with the technical means to detect, deter and interdict illicit trafficking of nuclear and other radioactive materials. The SLD Megaports Program is pursuing cooperation with international partners to deploy and equip key seaports ("Megaports") with radiation detection equipment and to provide training to appropriate law enforcement officials, in order to provide them with the technical means to deter and interdict illicit trafficking in nuclear and other radioactive materials in the maritime system.

Program Assessment Rating Tool (PART)

The Department implemented the PART tool to evaluate selected programs. PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The Department has incorporated feedback from OMB into the FY 2007 International Nuclear Materials Protection and Cooperation (NMP&C) Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2004, the OMB evaluated the NMP&C program using the PART. OMB gave the NMP&C program very high scores of 100 percent on the Purpose and Design, and Strategic Planning Sections; 57 percent on the Program Management Section; and 87 percent on the Program Results Section. OMB attributed these scores to the fact that the NMP&C program has a clear and unique purpose; is well managed; has clear, concise, meaningful and measurable performance metrics; and has demonstrated good progress in achieving its long-term and annual goals. OMB's overall PART rating for NMP&C is 85 percent; its highest category of "Effective."

Major Outyear Considerations

The International Materials Protection and Cooperation Program (NMP&C) outyear funding profile supports efforts to secure and eliminate vulnerable nuclear weapons and weapons-usable materials in Russia and other areas of concern and efforts to prevent and detect the illicit transfer of nuclear material. Significant decreases in funding during the outyears reflects the completion of MPC&A upgrades to warhead and material sites in Russia and the transition to sustainability activities. These decreases are partially offset by increases in the Second Line of Defense program as the program is expanded to include additional sites and Megaports in targeted countries.

To meet the goal of Nuclear Nonproliferation the NMP&C program plans to secure in Russia a total of 73 warhead sites by the end of 2008; approximately 195 buildings containing weapons usable nuclear material by the end of FY 2008; blendown a total of approximately 17 MTs of HEU by the end of 2015; and install radiation detection equipment at approximately 350 border sites and 35 Megaports by the end of 2013. These results will directly support the goal of Nuclear Nonproliferation by securing warheads and weapons usable nuclear materials at their source from theft and or diversion and as a second layer of defense by preventing and detecting the illicit transfer of nuclear materials.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Accelerate the rapid and comprehensive upgrades on at-risk plutonium, highly enriched uranium, and Naval nuclear weapons. (MET GOAL)	Install MPC&A upgrades on nuclear weapons and materials, eliminate weapons-usable materials, and consolidate the number of storage locations for weapons-usable materials into fewer buildings and sites to improve security in Russia. (MIXED RESULTS)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators *	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative number of buildings with weapons-usable material secured (Long-term Output)	R: 109	R: 120	R: 150	T: 175	T: 190	T: 195	N/A	N/A	N/A	By 2008, secure (rapid or comprehensive upgrades complete) approximately 195 buildings containing weapons-usable nuclear material.
Cumulative number of warhead sites with completed MPC&A upgrades (Long-term Output)	R: 30	R: 36 T: 35	R: 47 T: 47	T: 53	T: 58	T: 64	T: 73	N/A	N/A	By December 2008, complete MPC&A upgrades at approximately 73 warhead sites.
Cumulative metric tons of HEU converted to LEU (Long-term Outcome)	R: 4.3	R: 5.4 T: 6.0	R: 7.1 T: 7.5	T: 8.6	T: 9.7	T: 10.9	T:12.3	T: 13.2	T: 14.1	By December 2015, convert 17 MTs of HEU to LEU.
Cumulative number of Second Line of Defense (SLD) sites with nuclear detection equipment installed (Cumulative number of Megaports completed) (Long-term Output)	R: 39	R: 66 (2) T: 74 (3)	R: 87 (4) T: 98 (5)	T: 114 (10)	T: 180 (13)	T: 217 (18)	T: 277 (27)	T: 327 (45)	T: 381 (64)	By December 2013, install radiation detection equipment at approximately 350 border crossing sites and 64 Mega-Ports (414 total SLD sites) (assuming no expansion of program sites).
Cumulative cost in millions of dollars per metric ton to complete rapid security upgrades on Russian weapons usable nuclear material (Efficiency)	N/A	N/A	R: $5.3 T: $5.3	T: $5.5	T: $ 4.5	T: $3.5	N/A	N/A	N/A	By 2008, reduce the cumulative cost of rapid upgrades per metric ton of material secured to $3.5M/MT.

* Consistent with the terms of the Bratislava Agreement, the weapons usable-nuclear material secured performance indicator has been replaced with a new performance indicator to measure the progress of buildings secured under the Agreement's Joint Action Plan. The number of buildings and sites secured is a superior measure of risk reduction because, assuming the goal quantity of 25kg, a building with 1 ton of nuclear material in storage is as great a threat as a building with 10 tons.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Navy Complex	**16,983**	**16,000**	**17,300**

The Navy Complex program element improves security of Russian Federation (RF) Navy warhead and weapons usable material by installing improved security systems at RF Navy nuclear warhead sites, RF Navy Highly Enriched Uranium (HEU) fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These activities comprise a total of 50 sites, 39 Russian Navy nuclear warhead sites and 11 Russian Navy fuel and other nuclear material storage sites. The Navy Complex has refined the process of working with the RF Navy which includes upgrades design driven by vulnerability assessments (VAs), a rapid upgrades phase that is typically completed within six months, a comprehensive upgrades phase requiring 12-18 months to complete, and a sustainability program which assures the systems will remain effective after the installation of upgrades is complete.

NNSA plans to complete MPC&A upgrades at the final 2 Russian Navy nuclear warhead sites by the end of FY 2006 (increasing the total warhead sites secured with either completed rapid and/or comprehensive upgrades) to 39 sites. In FY 2007, NNSA will provide sustainability support such as training and site level maintenance of installed MPC&A upgrades to 16 of these 39 sites which meet interagency requirements for such support.

Comprehensive upgrades were completed on 100 percent of the 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 10 of these sites to ensure that equipment provided is effective in protecting the material.

Strategic Rocket Forces/12th Main Directorate [a]	**71,835**	**120,189**	**129,245**

The Strategic Rocket Forces (SRF)/ 12th Main Directorate program element improves security of RF warheads by installing improved MPC&A systems at RF Strategic Rocket Forces and 12th Main Directorate nuclear warhead sites. Twenty-five SRF sites (at 11 bases) and 9 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 will be based upon the refined process currently in place with the Russian Navy, which includes upgrades design driven by vulnerability assessments (VAs), a rapid upgrades and/or a comprehensive upgrades phase, and a sustainability program, which assures the systems will remain effective after the installation of upgrades is complete.

In FY 2007, NNSA plans to: complete MPC&A upgrades to 5 SRF sites (increasing the total SRF sites secured with either completed rapid and/or comprehensive upgrades) to 19 sites. Continue MPC&A upgrades to the remaining 6 SRF sites and comprehensive MPC&A upgrades to 9 12th Main Directorate sites.

a Beginning in FY 2006, we will be doing both Strategic Rocket Forces and 12th Main Directorate work.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Rosatom Weapons Complex	**59,669**	**85,323**	**56,505**

The Rosatom Weapons Complex program element enhances U.S. national security by providing MPC&A upgrades to the RF Rosatom nuclear weapons, uranium enrichment, and material processing/storage sites. The Rosatom Weapons Complex, located in closed cities, comprises a total of 9 sites. The goal of this joint cooperative program is to identify areas that handle highly attractive material and provide protection against both internal and external threat scenarios.

In FY 2007, the program will: At Mayak, complete all physical protection system integration upgrades at buildings 101, 104, 142, Central Alarm Station, and Secondary Alarm Station within RT-1; complete the physical protection upgrades at Plant 20 for the Central Alarm Station and Secondary Alarm Station; continue the trench work at building 142 to store the plutonium oxide canisters; and complete the Special Nuclear Material Transportation vehicle upgrades; and complete the computerized accounting system at RT-1.

At Tomsk-7, complete comprehensive Material Control &Accounting (MC&A) systems at Bld 201 and the Analytical Laboratory; complete the entry control points to the Radiochemical Plant, Chemical Metallurgical Plant, Conversion Plant, Uranium Enrichment Plant, and Reactor Plant; complete comprehensive physical protection and material accounting upgrades at the Chemical Metallurgical Plant; and complete the entire facility in FY 2007 and prepare for the commissioning ceremony.

At Krasnoyarsk-26, complete construction and load the nuclear material in the new Plutonium storage facility; complete upgrades to the new Central Alarm Station; complete upgrades and load the nuclear material in the Plutonium Storage Facility expansion project; and complete the entire facility in FY 2007 and prepare for the commissioning ceremony.

At Arzamas-16, continue comprehensive upgrades in Areas 1 and 2; complete comprehensive physical protection and material accounting upgrades in Area 8 and complete comprehensive MPC&A upgrades in Area 13.

At Chelyabinsk-70, complete comprehensive physical protection upgrades at Site 8 buildings 1 – 15; complete MC&A rapid upgrades at Site 8 for buildings 8 – 15; complete comprehensive physical protection upgrades at building 723.

Continue sustainability activities at Sverdlovsk-44 and Kransnoyarsk-45.

The serial production enterprises (SPEs) of Rosatom contain a significant portion of the nuclear material residing in the Russian weapons complex. Given the extreme national security sensitivity of these sites for the Russian Federation, Rosatom has not yet permitted security upgrades at these sites. The path forward is to apply the method adopted by the MPC&A Acceleration Working Group and approved by Rosatom to pursue a dialogue with Rosatom to obtain permission to upgrade the security systems at the SPEs.

Civilian Nuclear Sites	**86,010**	**46,847**	**21,200**

The Civilian Nuclear Sites program element installs systems at 31 civilian nuclear sites (18 Russian and 13 Non-Russian). The basic MPC&A upgrade objective is to employ a cost-effective, graded

approach with an initial focus on installing upgrades on the most highly attractive nuclear material at each site. Rapid MPC&A upgrades are installed to mitigate the immediate risk of theft and diversion while longer term, more comprehensive MPC&A upgrades are designed, installed and placed into operation. Following completion of initial rapid and comprehensive site upgrades, U.S. funding continues at a reduced level to help foster site capabilities to operate and maintain installed security systems, supports replacement of equipment, as needed and may support additional security enhancements, e.g., perimeter upgrades, as warranted. This program element will cover such support for those sites with completed MPC&A comprehensive upgrades.

In FY 2007, NNSA plans to complete upgrades at the Elektrostal Machine Building Plant; and provide support for training, procedures, maintenance, equipment repair, critical spare parts, and performance testing and other activities to the sites with completed MPC&A upgrades in order to ensure the sustainability of those upgrades.

In addition, in FY 2007, NNSA plans to continue cooperation with countries outside of Russia and the former Soviet States to increase MPC&A awareness and to provide assistance to protect weapons usable materials when appropriate. This includes engagement with China on modern nuclear material security methodologies and best practices. Planned activities generally include training, technical exchanges, and consultations on how security at nuclear material locations may be improved. With some partners, it may be appropriate to conduct rapid upgrades to sites with weapons usable nuclear materials, which are 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 usable materials by those seeking to produce nuclear weapons for use in potential acts of terrorism.

Material Consolidation and Conversion	**12,903**	**27,721**	**16,828**

The Material Consolidation and Conversion (MCC) program element reduces the complexity and the long-term costs of securing weapons-usable nuclear material. The MCC project is designed to significantly reduce the proliferation risk associated with weapons-usable nuclear materials by consolidating excess, non-weapons HEU and plutonium into fewer, more secure locations. This decreases the number of attractive theft targets and the equipment and personnel costs associated with securing such material. MCC also converts weapons-usable HEU 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 2007, NNSA plans to continue to implement the MPC&A strategy to simplify the nuclear security situation in Russia by converting attractive nuclear material to a less proliferant attractive form (i.e. HEU to LEU) and to consolidate material to fewer sites and fewer buildings where possible. The program is expecting to convert an additional 1.1 MTs of the total 17 MTs of HEU to LEU, (for a cumulative total converted of 9.7 MTs).

National Programs and Sustainability	**56,013**	**29,700**	**48,131**

The National Programs and Sustainability element enables the MPC&A program to implement a focused strategy to ensure that MPC&A programs can be sustained in the Russian Federation (RF) and other partner countries, by establishing and implementing projects to develop regulations and

inspection capabilities, site safeguards and security programs, training and regional support, and site sustainability. 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 Russian Federation.

In FY 2007, the program will accelerate projects to assist the RF in establishing the necessary MPC&A support infrastructure to sustain effective MPC&A operations in the long term. At this time the program plans to develop or revise 130 MPC&A regulations for the Russian Federation to support sustainable MPC&A operations. In FY 2007, a total of 36 MPC&A regulations will be developed or revised; 18 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 continue to manufacture transportation overpacks to prevent theft of nuclear material while in transit, and hardening railcars and trucks to provide additional protection for guards escorting material shipments. In FY 2007, the following will be procured: 4 new cargo railcars hardened with security enhancements for special nuclear material shipments. At this time, it is estimated that a total of 434 transportation overpacks will be manufactured, 169 trucks will be hardened, and 72 railcars will be hardened.

The program will operate and maintain 3 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 Russian MPC&A training, infrastructure curricula and support provisions of MPC&A courses. In FY 2007, fifteen physical protection classes with 300 participants, and 20 material control and accounting classes with 400 participants will be conducted.

The program will also assist the Russian sites in achieving long-term effective operation of their MPC&A Systems 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.

In addition, the program will continue implementation of an MPC&A operations and transition strategy to achieve the goal of fully transitioning operations and maintenance of MPC&A upgrades to full Russian responsibility by working with the Russian Federation to develop the capabilities they need to maintain the safeguards and security of their weapons usable nuclear material.

Second Line of Defense	**75,001**	**96,950**	**123,973**
▪ **Core Program**	**26,301**	**23,760**	**83,855**

The Second Line of Defense (SLD) Core Program deploys radiation detection monitors at strategic transit and border crossings and at air and sea transshipment hubs in Russia and other countries to provide these governments with the technical means to deter and interdict illicit trafficking in nuclear and other radioactive materials. While initial SLD efforts were focused on Russia borders, the program now includes engagement with other countries in eastern Europe, and the Caucuses and Central and South Asia, such as Ukraine, Georgia, Azerbaijan, Turkey and Pakistan. Sites to be addressed are selected through a site prioritization and selection methodology established to

effectively plan and utilize program resources. In FY 2007, radiation detection equipment will be installed at an additional 63 foreign sites, increasing the total non-Megaport sites with completed installations to 167. Provide maintenance and/or repair for radiation detection systems at up to 123 sites in countries where the SLD Core Program has installed such equipment, including Russia, Azerbaijan, Greece, Georgia and Ukraine. Additionally, the program will continue to maintain previously deployed Department of State equipment in 23 countries.

- **Megaports** **48,700** **73,190** **40,118**

The SLD Megaports Program is pursuing cooperation with international partners to deploy and equip key ports with radiation detection equipment and to provide training to selected law enforcement officials, in order to provide them the technical means to detect, deter and interdict illicit trafficking in nuclear and other radioactive materials. This program is closely coordinated with the Department of Homeland Security's (DHS) Bureau of Customs and Border Protection's Container Security Initiative (CSI). By adding radiation detection capabilities at seaports, NNSA will be able to screen cargo for nuclear and radioactive materials that could be used in a weapon of mass destruction or a RDD (dirty bomb) against the US, the host country and our allies.

The ports of interest to DOE have been identified based upon several factors, such as container volume to the U.S., routing criteria and traffic flow characteristics. Under this initiative, NNSA plans to implement the program in up to 35 international seaports. Implementation of the Mega-Ports program at any given port is contingent upon the agreement/invitation of the government in the country in which the port lies.

NNSA is engaged with multiple countries in Europe, Asia and South America to negotiate the implementation of Megaports Initiative in these countries. NNSA continues to aggressively engage with governments and commercial terminal operators in those countries where it is important to implement the Megaports Initiative.

In FY 2007, NNSA plans to complete installations at 3 additional Megaports (increasing the number of completed ports to 13). This involves providing site surveys, vulnerability assessments, radiation detection equipment design procurement and installation. Sustainability support including equipment, maintenance, system checkups and diagnostics and supplemental training will be provided for 10 sites which have completed installations. NNSA will continue to pursue cooperation with international partners interesting in participating in the Megaports initiative.

International Radiological Threat Reduction	**25,037**	**0**	**0**
Total, International Nuclear Materials Protection and Cooperation	**403,451**	**422,730**	**413,182**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
▪ **Navy Complex**	
Increase to provide additional sustainability support to some sites in preparation for transfer of this responsibility to Russian personnel.	**+1,300**
▪ **Strategic Rocket Forces/12th Main Directorate**	
Increase due to the addition of 6 SRF and 2 12th Main Directorate sites for MPC&A cooperation in FY 2006.	**+ 9,056**
▪ **Rosatom Weapons Complex**	
Decrease due to the completion of comprehensive physical protection upgrades at one guarded area within Arzamas -16; completion of the rapid upgrades at building 1A at Plant 20 within Mayak; completion of the Tomsk-7 entry control points at the Radiochemical Plant, Conversion Plant, Chemical Metallurgical Plant, and the Reactor Plant; completion of the upgrades at the Calcination Point within the Radiochemical Plant within the Krasnoyarsk-26 (K-26) facility; and completion of the construction phase of the Plutonium Storage Facility at K-26.	**-28,818**
▪ **Civilian Nuclear Sites**	
Decrease due to the completion of initial MPC&A upgrades within one country outside of the FSU, partially offset by an increase in sustainability assistance requirements to several Rosatom Civilian sites.	**-25,647**
▪ **Material Consolidation and Conversion**	
Decrease due to a lower projected availability of excess HEU to be downblended to LEU.	**-10,893**
▪ **National Programs and Sustainability**	
Increase to accelerate projects critical to the sustainability of effective MPC&A operations in the Russian Federation including: development of regulations, Rostexhnadzor/Rosatom self-inspections of nuclear material physical protection and material control and accounting and secure transportation of special nuclear material.	**+18,431**
▪ **Second Line of Defense**	
Increase in the Core program to accelerate installations of radiation detection equipment at sites in Caucuses region, offset by a decrease in the Megaports program due to acceleration of Megaport installations in FY 2006; completing the installation of radiation detection equipment at 5 additional ports.	**+27,023**
Total Funding Change, International Nuclear Materials Protection and Cooperation	**-9,548**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	FY 2005	FY 2006	FY 2007
General Plant Projects	0	0	0
Capital Equipment	1,090	1,122	1,156
Total, Capital Operating Expenses	**1,090**	**1,122**	**1,156**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0	0
Capital Equipment	1,191	1,226	1,263	1,301
Total, Capital Operating Expenses	**1,191**	**1,226**	**1,263**	**1,301**

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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

Elimination of Weapons-Grade Plutonium Production

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Elimination of Weapons Grade Plutonium Production (EWGPP)			
Seversk Pu Production Elimination	24,900	125,738	84,730
Zheleznogorsk Plutonium Production Elimination	37,245	46,685	119,924
Crosscutting and Technical Support Activities	997	2,000	2,000
DoD Funding Reappropriated	4,189[a]	0	0
Total, EWGPP	**67,331**	**174,423**	**206,654**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Elimination of Weapons Grade Plutonium Production	**182,017**	**139,363**	**24,949**	**0**

Description

The Elimination of Weapons-Grade Plutonium Production (EWGPP) program enables the Russian Federation to permanently cease production of weapons-grade plutonium by replacing plutonium-producing nuclear reactors with fossil-fueled power plants to provide alternative sources of heat and electricity and provide for the shutdown of the reactors.

Benefits

The EWGPP program achieves a major United States (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 Program Goal 02.42.00.00.

The Seversk Plutonium Production Elimination Project subprogram shuts down two of the last three weapons-grade plutonium production reactors by refurbishing an existing 1950s fossil-fueled facility.

The Zheleznogorsk Plutonium Production Elimination Project subprogram shuts down 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. For instance, the Reactor Shutdown project monitors the *quid pro*

[a] Of the $74.0 million transferred from DoD in FY 2003, $4,189,256 was reappropriated in FY 2005 from unobligated balances expiring at the end of FY 2004 to maintain their availability in accordance with the National Defense Authorization Act of 2003.

quo milestone schedule, linking the shutdown of reactor activities with the project construction activities to ensure the reactors are permanently shut down when construction is completed.

Major Outyear Considerations

The EWGPP program outyear funding profile supports efforts to permanently cease production of weapons-grade plutonium by replacing three plutonium-producing nuclear reactors with two fossil-fueled power plants. These plants will provide alternate sources of heat and electricity and provide for the shutdown of the reactors in Russia. Increased funding in FY 2008 over previous estimates is necessary to support a December 2010 completion schedule for the Zheleznogorsk project. Specifically, the increased funding is required for additional progress on construction startup activities. Beyond FY 2008, significant decreases in funding during the outyears reflect the completion of construction of the plants in December 2008 for Seversk and December 2010 for Zheleznogorsk. The Program will be complete in FY 2011 when the last of the three reactors will be shut down.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from OMB into the FY 2007 Elimination of Weapons Grade Plutonium Production (EWGPP) Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2007, OMB reassessed the EWGPP program using PART. OMB gave the EWGPP program very high scores of 100 percent on the Strategic Planning and Program Management Sections; 80 percent on the Purpose and Design Section; and 84 percent on the Program Results Section. Overall, OMB rated the EWGPP 88 percent, its highest category of “Effective”. OMB found the program has a clear and unique purpose, is well-managed, and has a demonstrated track record of achieving good progress towards its annual and long-term goals. In addition, OMB noted that the ultimate goal of the program is to shut down the three existing Russian plutonium production reactors and therefore, the program must ensure the reactors are shut down as the new coal plants are constructed. In response to the OMB findings, the NNSA is working with Russia to ensure replacement reactor construction milestones are linked to nuclear reactor shutdown.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets in the Annual Performance Plan.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of progress towards refurbishing a fossil plant in Seversk shutting down two weapons-grade plutonium production reactors (Long-term Output)	R: 1%	R: 12.9% T: 16%	R: 25.7% T: 32%	T: 55%	T: 79%	T: 93%	T: 100%	N/A	N/A	By December 2008, complete refurbishment of fossil plant at 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)	N/A	R: 1.02	R: 1.01 T: 1.0	T: 1.0	T: 1.0	T: 1.0	N/A	N/A	N/A	Annually, complete work at or below budgeted cost (CPI greater than 1.0 indicates under budget).
Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk shutting down one weapons-grade plutonium production reactor** (Long-term Output)	R: 0.5%	R: 5% T: 3%	R: 4.9% T: 4.8%*	T: 9.6%	T: 33.6%	T: 62.6%	T: 96.4%	T: 98.0%	T: 100%	T: By December 2010, complete construction of fossil plant at Zheleznogorsk.
Annual percentage of Russian weapons-grade plutonium production capability eliminated from its 2003 baseline of 1.2 MT/yr (0.4 MT per reactor) (Annual Outcome)	N/A	R: 0 T: 0	R: 0 T: 0	T: 0	T: 0	T: 0	T: 67%	T: 67%	T: 67%	T: By 2011, eliminate 100% of Russia's current capability to produce 1.2 MT of weapons-grade plutonium per year (0.4 MT at each of three reactors).

* The Zheleznogorsk project received Critical Decision-1 approval for Preliminary Baseline Range/cost estimates in December 2004. The CD-1 total project cost (TPC) was higher than the original TPC estimate. Hence, the 2005 cumulative completion percentage Target, 4.8%, is lower than the 2004 non-comparable Result amount of 5%.

** The FY 2007 thru FY 2011 FYNSP Target percentages assume receipt of the committed International Participation contribution amounts of $12.8 million in 2005, $6.83 million in 2006, and $9.8 million in FY 2007. FY 2006 shortfall is addressed by reprogramming.

Detailed Justification

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Seversk Plutonium Production Elimination	**24,900**	**125,738**	**84,730**

The Seversk Plutonium Production Elimination Project provides for the shutdown of two of the last three weapons-grade plutonium production reactors by December 2008, by refurbishing an existing 1950s era fossil-fueled facility to provide replacement energy. The Russian Federation (R.F.) began upgrades in 1978 to the fossil-fueled facility and the U.S. has built on those efforts. In March 2003, an associated U.S./R.F. agreement was revised from a reactor core-conversion approach to the fossil-fueled power plant replacement approach. Final approval of Critical Decision-0, Justification of Mission Need, occurred in December 2002. In August 2003, Washington Group International was selected as the U.S. contractor to interface with the R.F. integrating contractor, provide technical project implementation and management support efforts, verify the Russian work performed, and provide appropriate payments after verification. The R.F. integrating contractor subcontracts most of the on-site work to Russian performance contractors.

In the first half of FY 2004, the original 2001 Russian cost estimates were reviewed leading to adjustments to the project cost estimate, the work scope, and the work configuration. Part of these adjustments included a reduction in the number of boilers from 13 to 10 (plans include 1 new, 7 replacement, and 2 refurbished boilers). These efforts supported the Critical Decision (CD) reviews and approvals in June 2004 for CD-1, Preliminary Baseline, and CD-3A, Long-lead Procurements. In November 2004, CD-2, Performance Baseline, with a total project cost of $387.3 million was approved along with CD-3 for Start of Construction. The refurbishment of the Seversk Thermal Heat and Electricity Plant (TETs) then began with tasks for adding a new boiler unit, replacing a turbine generator, providing a new fuel conveying system, and refurbishing two boiler units.

In late FY 2004 and early FY 2005 and at the EWGPP program's request, the U.S. Army Corps of Engineers reviewed the project's Performance Baseline and determined that the adjusted cost and schedule were appropriate. In addition, all appropriate DOE project management requirements were performed in accordance with the DOE Order 413.3 and are on schedule to remain so.

In FY 2005, work continued on the new boiler unit, the first larger turbine generator, the new fuel conveying system, and two replacement boilers. Work was initiated on the second smaller turbine generator, two more boiler units, auxiliary equipment, and the auxiliary structures. For the new boiler unit, specific tasks included completing the working design and acquisition of equipment and materials, and beginning construction and installation efforts. For the first turbine generator, specific tasks included completing the working design, acquisition of equipment and materials, dismantling of existing equipment, and beginning construction and installation efforts. For the second turbine generator, specific tasks included beginning the working design, acquisition of equipment and materials, and the dismantling of existing equipment. Refurbishment of the first two boiler units, as well as installation of the fuel conveying system commenced. Work began on replacement of the second two boiler units. For the auxiliary equipment (such as turbine cooling water pumps), specific tasks included: completing the working design; beginning acquisition of equipment and materials; and beginning construction for such structures as the Fuel and Lubrication Storage Depot.

The U.S. contractor provided oversight while monitoring schedule and cost compliance from the Moscow-based program management office and the established field office in the Tomsk region of

southern Siberia. The Russian integrating contractor, Rosatomstroi released competitive tenders to pre-qualified Russian general contractors, and material and equipment suppliers for the majority of long lead equipment and construction work. The subcontract selection process was based on both technical competence and overall cost. A thorough external independent review was performed by the U.S. Army Corps of Engineers to evaluate the reasonableness of the total project estimate and to validate that the project had the management systems in place to successfully complete the power plant refurbishment. A formalized risk mitigation plan also was finalized and implemented.

The FY 2006 funding supports equipment fabrication and installation activities for this phase of construction. Specifically, efforts include: commencement of installation of the first larger turbine generator, and start of preparation and construction on the remaining five boilers. Work on auxiliary systems include: preparation and installation of water treatment system upgrades; work on preparation and construction of the coal-handling facilities; site preparation, construction, and installation of electrical systems; substantial installation work on the Plant Distributed Controls System (DCS); commencement of construction of the main control building, circulating and feedwater systems, and air pollution control.

The FY 2007 funding requirements will decrease as procurements for major equipment are completed. Final payments will be made for the last boilers, turbines, and coal handling system. The following installation work on Boilers 5, 10, 16, 18, 21 Turbine 13, Stage 2 of the Coal Handling System, Municipal & Industrial Heating, Water Treatment, Air Pollution Control, and the Circulating & Feedwater systems will be completed. The remaining work after FY 2007 includes: complete refurbishment of Boiler 2 and installation of Boilers 3, 4, 7, 8, Turbines 4, 8, Coal Handling Final Stage, DCS, and acceptance and testing of remaining systems.

Zheleznogorsk Plutonium Production Elimination **37,245** **46,685** **119,924**

The Zheleznogorsk Plutonium Production Elimination Project provides for the shut down of the last remaining weapons-grade plutonium production reactor in Russia by constructing a replacement fossil-fueled facility. The project has been broken in three startup areas. Area one is the first two low-pressure boilers and the related infrastructure. Area two is the third and fourth low-pressure boilers. Area three is the high-pressure boiler and power generation facilities.

In March 2003, the Program revised the master U.S./R.F agreement from the previous reactor core-conversion approach to the fossil-fueled power plant replacement approach. Final approval of Critical Decision 0, Justification of Mission Need, occurred in December 2002. In August 2003, Raytheon Technical Services Company was awarded phase one of the U.S. contracts to provide construction management and project oversight during the design phase of the project. The role of the U.S. contractor is to interface with the R.F. integrating contractor, verify Russian work performed, and provide appropriate payments after verification. The R.F. integrating contractor subcontracts most of the on-site work to Russian performance contractors.

In FY 2004, the site was evaluated to determine if existing buildings and structures could be used. The project completed the conceptual design and preliminary site details, obtained Russian regulatory approval, and initiated preliminary design. Early in FY 2004, the original 2001 Russian unvalidated cost estimates were reviewed, leading to adjustments to the project cost estimate, the work scope, and the

(dollars in thousands)

FY 2005	FY 2006	FY 2007

work configuration. This supported Critical Decision 1, Preliminary Baseline, approval in November 2004.

In FY 2005, the project initiated detailed design. Critical Decision 3A for long-lead procurements and site preparation was approved in June 2005. The Energy Systems Acquisition Advisory Board (ESAAB) meeting for Critical Decision 2, performance baseline, and Critical Decision 3, start of construction, was conducted in November 2005.

The U.S. contractor provided oversight while monitoring schedule and cost compliance from the Moscow-based program management office and the established field office in the Krasnoyarsk region of southern Siberia. A thorough design review was conducted with particular focus applied to both limiting construction scope to the statement of objectives and the application of value engineering practices. The Russian integrating contractor, Rosatomstroi released a series of competitive tenders to pre-qualified Russian general contractors, and material and equipment suppliers. The subcontract selection process was based on both technical competence and overall cost. A thorough external independent review was performed by the U.S. Army Corps of Engineers to evaluate the reasonableness of the total project estimate and to validate that the project had the management systems in place to successfully complete the power plant. In addition the Corps reviewed and validated the limited site preparation and long lead procurements that were conducted in FY 2005 for cost, scope, and schedule reasonableness. A formalized risk mitigation plan was also finalized and implemented. In addition, all appropriate DOE project management requirements were performed in accordance with the DOE order 413.3 and are on schedule to remain so. Site preparation and long lead procurement of the low-pressure boilers, electrostatic precipitators, and coal handling system was initiated.

In FY 2006, development of its detailed design and the procurement activities started in FY 2005 will continue. The U.S. contractor provides oversight while monitoring schedule and cost compliance from the Moscow-based Program Management Office and the field office in Krasnoyarsk. At the FY 2006 budget level, full construction will start at the Sosnovoborsk site. The contractor will complete site preparation and construction on startup Area one will show significant process. The United States contractor will continue to track the Russian progress against the mutually agreed Quid Pro Quo reactor shutdown plan.

In FY 2007, the U.S. contractor will 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. Significant progress will be made on the project toward completion of startup Area one for the first two low-pressure boilers and the related infrastructure. The project will start construction on start Area two. The long lead equipment procured earlier in the project will be delivered and installation will begin. The U.S. contractor will continue to track the Russian progress against the mutually agreed to Quid Pro Quo reactor shutdown plan.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
▪ **International Participation Contributions, Zheleznogorsk Plutonium Production Elimination (Non-add)**	**(12,827)**	**(6,830)**[a]	**(9,800)**

International participation in the EWGPP program was first proposed in the FY 2003 National Defense Authorization Act legislation that transferred the program from DoD to DOE. Later, FY 2005 authorization language was enacted allowing the program to accept and utilize non-U.S. government contributions. NNSA has aggressively sought international sources of funding, in-kind assistance, and other support. NNSA has received commitments of $29.43 million from international participants, including $20 million from the United Kingdom, $7.3 million from Canada, and $1.3 million from the Netherlands, $0.25 million from the Republic of Korea, and $0.58 million from the Republic of Finland. In FY 2005, $12.8 million total was received from the United Kingdom and Canada. In FY 2006, $1.2 million from the Netherlands, $5.6 million from the United Kingdom, Republic of Korea, and Republic of Finland is anticipated. For FY 2007 the current estimate is $9.8 million, from these and other countries that have expressed interest in contributing to this international cooperative effort.

The $12.8 million in contributions already received in FY 2005 will provide for completion of several design activities and for the commencement of limited construction-related activities, as supported by the Critical Decision 3A approval for Long-lead Time Procurements and Site Preparation in June 2005. The limited construction includes site preparation and demolition. The long-lead procurements include for four low-pressure boilers, four low-pressure precipitators, and coal handling system components.

Total, Zheleznogorsk Plutonium Production Elimination	**37,245**	**46,685**	**119,924**
Crosscutting and Technical Support Activities	**997**	**2,000**	**2,000**

The crosscutting and technical funding supports project reviews and external reporting (including reports to Congress), contract administration, intergovernmental contract negotiation support, quality assurance, foreign logistical support, and other communications products and services. Also provides the necessary supporting technical and engineering expertise and independent analyses, crosscutting project management system support, and support to the Moscow office of the Resident Officer for Construction.

Other major crosscutting efforts also include for the Reactor Shutdown Plan and International Participation efforts utilizing foreign contributions for the Zheleznogorsk project. A detailed Reactor Shutdown Plan for each site has been developed, which provides linkage between construction milestones for the power plant and the shutdown of the reactors.

[a] FY 2006 and FY 2007 amounts shown represent current international commitments.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
DoD Funding Reappropriated	**4,189**	**0**	**0**

Of the $74.0 million transferred from DoD in FY 2003 with the program itself, $0.2 million was reappropriated as current-year funds and $73.8 million remained prior-year balances with three years of availability for obligation prior to expiration in accordance with the National Defense Authorization Act of 2003. Consequently, $32.1 million of the prior-year funding was reappropriated in FY 2004 upon expiration at the end of FY 2003, and $4.189 million was reappropriated in FY 2005 from unobligated balances expiring at the end of FY 2004.

Total, Elimination of Weapons-Grade Plutonium Production	**67,331**	**174,423**	**206,654**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
▪ **Seversk Plutonium Production Elimination**	
Decrease reflects waning of construction and refurbishment activities as project approaches the 2008 completion date. FY 2007 funding reflect completion of installation work on Boilers 4, 5, 10, 16, 18, Turbine 13, Stage 2 of the Coal Handling System, Municipal & Industrial Heating, Water Treatment, Air Pollution Control, and the Circulating & Feed water Systems.	**-41,008**
▪ **Zheleznogorsk Plutonium Production Elimination**	
Increase to support a December 2010 completion schedule. The increased funding will allow progress on startup Area one and initiation of startup Area two supplying the third and fourth low-pressure boilers.	**+73,239**
Total Funding Change, Elimination of Weapons-Grade Plutonium Production	**+32,231**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
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 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**0**	**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 2006 and FY 2007 funding shown reflects estimates based on actual FY 2005 obligations.

Fissile Materials Disposition

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Fissile Materials Disposition			
U.S. Surplus Fissile Materials Disposition			
Operations and Maintenance (O&M)			
U.S. Plutonium Disposition	52,636	81,550	132,900
U.S. Uranium Disposition	85,500	91,500	86,898
Supporting Activities	20,300	20,000	15,253
Subtotal, O&M	**158,436**	**193,050**	**235,051**
Construction	397,131	241,560	368,210
Total, U.S. Surplus FMD	**555,567**	**434,610**	**603,261**
Russian Surplus Fissile Materials			
Disposition (FMD)			
Russian Materials Disposition	63,493	34,163	34,695
Subtotal, Fissile Materials Disposition	**619,060**	**468,773**	**637,956**
Less Use of Prior Year Appropriation, P.L. 105-277	0	0	-34,695
Total, Fissile Materials Disposition	**619,060**	**468,773**	**603,261**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Fissile Materials Disposition				
U.S. Surplus Fissile Materials Disposition	214,609	162,103	190,184	212,463
Construction	393,849	457,988	457,099	462,618
Russian Surplus Fissile Materials Disposition	34,395	34,378	62,895	62,895
Total, Fissile Materials Disposition	**642,853**	**654,469**	**710,178**	**737,976**

Description

The program goal is to eliminate surplus Russian plutonium and surplus United States (U.S.) plutonium and highly enriched uranium.

Benefits

Within the Fissile Materials Disposition Program, two subprograms each make unique contributions to Program Goal 02.47.00.00.

Major Outyear Considerations

U.S.-Russia Surplus Weapon-Grade Plutonium Disposition

In September 2000, the U.S. and Russia signed the Plutonium Management and Disposition Agreement, which commits each country to dispose of 34 metric tons of surplus weapon-grade plutonium. The National Nuclear Security Administration (NNSA) is responsible for U.S. efforts to dispose of its

weapon-grade plutonium, and for supporting Russia's efforts to dispose of its surplus weapon-grade plutonium. This is a key element of the U.S. Government's nonproliferation strategy to address the potential threat of diversion of materials that can be used in nuclear weapons.

To dispose of surplus weapon-grade plutonium, both the U.S. and Russia will fabricate it into mixed oxide (MOX) fuel for use in existing nuclear reactors. Once irradiated, the plutonium is no longer readily useable for nuclear weapons. To implement this strategy in the United States, NNSA will oversee the design, construction and operation of a MOX Fuel Fabrication Facility and a Pit Disassembly and Conversion Facility (PDCF). NNSA will also oversee the design, construction and operation of a Waste Facility (WF) to process radioactive liquid waste streams from the MOX facility and the PDCF into a solid form for ultimate disposal. These facilities will be built at the Department's Savannah River Site (SRS) near Aiken, South Carolina. Russia will also construct and operate a MOX facility, which is based on the design of the United States MOX facility. The United States and selected G-7 partners (United Kingdom, France, Japan, Italy and Canada) are funding the Russian program, and have already pledged more than $850M to construct the Russian MOX facility.

The September 2000 Agreement and Congressional direction require that the U.S. and Russian programs proceed in rough parallel. As a result, a disagreement with Russia over liability protection for contractor work performed in that country has delayed the U.S. MOX facility construction schedule. The issue has now been successfully resolved. In 2006, NNSA plans to complete site preparation activities, as well as excavate the foundation and begin construction of the U.S. MOX facility. In 2006, plans call for Russia to continue site preparation activities at the planned site of its MOX facility in Seversk, complete site characterization, clear access roads and utility pathways, and continue preparation of licensing documents.

Surplus U.S. Highly Enriched Uranium Disposition

NNSA is also responsible for making U.S. highly enriched uranium (HEU) that has been declared surplus non-weapons usable, primarily by down-blending it to low enriched uranium (LEU). To the extent practical, the program seeks to recover the economic value of the material by using the resulting LEU as nuclear reactor fuel. Three separate disposition activities (Off-Specification HEU Blend-Down, IAEA Replacement HEU, Research Reactor Fuel) are currently being implemented and additional projects are being planned.

In September 2005, NNSA successfully completed its agreement with the U.S. Enrichment Corporation (USEC) to transfer 50 MT of surplus U.S. HEU. Under this agreement, enough HEU for approximately 2,000 weapons was down-blended for peaceful use.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Developed a plan for U.S. and Russian plutonium disposition that is politically, fiscally, and technically feasible, and obtain White House approval. (MET GOAL)	Complete Title II (detailed) design of Mixed Oxide (MOX) Fuel Fabrication Facility for the disposition of excess U.S. weapon-grade plutonium, and commence downblending of off-specification highly enriched uranium (HEU) at the Savannah River Site (SRS). (MET LESS THAN 80% OF TARGET)

Annual Performance Results and Targets

(R = Results; T= Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative percentage of the facility and equipment design, construction, and cold start-up activities completed for the Mixed Oxide (MOX) Fuel Fabrication Facility (Long-term Output)	R: 7%	R: 9% T: 10%	R: 13%	T: 17%	T: 25%	T: 35%	T: 51%	T: 66%	T: 73%	By 2014, complete the facility and equipment design, construction, and cold start-up activities for the Mixed Oxide (MOX) Fuel Fabrication Facility
Cumulative percentage of the design, construction, and cold start-up activities completed for the Pit Disassembly and Conversion Facility (PDCF) (Long-term Output)	R: 13%	R: 18%	R: 24%	T: 24%	T: 33%	T: 34%	T: 35%	T: 41%	T: 44%	By 2016, complete the design, construction, and cold start-up for the Pit Disassembly and Conversion Facility (PDCF)
Cumulative amount of surplus U.S. highly enriched uranium (HEU) down-blended or shipped for down-blending (Efficiency)	R: 45 MT	R: 65 MT	R: 82 MT T: 82 MT	T: 93 MT	T: 103 MT	T: 107 MT	T: 109 MT	T: 110 MT	T: 113 MT	TBD*
Cumulative percentage of design, construction, and cold start-up activities completed for the Russian MOX Fuel Fabrication Facility (Long-term Output)	N/A	N/A	N/A	T: TBD**	T: TBD	T: TBD	T: TBD	T: TBD	T: TBD	TBD

* The date for completion of this target will be determined when the total amount of material to be dispositioned is known.

** Annual targets for the Russian Program will be established when the program schedule is jointly defined.

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
U.S. Surplus Fissile Materials Disposition (O&M)	**158,436**	**193,050**	**235,051**
▪ **U.S. Plutonium Disposition**	**52,636**	**81,550**	**132,900**
• **MOX Fuel Utilization Technology and MOX Other Project Costs**	**23,300**	**40,000**	**103,400**

MOX Fuel Utilization Technology funding is needed to support activities that are not part of the MOX line item project such as lead assemblies, licensing, and fuel transportation. MOX Other Project Costs provide funding for project activities that are O&M funded, such as management oversight, reviews and facility start-up testing.

As part of MOX technology activities: continue fuel transportation and packaging activities; develop information and responses to Nuclear Regulatory Commission (NRC) questions to assure approval of the operating license for the MOX facility; continue modifications to designated commercial nuclear reactors; develop a depleted uranium supply source for the MOX fuel, and continue irradiation of MOX fuel lead assemblies.

As part of project support activities: continue management oversight for construction activities and planning for start-up and operation of the MOX facility.

• **Pit Disassembly and Conversion**	**29,336**	**41,550**	**29,500**

NNSA will continue to operate a demonstration system, the Advanced Recovery and Integrated Extraction System (ARIES), at Los Alamos National Laboratory (LANL) to demonstrate the technology and the capability to disassemble various pit types in the U.S. surplus inventory.

Complete an integrated demonstration of pit disassembly technology in the ARIES system, and support waste management activities for plutonium disposition facilities at SRS.

▪ **U.S. Uranium Disposition**	**85,500**	**91,500**	**86,898**

This funding supports the disposition of U.S. HEU that has been declared surplus primarily by down-blending it to low enriched uranium (LEU). Three separate disposition activities (Off-Specification HEU Blend-Down, IAEA Replacement HEU Project and Research Reactor Fuels) are on going, and additional projects are being planned as materials become available from future weapons dismantlements. Current efforts include:

- Off-Specification HEU Blend-Down Project: Continue processing, down-blending, and LEU loading operations at SRS for shipments to Nuclear Fuel Services (NFS) for eventual use in Tennessee Valley Authority (TVA) nuclear reactors. Continue HEU alloy shipments from SRS to NFS and continue HEU metal and alloy shipments from the Y-12 Plant to NFS.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

- IAEA Replacement HEU Project: Continue down-blending of 17.4 MT of HEU. The goal is to have 9.4 MT of the 17.4 MT down blended by August 2008 to enable current HEU at Y-12 to be withdrawn from safeguards and removed from the Y-12 facility in time for its scheduled decommissioning in FY 2009.

- Research Reactor Fuel Project: Continue down-blending HEU to LEU as fuel for foreign reactors as part of the Reduced Enrichment for Research and Test Reactors program.

- Planning for Additional Projects: Program activities include the planning, processing, characterizing and packaging work necessary to prepare additional surplus HEU material for processing, down-blending, and ultimate disposition. The material is located at various sites in the DOE complex, including LANL, Idaho National Laboratory, and Lawrence Livermore National Laboratory. The program will also continue procurement of ES-3100 containers for shipping surplus HEU.

▪ **Supporting Activities**	**20,300**	**20,000**	**15,253**
• **Surplus Plutonium Storage**	**8,900**	**15,500**	**8,753**

This funding provides safe storage configurations for surplus plutonium at the Pantex Plant and LANL until the plutonium is moved to SRS for disposition. Activities include surveillance and maintenance operations, radiation safety support and training, and thermal monitoring.

Continue to store surplus plutonium at the Pantex Plant and LANL; continue to upgrade plutonium storage facilities at the Pantex Plant; continue to package surplus pits for shipment from the Pantex Plant to LANL for the ARIES demonstration system (the pits are needed as feed material to validate equipment for the PDCF) and continue certification of the surplus pit shipping container.

• **Surplus HEU Storage**	**6,000**	**0**	**0**

The responsibility associated with storing 85 MT of surplus HEU residing at the Y-12 Plant was transferred to DP from the Fissile Materials Disposition Program. Storage requirements will continue until the material is moved to the disposition (blending) site (begun in FY 2000 and estimated to end in FY 2020). Storage operations include planning, providing and maintaining storage facilities, limited repackaging of material as necessary for safety, and surveillance for surplus HEU materials and facilities.

• **NEPA**	**1,500**	**1,500**	**1,500**

National Environmental Policy Act (NEPA) activities include preparing and reviewing Environmental Assessments and Environmental Impact Statements for fissile materials disposition activities, as required. NEPA efforts include preparing Supplement Analyses and amended Records of Decision as well as reviewing existing and new environmental documents for activities affecting the fissile material disposition program.

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
• **Common Technologies and Integration**	**3,900**	**3,000**	**5,000**

The September 2000 U.S. - Russian Plutonium Management and Disposition Agreement (PMDA) requires that, prior to beginning construction of disposition facilities in Russia, the parties agree in writing to monitoring and inspection (M&I) procedures that would provide confidence that each party is disposing of 34 MT of weapon-grade plutonium withdrawn from its defense programs. This funding provides for technical analysis and support for policy-level negotiations among the U.S., Russia, and the International Atomic Energy Agency (IAEA) on M&I issues and other efforts common to plutonium disposition activities.

Continue support for U.S.-Russian activities associated with an effective M&I regime, including continued U.S.-Russian negotiations on the implementation of the M&I regime, consultations with the IAEA related to its role in monitoring activities, and evaluation of monitoring equipment used to collect, analyze and evaluate data. Continue support for efforts common to the MOX facility and the PDCF, including transfer and receipt of materials between facilities and the development of MOX facility feedstock specifications.

Construction	**397,131**	**241,560**	**368,210**
▪ **99-D-141, Pit Disassembly and Conversion Facility**	**32,044**	**23,760**	**78,700**

PDCF will provide the U.S. with the capability to disassemble surplus nuclear weapons pits and convert the resulting plutonium metal to plutonium oxide. Once in powder form, the plutonium can then be fabricated into MOX fuel. The PDCF is a complex consisting of a hardened building that will contain the plutonium processes and conventional buildings and structures that will be used for support personnel, systems, and equipment. The plutonium processing building will contain the following key areas: pit shipping and receiving; assay and storage; plutonium metal extraction and conversion to oxide; and plutonium oxide packaging, assay, storage, and shipment. The NNSA awarded a contract to Washington Group International in 1999 to design this facility, which will be built at SRS.

Complete 100% of the training module design and begin procuring equipment. Complete 85% of the design of the Waste Facility, which will handle waste from the MOX facility and the PDCF.

▪ **99-D-143, MOX Fuel Fabrication Facility**	**365,087**	**217,800**	**289,510**

The MOX facility will provide the U.S. with the capability to fabricate plutonium oxide derived from surplus weapon-grade plutonium to MOX fuel suitable for use in commercial nuclear reactors. The facility will contain the following key areas: shipping and receiving, storage, chemical processing, pellet manufacturing, fuel rod manufacturing, fuel bundle assembly, fuel

(dollars in thousands)

FY 2005	FY 2006	FY 2007

bundle storage and a laboratory. In addition, a number of supporting facilities will be built including an administration building, material receipt warehouse, technical support building, emergency and diesel standby generator buildings, and a reagent building. NNSA awarded a contract to a private consortium, Duke Engineering Services, COGEMA, Inc. and Stone & Webster (DCS) in 1999. The contract requires DCS to design the MOX facility, which will be built at SRS and licensed by the Nuclear Regulatory Commission.

Complete 15% of facility construction including adding additional floors, installing some of the procured equipment, starting installation of mechanical and electrical utilities, and continuing procurement of processing equipment.

Russian Surplus Fissile Materials Disposition	**63,493**	**34,163**	**34,695**
▪ **Russian Plutonium Disposition (funds spent in Russia)**	**33,469**	**18,600**	**19,050**

Major activities for the Russian plutonium disposition program include licensing and constructing a Russian MOX facility based on the U.S. MOX facility design and modifying Russian reactors to irradiate MOX fuel.

- VVER-1000 Reactors: Continue modifying Russian VVER-1000 nuclear reactors to use MOX fuel. Complete installation of plant and system modifications at the Balakovo Nuclear Station needed to support irradiation of MOX fuel lead test assemblies.

- BN-600 Reactors: Continue converting the Russian BN-600 fast reactor from a breeder of plutonium into a net burner of plutonium by removal of the radial breeding blanket. Complete the design of the uranium core without the radial breeding blanket, continue with safety analysis activities, and prepare the manufacturing facility to fabricate core components.

- Licensing, Regulation and Other Program Support: Continue to support licensing activities with the Russian nuclear regulatory agency for the insertion of lead test assemblies into VVER-1000 reactors and for construction of the MOX facility. Continue to support the Gas Turbine-Modular Helium Reactor (GT-MHR) as a potential option for expanding the surplus weapon-grade plutonium disposition capacity in Russia above the initial 34 MT by fabricating and irradiating plutonium fuel samples. Identify methods for transportation and storage of the BN-600 spent blanket and modify plutonium shipping containers to meet new Russian and IAEA standards.

- Implementation of MOX Facility Design: Adapt the detailed design of the U.S. MOX facility for use in Russia, support construction of the Russian MOX facility, and develop and fabricate Russian MOX fuel lead test assemblies. Funds will be augmented with multilateral international funding and U.S. funds appropriated in previous years.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
▪ **U.S. Design, Engineering, and Support (funds spent in the U.S.)**	**30,024**	**15,563**	**15,645**

This activity is for U.S. technical support to assist in adapting the detailed design of the U.S. MOX facility for use in Russia and licensing and constructing the Russian MOX facility.

Provide technical support to obtain Russian regulatory permits and licenses to support the construction and operation of the Russian MOX facility; transfer design documentation; develop and qualify MOX fuel lead test assemblies; modify the Russian VVER-1000 reactors to irradiate MOX fuel; modify the BN-600 to be a net burner of plutonium; assist in modifying and re-certifying plutonium shipping containers and MOX fuel shipping casks; and provide support for GT-MHR activities.

Subtotal, Fissile Materials Disposition.....	**619,060**	**468,773**	**637,956**
Less Use of Prior Year Balance.....	**0**	**0**	**-34,695**
Total, Fissile Materials Disposition.....	**619,060**	**468,773**	**603,261**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
U.S. Surplus Fissile Materials Disposition	
▪ **U.S. Plutonium Disposition**	
MOX Technology and Project Support: The increase is due to ramping up management oversight of MOX activities at SRS since this is a peak construction year.	**+63,400**
Pit Disassembly and Conversion: The decrease is primarily due to a reduction in demonstration activities at LANL.	**-12,050**
▪ **U.S. Uranium Disposition**	
Highly Enriched Uranium: The decrease is primarily due to completing most of the processing of 6 MT of surplus HEU that was added in FY 2005 to the Off-specification HEU Blend-Down Project.	**-4,602**
▪ **Supporting Activities**	
Surplus Plutonium Storage: The decrease is due to delaying fabrication of a new shipping container and shipment of pits from Pantex to SRS. This delay is due to the change in the start-up schedule of the PDCF.	**-6,747**
Common Technologies: The increase is due to additional support required for efforts common to the MOX facility and the PDCF as the program moves from the design phase to the construction phase.	**+2,000**
Total, U.S. Fissile Materials Disposition (O&M)	**+42,001**
Construction	
99-D-141, Pit Disassembly and Conversion Facility: The increase is due to procuring equipment for the training module and designing the Waste Facility.	**+54,940**
99-D-143, MOX Fuel Fabrication Facility: The increase is due to the ramping up MOX construction activities.	**+71,710**
Total, Construction	**+126,650**

	FY 2007 vs. FY 2006 ($000)
Russian Surplus Fissile Materials Disposition	
▪ **Russian Fissile Materials Disposition (funds spent in Russia)**	
The increase is due to the need to accelerate the level of effort associated with constructing the MOX facility in Russia.	**+450**
▪ **U.S. Design, Engineering, and Support (funds spent in the U.S.)**	
The increase is due to the need for increased U.S. oversight of site preparation activities in Russia.	**+82**
Total, Russian Fissile Materials Disposition	**+532**
Subtotal Funding Change, Fissile Materials Disposition	**169,183**
Less Use of Prior Year Balance	**-34,695**
Total Funding Change, Fissile Materials Disposition	**134,488**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	1,608	1,656	1,706
Capital Equipment	3,651	3,761	3,874
Total, Capital Operating Expenses	**5,259**	**5,417**	**5,580**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	1,757	1,810	1,864	1,920
Capital Equipment	3,994	4,114	4,237	4,365
Total, Capital Operating Expenses	**5,751**	**5,924**	**6,101**	**6,285**

Construction Projects[b]

(dollars in thousands)

	Total Estimted Cost (TEC) [a]	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
99-D-141, Pit Disassembly Conversion Facility	1,243,428	146,884	32,044	23,760	78,700	962,040
99-D-143, MOX Fabrication Facility	3,277,984	584,673	365,087	217,800	289,510	1,820,914
Total, Construction		731,557	**397,131**	**241,560**	**368,210**	

[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 2006 and FY 2007 funding shown reflects estimates based on projected FY 2005 obligations.

[b] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2006.

99-D-141, Pit Disassembly and Conversion Facility
Savannah River Site, Aiken, South Carolina

1. Significant Changes

- Delays due to the liability issue with Russia have caused the National Nuclear Security Administration (NNSA) to delay procurement and construction activities for the Pit Disassembly and Conversion Facility (PDCF) and to revise the cost and extend the schedule correspondingly. Revised cost and schedule data are currently being developed and will be validated in FY 2007 as part of the Department's Critical Decision process. The current planning basis is full construction to begin in FY 2011.

- DOE has completed an initial evaluation of radioactive waste processing and disposal capabilities at the Savannah River Site (SRS) to support the MOX facility and the PDCF. The evaluation took into account the availability of existing SRS facilities when needed for the disposition mission as well as additional capabilities required to handle the specialized waste streams generated by plutonium disposition activities. The preferred alternative would maximize the use of existing SRS facilities, as long as they were available, in conjunction with other specialized capabilities as part of a new Waste Facility (WF). DOE is currently analyzing this approach in detail and will make a final decision in the 3Q FY 2006. FY 2007 funding for the design of the WF would not be spent until the preliminary baseline range is approved as part of the Department's Critical Decision process.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2000	2Q FY 1999	4Q FY 2001	2Q FY 2001	4Q FY 2004	N/A	N/A
FY 2001	3Q FY 1999	1Q FY 2002	1Q FY 2002	3Q FY 2005	N/A	N/A
FY 2002	3Q FY 1999	TBD	TBD	TBD	N/A	N/A
FY 2003	3Q FY 1999	1Q FY 2004	TBD	TBD	N/A	N/A
FY 2004	3Q FY 1999	2Q FY 2004	TBD	TBD	N/A	N/A
FY 2005	3Q FY 1999	4Q FY 2005	2Q FY 2005	TBD	N/A	N/A
FY 2006	3Q FY 1999	4Q FY 2005	3Q FY 2010	TBD	N/A	N/A
FY 2007	3Q FY 1999	4Q FY 2007	1Q FY 2011[a]	4Q FY 2015[a]	N/A	N/A

[a] These are preliminary schedules that will be finalized once the Project Performance Baseline is established in FY 2007. The planned construction start and completion dates for the WF are 3Q FY 2008 and 3Q FY 2011 in time to support MOX operations.

3. Baseline and Validation Status [a]

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2000	346,192	0	N/A	N/A	N/A	N/A
FY 2001	346,192	0	N/A	N/A	N/A	N/A
FY 2002	TBD	TBD	N/A	N/A	N/A	N/A
FY 2003	TBD	TBD	N/A	N/A	N/A	N/A
FY 2004	TBD	TBD	N/A	N/A	N/A	N/A
FY 2005	TBD	TBD	N/A	N/A	N/A	N/A
FY 2006	TBD	TBD	N/A	N/A	N/A	N/A
FY 2007	1,243,428	481,628	N/A	1,725,056	4Q FY2007[b]	1,725,056

4. Project Description, Justification, and Scope

This project is comprised of two subprojects: 99-D-141-01, Pit Disassembly and Conversion Facility and 99-D-141-02, Waste Facility (WF).

Subproject 01-Pit Disassembly and Conversion Facility (PDCF)

The PDCF, which will be built at the Savannah River Site, will disassemble surplus nuclear weapon pits and convert the resulting weapon-grade plutonium metal to a powder form that can be fabricated into 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. The facility's operating life is expected to be approximately 7.5 years but could easily be extended to disassemble and convert additional quantities of surplus nuclear weapon pits. After completing its mission, the PDCF will be deactivated, decontaminated, and decommissioned over three to four years.

The PDCF is a complex consisting of a hardened building that will contain the plutonium processes and conventional buildings and structures that will contain support personnel, systems, and equipment. The plutonium processing building will occupy approximately 115,000 square feet and contain the following key areas: pit receiving, assay and storage; plutonium metal extraction and conversion to oxide; and plutonium oxide packaging, assay, storage, and shipment. This building will be equipped with storage for incoming pit materials and for plutonium oxide and also includes areas for recovery, decontamination, and declassification of other components resulting from the disassembly of the nuclear weapon pits. The conventional buildings and structures, which do not contain any radioactive materials, will occupy approximately 50,000 square feet and will contain offices; change rooms; a central control station; non-radioactive waste treatment; and packaging, storage, and shipment systems.

The PDCF is a first-of-a-kind facility. The United States has never before constructed and operated a large-scale production facility for disassembling various categories of nuclear weapons pits. As part of the PDCF project, a training module will be constructed to: verify the operation and functionality of specialized equipment including software in the PDCF, validate process control systems, train personnel

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2007.

[b] No construction funds will be used until the Performance Baseline has been validated.

prior to completion of the actual processing building and test key system components in a cold, non-radiological environment.

This subproject consists of the following: design and construction of the buildings and structures, including the training module for PDCF operators; design, procurement, installation, testing, and start-up of equipment to disassemble pits and convert the plutonium metal from nuclear weapon pits to oxide form; and associated supporting equipment, components, and systems. The PDCF will meet Nuclear Regulatory Commission (NRC) licensing standards, but will not be licensed by the NRC.

The work planned for FY 2007 involves the completion of the design and start of procurement for the training module.

Subproject 02-Waste Facility (WF):

Although NNSA is working with the Office of Environmental Management to determine the most cost-effective approach for handing the waste generated by plutonium disposition operations, the results of the initial evaluation indicate that DOE will need to build a new Waste Facility (WF). The WF, which would be built adjacent to the PDCF, would process radioactive liquid waste streams from the MOX facility and the PDCF into a solid form for ultimate disposal. The radioactive liquid wastes are composed of one high-activity and two low-activity streams. The high-activity stream contains significant amounts of americium removed from plutonium oxide during polishing in the MOX facility. The facility's operating life would be approximately 15 years but could easily be extended to accommodate fabrication of additional surplus plutonium into MOX fuel at the MOX facility and the PDCF. After completing its mission, the WF would be deactivated, decontaminated, and decommissioned over three to four years.

This subproject consists of the following: design, construction, procurement, installation, and startup testing of structures and equipment. The facility, which would not exceed 48,000 square feet, would be a single story structure with a high bay made up of a combination of hardened (concrete) and conventional steel structures. A concrete-cell configuration would be provided to process the high-activity waste stream in the building. The conventional steel structure, which would be composed of steel siding on structural steel members, would contain the low-activity processes and support systems. The major pieces of process equipment would include tanks, evaporators, and solidification equipment.

The work planned for FY 2007 is to complete 85% of the detailed design of the WF and to procure long-lead equipment.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- PDCF & WF Critical Decision – 0: Approve Mission Need – 1Q FY 1998
- WF Critical Decision – 1: Approve Preliminary Baseline Range – 3Q FY 2006
- PDCF Critical Decision – 2: Approve Performance Baseline – 4Q FY 2006
- WF Critical Decision – 2: Approve Performance Baseline – 4Q FY 2007
- PDCF External Independent Review Final Report – TBD

- WF External Independent Review Final Report – TBD
- PDCF Critical Decision – 3: Approve Start of Construction – 2Q FY 2008
- WF Critical Decision – 3: Approve Start of Construction – 1Q FY 2008
- WF Critical Decision – 4: Approve Start of Operations – 3Q FY 2012
- PDCF Critical Decision – 4: Approve Start of Operations – 4Q FY 2017

5. Financial Schedule [a]

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
1999	20,000	20,000	211
2000	18,751	17,396	13,449
2001	19,956	17,804	17,834
2002	11,000	14,507	23,377
2003	34,657	34,657	42,662
2004	42,520	41,920	35,140
2005	32,044	32,644	33,368
2006	19,372	19,372	32,259
2007	42,000	42,000	42,000
2008	2,000	2,000	2,000
Total, Design (99-D-141)	242,300	242,300	242,300
Construction			
2006	4,388	4,388	4,388
2007	36,700	36,700	36,700
2008	58,000	58,000	58,000
2009	58,500	58,500	58,500
2010	148,500	148,500	148,500
2011	212,100	212,100	212,100
2012	220,000	220,000	220,000
2013	200,000	200,000	200,000
2014	62,940	62,940	62,940
Total, Construction	1,001,128	1,001,128	1,001,128
Total TEC	1,243,428	1,243,428	1,243,428

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2007.

6. Details of Project Cost Estimate [a]

Total Estimated Costs

Sub-Project 01 – Pit Disassembly and Conversion Facility

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	213,000	160,200
Construction Phase		
Site Preparation	6,100	TBD
Equipment	138,000	TBD
All other construction	615,528	TBD
Contingency	81,500	TBD
Total, Construction	841,128	TBD
Total, TEC	1,054,128	TBD

Sub-Project 02 – Waste Facility

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design	29,300	25,700
Construction Phase		
Site Preparation	1,300	TBD
Equipment	35,600	TBD
All other construction	93,100	TBD
Contingency	30,000	TBD
Total, Construction	160,000	TBD
Total, TEC	189,300	TBD

Other Project Costs

Sub-Project 01 – Pit Disassembly and Conversion Facility

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	251,970	TBD
Start-up	153,380	TBD
Offsetting D&D		
D&D for removal of the offsetting facility	N/A	TBD
Other D&D to comply with "one-for-one" requirements	N/A	TBD
D&D contingency	N/A	TBD
Total, D&D	N/A	TBD
Contingency for OPC other than D&D	39,570	TBD
Total, OPC	444,920	TBD

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2007.

Sub-Project 02 – Waste Facility

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	19,208	TBD
Start-up	16,000	TBD
Offsetting D&D		
D&D for removal of the offsetting facility	N/A	TBD
Other D&D to comply with "one-for-one" requirements	N/A	TBD
D&D contingency	N/A	TBD
Total, D&D	N/A	TBD
Contingency for OPC other than D&D	1,500	TBD
Total, OPC	36,708	TBD

7. Schedule of Project Costs [a]

Sub-Project 01 – Pit Disassembly and Conversion Facility

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	189,000	24,000	0	0	0	0	0	213,000
TEC (Construction)	4,388	32,400	15,400	18,500	100,500	187,000	482,940	841,128
OPC Other than D&D	229,320	26,500	26,100	22,500	22,500	28,000	90,000	444,920
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total, Project Costs	422,708	82,900	41,500	41,000	123,000	215,000	572,940	1,499,048

Sub-Project 02 – Waste Facility

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	9,300	18,000	2,000	0	0	0	0	29,300
TEC (Construction)	0	4,300	42,600	40,000	48,000	25,100	0	160,000
OPC Other than D&D	6,708	3,000	5,000	5,000	5,400	5,800	5,800	36,708
Offsetting D&D Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total, Project Costs	16,008	25,300	49,600	45,000	53,400	30,900	5,800	226,008

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2007.

8. Related Operations and Maintenance Funding requirements

Sub-Project 01 – Pit Disassembly and Conversion Facility

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2017
Expected Useful Life (number of years).....	7-1/2
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

Sub-Project 02 – Waste Facility

Start of Operation or Beneficial Occupancy (fiscal quarter).....	3Q FY 2012
Expected Useful Life (number of years).....	15
Expected Future start of D&D for new construction (fiscal quarter).....	N/A

(Related Funding requirements)

Sub-Project 01 – Pit Disassembly and Conversion Facility

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	TBD	N/A	TBD	N/A
Maintenance	TBD	N/A	TBD	N/A
Total Related funding	TBD	N/A	TBD	N/A

Sub-Project 02 – Waste Facility

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	TBD	N/A	TBD	N/A
Maintenance	TBD	N/A	TBD	N/A
Total Related funding.....	TBD	N/A	TBD	N/A

9. Required D&D Information

Sub-Project 01 – Pit Disassembly and Conversion Facility

N/A

Sub-Project 02 – Waste Facility

N/A

10. Acquisition Approach

Sub-Project 01 – Pit Disassembly and Conversion Facility

A cost plus fixed-fee contract for preliminary design and a cost plus award-fee contract for detailed design have been awarded for the PDCF. The procurement strategy includes an option for construction inspection services (Title III), which DOE will decide whether to exercise during the Title II design phase. A purchase order for procurement of long-lead equipment fabrication will be issued approximately one to two years prior to the start of construction.

It is anticipated that fixed-price construction contracts for the PDCF will be awarded on the basis of competitive bidding.

Sub-Project 02 – Waste Facility

The WF design service was procured through the Savannah River Site M&O contract. A purchase order for procurement of long-lead equipment for the WF would be issued approximately one year prior to start of construction. It is anticipated that fixed-price construction contracts for the WF will be awarded on the basis of competitive bidding.

99-D-143, Mixed Oxide Fuel Fabrication Facility
Savannah River Site, Aiken, South Carolina

1. Significant Changes

- Significant progress has been made on the U.S. Mixed Oxide (MOX) Fuel Fabrication Facility. The Nuclear Regulatory Commission (NRC) granted a construction authorization for the MOX facility in March 2005. This is the first time that the NRC has authorized the construction of a fuel fabrication facility. Site preparation activities began in 1Q FY 2006 and full construction is planned to start in 4Q FY 2006. Following approval from the NRC, MOX fuel lead assemblies fabricated from surplus weapon-grade plutonium are currently being irradiated in a commercial nuclear reactor in South Carolina.

- Despite this progress, delays due to the liability issue with Russia have caused the National Nuclear Security Administration (NNSA) to delay procurement and construction activities for the MOX facility and to revise the cost and extend the schedule correspondingly. Revised cost and schedule data for the MOX facility are currently undergoing validation as part of the Department's Critical Decision process.

- Although design costs for the MOX facility have increased from $243 million to $765 million, the primary reasons for this increase include funding some design work for gloveboxes and enhanced aqueous polishing during the design phase as opposed to the construction phase, as well as increasing design work to adapt the facility to handle and treat several tons of impure plutonium resulting from the cancellation of plutonium immobilization. Further adding to design cost growth are delays resulting from the liability issue, which have caused NNSA to modify the acquisition strategy for much of the equipment and software design from being procured by outside vendors to being designed by the existing contractor. The remainder of the design cost growth is due to the underestimation of scope and effort and the unanticipated complexity in adapting a commercial French fuel fabrication facility design to meet U.S. requirements for handling weapon-grade plutonium.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2000	2Q FY 1999	4Q FY 2001	1Q FY 2002	4Q FY 2005	N/A	N/A
FY 2001	2Q FY 1999	3Q FY 2002	4Q FY 2002	1Q FY 2006	N/A	N/A
FY 2002	2Q FY 1999	4Q FY 2002	2Q FY 2003	1Q FY 2007	N/A	N/A
FY 2003	2Q FY 1999	4Q FY 2003	2Q FY 2004	4Q FY 2007	N/A	N/A
FY 2004	2Q FY 1999	1Q FY 2004	2Q FY 2004	4Q FY 2007	N/A	N/A
FY 2005	2Q FY 1999	3Q FY 2004	3Q FY 2005	2Q FY 2009	N/A	N/A
FY 2006	2Q FY 1999	1Q FY 2005	3Q FY 2005	TBD	N/A	N/A
FY 2007	2Q FY 1999	4Q FY 2009	4Q FY 2006	4Q FY 2014	N/A	N/A

3. Baseline and Validation Status [a]

(dollars in thousands)

	TEC	OPC, except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2000	383,186	0	N/A	N/A	N/A	N/A
FY 2001	398,186	0	N/A	N/A	N/A	N/A
FY 2002	TBD	TBD	N/A	N/A	N/A	N/A
FY 2003	TBD	TBD	N/A	N/A	N/A	N/A
FY 2004	TBD	TBD	N/A	N/A	N/A	N/A
FY 2005	TBD	TBD	N/A	N/A	N/A	N/A
FY 2006	TBD	TBD	N/A	N/A	N/A	N/A
FY 2007	3,277,984	354,108	N/A	3,632,092	3Q FY 2006	3,632,092

4. Project Description, Justification, and Scope

Description and Scope

The U.S. MOX facility, which will be built at the Savannah River Site, will combine surplus weapon-grade plutonium oxide with depleted uranium to form MOX fuel assemblies that will be irradiated in 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 facility's operating life is expected to be approximately 12 years but could easily be extended to dispose of additional quantities of surplus weapon-grade plutonium. After completing its mission, the facility will be deactivated, decontaminated, and decommissioned over three to four years.

The MOX facility will be designed to receive and process 3.5 metric tons (MT) of plutonium oxide per year, and will be capable of expanding this throughput to 4 MT per year to meet plutonium disposition rate provisions in the 2000 U.S.-Russian Plutonium Management and Disposition Agreement. The plutonium oxide will be provided by the Pit Disassembly and Conversion Facility (PDCF) and come from other selected inventories of weapon-grade plutonium within the DOE complex. The facility will also have the capacity to store incoming plutonium oxide for two years.

The MOX facility will occupy approximately 441,000 square feet and perform all the material processing and fabrication operations needed to produce MOX fuel. MOX facility operations include: aqueous polishing (AP) to purify some of the plutonium oxide; blending and milling; pelletizing; sintering; grinding; fabricating fuel rods; bundling fuel assemblies; and storing feed material, pellets, and fuel assemblies. The facility also includes a laboratory and space for use by a monitoring and inspection team. Adjacent to the MOX process areas, 140,000 square feet of structures will be used for secure shipping and receiving, material receipt, utilities, and technical support.

The design of the MOX facility is based on processes and facilities that have been successfully operating in France for decades, specifically Cogema's MELOX and La Hague facilities. The MOX facility is being designed and built to meet U.S. conventions, codes, standards, and regulatory requirements, and will be licensed by the NRC.

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2006.

FY 2006 and FY 2007 Description of Activities
Initial site preparation activities began in 1Q FY 2006. These activities include site clearing, grubbing, grading, excavating the foundation, adding a power substation and power lines, and installing a concrete batch plant and storm water collection system.

In FY 2006, full construction is expected to begin with the award of the structural subcontract. Design efforts for the facility, equipment and software will continue. Long-lead equipment and materials procurement is planned for 3Q FY 2006.

In FY 2007, pouring of the concrete foundation will begin. Construction activities will continue with the first floor slab and walls of the AP building. First floor 'trapped' tanks will be installed. Equipment procurement and software design will continue.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order

- Critical Decision – 0: Approve Mission Need – 1Q FY 1997
- Critical Decision – 1: Approve Preliminary Baseline Range – 1Q FY1997
- Critical Decision – 2: Approve Performance Baseline – 4Q FY 2006
- External Independent Review Final Report – Date – 4Q FY 2006
- Critical Decision – 3: Approve Start of Construction – 4Q FY 2006
- Critical Decision – 4: Approve Start of Operations – 4Q FY 2014

5. Financial Schedule [a]

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
1999	28,000	9,600	2,545
2000	12,375	30,775	33,512
2001	25,943	25,943	29,938
2002	65,993	65,993	52,513
2003	92,088	92,088	82,022
2004	81,081	81,081	93,457
2005	165,200	165,200	160,768
2006	144,138	144,138	148,658
2007	86,944	86,944	82,273
2008	63,548	60,548	65,219
2009	0	3,000	14,405
Total, Design includes equipment design (99-D-143)	765,310	765,310	765,310
Construction			
2004	279,193	0	0
2005	199,887	57,970	0
2006	73,662	321,230	78,767
2007	202,566	372,105	377,962
2008	270,301	274,244	459,740
2009	399,488	397,766	418,857
2010	308,599	308,635	377,625
2011	250,518	247,793	253,223
2012	294,721	228,464	241,764
2013	106,358	177,086	129,575
2014	127,381	127,381	175,161
Total, Construction	2,512,674	2,512,674	2,512,674
Total TEC	3,277,984	3,277,984	3,277,984

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2006.

6. Details of Project Cost Estimate [a]

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Preliminary and Final Design (includes Equipment Design)	765,310	242,939
Construction Phase		
Site Preparation	47,126	0
Equipment	331,674	0
All other construction	1,878,874	0
Contingency	255,000	0
Total, Construction	2,512,674	TBD
Total, TEC	3,277,984	TBD

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Conceptual Planning	35,000	TBD
Start-up	274,108	TBD
Offsetting D&D		
D&D for removal of the offsetting facility	0	0
Other D&D to comply with "one-for-one" requirements	0	0
D&D contingency	0	0
Total, D&D	N/A	N/A
Contingency for OPC other than D&D	45,000	TBD
Total, OPC	354,108	TBD

7. Schedule of Project Costs [a]

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design including equipment)	603,413	82,273	65,219	14,405	0	0	0	765,310
TEC (Construction)	78,767	377,962	459,740	418,857	377,625	253,223	546,500	2,512,674
OPC Other than D&D	123,400	50,000	33,500	34,550	35,400	60,300	16,958	354,108
Offsetting D&D Costs	0	0	0	0	0	0	0	0
Total, Project Costs	805,580	510,235	558,459	467,812	413,025	313,523	563,458	3,632,092

[a] All outyear numbers are preliminary estimates and will be finalized once a Project Performance Baseline is established in FY 2006.

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2015
Expected Useful Life (number of years)	12
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	TBD	100,500[a]	TBD	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

The procurement strategy for the MOX facility involves awarding a base contract for the design and licensing with three subsequent contract options for construction, operations and deactivation. The base contract was awarded on March 22, 1999 to the consortium of Duke, Cogema, Stone and Webster (DCS). This base contract also includes fuel qualification activities and reactor license modifications required to irradiate MOX fuel.

In FY 2002, DOE modified its procurement strategy to segment the construction phase into three options for work. Option 1A includes equipment and software design, procurement engineering, basic ordering agreements, and related project management support. Option 1B is for construction of the MOX facility, including all procurement, equipment fabrication, construction, construction management services, support structures and related infrastructure, installation checks and testing prior to actual startup, and project management functions associated with these efforts. Option 1C includes start up of the MOX facility. Options 1B and 1C may be combined.

Actual physical construction will be through fixed-price subcontracts to the extent practical, with a cost-type contract for construction management services. The MOX facility will be Government-owned and contractor-operated under an incentivized prime contract. It is expected that during the facility's operating phase, operating costs will be partially offset by the value of the MOX fuel, which will displace low enriched uranium (LEU) fuel that the utility would have otherwise purchased.

[a] Annual operating costs taken from FY 2002 Report to Congress: Disposition of Surplus Defense Plutonium at Savannah River.

Global Threat Reduction Initiative (GTRI)

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Global Threat Reduction Initiative			
Reduced Enrichment for Research and Test Reactors (RERTR)[a]	0	24,732	32,096
Russian Research Rector Fuel Return (RRRFR)[a]	0	14,703	30,025
Kazakhstan Spent Fuel[a]	0	8,000	3,934
U.S. Foreign Research Reactor Spent Nuclear Fuel Acceptance (FRRSNF)[b]	0	8,100	6,340
U.S. Radiological Threat Reduction (USRTR)[c] (Homeland Security)	0	12,566	9,441
International Radiological Threat Reduction (IRTR) (Overseas Combating Terrorism)[d]	0	23,894	18,299
Emerging Threats and Gap Materials (Overseas Combating Terrorism)[e]	0	5,000	5,683
Global Research Reactor Security[f]	0	0	1,000
Total, Global Threat Reduction Initiative	**0**	**96,995**	**106,818**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Global Threat Reduction Initiative	**120,619**	**129,085**	**115,635**	**116,649**

Description

The Global Threat Reduction Initiative (GTRI) mission is to identify, secure, remove and/or facilitate the disposition of high-risk, vulnerable nuclear and radioactive materials around the world that pose a potential threat to the United States (U.S.) and the international community.

[a] Program transferred from NIS/Nonproliferation Policy to GTRI in FY 2006.

[b] FRRSNF transferred from Environmental Management (EM) to GTRI in FY 2006.

[c] Program transferred from Off-Site Source Recovery Project to GTRI in FY 2006.

[d] Program transferred from MPC&A to GTRI in FY 2006.

[e] Program transferred from NIS to GTRI in FY 2006.

[f] Program transferred to GTRI from the International Nuclear Security Program within NIS.

Benefits

Within the current Global Threat Reduction Initiative (GTRI) program, eight subprograms each make important and unique contributions to Program Goal 02.64.00.00.

The Reduced Enrichment for Research and Test Reactors (RERTR) subprogram supports the minimization and, to the extent possible, elimination of the use of highly enriched uranium (HEU) in civil nuclear applications by working to convert research reactors and radioisotope production processes to the use of low enriched uranium (LEU) fuel and targets throughout the world. It develops technologies needed to substitute LEU for HEU in research and test reactors and medical isotope production processes, and provides assistance in reactor conversion activities. RERTR coordinates closely with the RRRFR and FRRSNF subprograms (below).

The Russian Research Reactor Fuel Return (RRRFR) subprogram prevents proliferation of nuclear weapons by repatriating to Russia fresh and irradiated Russian-origin HEU fuel from Soviet-/Russian-supplied research reactors throughout the world. 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 included developing a prioritized plan for returning all Russian-origin fresh and spent nuclear fuel inventories currently stored outside of eligible research reactor cores in third countries. In accordance with this plan, DOE will work to accelerate and complete all of these shipments by 2010.

The Kazakhstan Spent Fuel subprogram prevents the proliferation of nuclear weapons by providing safe and secure long-term storage of the nearly three tons of weapons-grade plutonium in the BN-350 spent fuel, from the BN-350 fast breeder reactor, enough material for hundreds of nuclear weapons.

The U.S. Foreign Research Reactor Spent Nuclear Fuel Acceptance (FRRSNF) subprogram supports the implementation of the U.S. HEU minimization policy by accepting eligible HEU and LEU spent nuclear fuel and HEU target material that contain uranium enriched in the United States or disposing of such material in an alternate acceptable disposition path.

The U.S. Radiological Threat Reduction (USRTR) subprogram reduces the risk posed by vulnerable radiological materials in the U.S. that could be used in a Radiological Dispersal Device (RDD) or “dirty bomb”.

The International Radiological Threat Reduction (IRTR) subprogram reduces the risk internationally posed by vulnerable radioactive materials that could be used in a Radiological Dispersal Device (RDD) or “dirty bomb”.

The Emerging Threats and Gap Materials (ET) subprogram addresses those nuclear materials that are not covered by existing programs and could include: United States-origin HEU nuclear fuel from reactors converted to LEU *not* covered under the FRR SNF Acceptance program; separated (Plutonium) Pu and Pu-bearing materials; and HEU materials of non-U.S. and non-Russian origin, by securing, recovering or facilitating final disposition of such materials. Highest priority is given to special nuclear material located in countries of proliferation concern.

The Global Research Reactor Security (GRRS) subprogram, transferred from the Nonproliferation and International Security program, provides security upgrades at sites where security is found to be below internationally recognized guidelines to protect vulnerable nuclear material at research reactors and related facilities outside of the U.S. and the former Soviet Union from theft, diversion, and sabotage.

Major Outyear Considerations

The outyear funding profile supports continued threat reduction by the U.S and International Radiological Threat Reduction Program responding to the potential malicious use of high-risk radiological sources in Radiological Dispersal Devices ("dirty bombs").

Domestically, the Program recovers and manages excess and unwanted sealed radioactive sources possessed by U.S. licensees, where such sources are of concern for use in a radiological dispersal device. In addition, the program also addresses sources that exceed the limits for commercial disposal, which are considered Greater Than Class C (GTCC) and are a Department of Energy responsibility under P.L. 99-240. In some domestic cases, it may also address radioactive materials not in the form of sealed sources.

Internationally, the Program reduces the threat of a radiological attack against the United States and its interests. Given the large number of radiological sources and associated facilities worldwide, the Program is continuing to refine a prioritization of those materials that pose the greatest risk. Threat environment and impacts on U.S. national security are also considered in this prioritization. The Program security upgrades are based on a similar methodology used by the MPC&A program to design security enhancements for nuclear warheads and weapons-usable nuclear material.

In addition, the outyear funding profile supports continued threat reduction by the Global Nuclear Material Threat Reduction program. While our goal is to accelerate activities to identify, secure, remove and/or facilitate disposition of high-risk, vulnerable nuclear material around the world that pose a potential threat to the U.S. and international community, many of the programs extend through the outyears with significant milestones linked to funding.

The Reduced Enrichment for Research and Test Reactors (RERTR) program is working to convert those research reactors for which a low enriched uranium (LEU) fuel is available and continue to develop new, higher-density LEU fuels that can enable the conversion of additional HEU-fueled reactors. In FY 2005-2008, the LEU fuel development activity includes additional funding in order to develop and license an LEU fuel in 2010, at which time the outyear funding profile supports the conversion of the remaining HEU-fueled reactors that require the new LEU fuels. In accordance with Bratislava Joint Statement on Nuclear Security Cooperation, the Russian Research Reactor Fuel Return (RRRFR) program developed with the Russian Federation a joint schedule to complete all shipments of fresh and irradiated Russian-origin HEU currently stored outside of research reactors by 2010. As the program completes all the fresh fuel shipments by the end of FY 2006, the outyear funding profile supports the shift in focus to the spent fuel shipments which require more steps, planning, and resources to complete successfully. In FY 2006, the BN-350 program will begin the large procurement of dual-use casks for transporting and storing the nearly three tons of weapons-grade plutonium contained in the BN-350 spent fuel. The current funding profile is adequate to cover loading all 479 canisters into sixty casks and storing them on an interim storage pad at Aktau.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Conducted Field missions to North Korea to maintain status of spent fuel in the Nyongbyon spent fuel facility. (MET GOAL)	Expedited the retrieval of spent nuclear fuel from Central Asia (MIXED RESULTS)

Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative number of targeted research/test reactors converted from HEU to LEU fuel (Long-term Outcome)	R: 39	R: 39 T: 41	R: 40 T: 44	T: 46	T: 53	T: 61	T: 67	T: 74	T: 80	By 2014, convert 106 targeted research/test reactors from HEU to LEU fuel.
Cumulative kilograms of HEU fresh and/or spent fuel from Soviet-supplied research reactors repatriated to Russia (Long-term Outcome)	N/A	R: 99	R: 122 T: 175	T: 232	T: 634	T: 847	T: 1,292	T: 1,603	T: 1,656	By 2013, repatriate/disposition 1,781 kilograms of HEU.
Cumulative number of fuel assemblies containing U.S.-origin spent fuel returned from foreign research reactors (Long-term Outcome)	N/A	R: 6,334	R: 6,783 T: 6,693	T: 7,115	T: 8,047	T: 8,839	T: 9,396	T: 9,582	T: 9,702	By 2019, return or validate acceptable disposition of 22,743 U.S.-origin spent fuel assemblies from foreign research reactors.
Cumulative number of U.S. excess sealed sources recovered (Efficiency)	R: 7,322	R: 10,022 T: 8,500	R: 11,682 T: 11,500	T: 13,650	T: 15,228	T:17,478	T:19,728	T: 21,978	T: 24,000	By 2021, recover 31,500 sources.
Cumulative number of high priority sites with vulnerable radiological material secured (Long-term Output)	R: 8	R: 69 T: 35	R: 234 T: 174	T: 498	T: 590	T: 637	T: 718	T: 766	T: 797	By 2023, secure 1,396 high-priority sites with vulnerable radiological material (interim target).

Detailed Justification

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Reduced Enrichment for Research and Test Reactors (RERTR)	**0**	**17,732**	**32,096**

The Reduced Enrichment for Research and Test Reactors (RERTR) program develops the technical means to convert research and test reactors and medical isotope production processes from the use of HEU to the use of LEU through the development of new LEU fuels and targets. In addition, the RERTR program provides technical support and expert assistance to reactors undergoing conversion to ensure that regulatory approval is obtained for conversion to LEU and for operation with LEU fuel. Defense Nuclear Nonproliferation (DNN) is now responsible, under the RERTR program, for conversion of both international and domestic reactors. The Office of Nuclear Energy transferred responsibility for conversion of 13 domestic reactors to the Office of Global Threat Reduction in FY 2005. Two of the 13 are currently being converted. In FY 2007, the program will initiate the conversion of three (3) of the five (5) remaining domestic reactors for which LEU fuel is available. The current FYNSP does not include funding for the conversion of the six (6) domestic reactors for which LEU fuel in not currently available. In addition, the program will continue to accelerate the development of LEU fuel for HEU-fueled research reactors and convert five (5) international research reactors. RERTR funding supports the development of appropriate LEU fuels to assist conversion of HEU-fueled research reactors to LEU fuel. Included in the base, the program develops LEU replacement fuel for HEU-fueled research reactors and purchases replacement LEU fuel to provide incentives for reactor conversion packages

Congressionally Directed Activity	**0**	**7,000**	**0**

From within available FY 2006 funds, up to $7,000,000 to support the conversion of university research reactors from HEU core to LEU core, for as many as four research reactors in the United States.

Russian Research Reactor Fuel Return (RRRFR)	**0**	**14,703**	**30,025**

The Russian Research Reactor Fuel Return (RRRFR) program eliminates stockpiles of Russian-origin HEU by repatriating or otherwise facilitating final disposition of Russian-origin HEU from Soviet-/Russian-supplied research reactors throughout the world and by assisting eligible countries in the conversion of their research reactors from HEU to LEU fuel upon availability and qualification. During trilateral discussions, the United States, Russian Federation, and the International Atomic Energy Agency (IAEA) identified more than 24 research reactors in 17 countries that have Russian/Soviet-supplied fuel. Most of these reactors use at least some HEU fuel, and most have stocks of both fresh and irradiated fuel that must be carefully stored and managed for many years to come. As of the end of FY 2005, the RRRFR program has completed 8 repatriation shipments to Russia of 108 kilograms of Russian-origin, fresh HEU. This material will be down blended in Russia. The RRRFR program intends to work with Russia to remove or dispose of 1,625 kilograms of Russian-origin HEU outside of Russia by the end of CY 2010. In FY 2007, the program will repatriate 400 kilograms of Russian-origin HEU fuel from five (5) countries and initiate efforts to down blend in place Russian-origin HEU fuel in three (3) additional countries.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Kazakhstan Spent Fuel Disposition	**0**	**8,000**	**3,934**

Under the Kazakhstan Spent Fuel Disposition program, the spent fuel assemblies from the shut-down BN-350 fast breeder reactor have been stabilized, packaged in theft resistant canisters, and placed under IAEA safeguards. The program also seeks to provide long-term dry storage of the spent fuel in dual-use casks and provide physical protection support for all operations. The U.S. Government (USG) and the Republic of Kazakhstan have agreed on the approach using dual-purpose casks for both transportation and storage of the material. The BN-350 spent fuel contains nearly three tons of weapons-grade plutonium that could be used to make hundreds of nuclear weapons. The USG has already decided through an NSC-led interagency process that this project should proceed because it protects our national security interests within the volatile Central Asia region. This project will design, procure, and conduct licensing of the casks. Much of the equipment required for the project is complex and must be custom designed. In addition, the design process is intricate and the lead-time for procurement is extensive. The BN-350 program recently completed an internal review of the cost and schedule for this program. As a result of the review, the BN-350 program has revised the cost and schedule for the outyears for this program.

U.S. Foreign Research Reactor Spent Nuclear Fuel Acceptance (FRRSNF)	**0**	**8,100**	**6,340**

The U.S. Foreign Research Reactor Spent Nuclear Fuel Acceptance (FRRSNF) program prevents proliferation of nuclear material by repatriating United States (U.S.)-origin spent HEU fuel from foreign research reactors around the world. This program works to eliminate stockpiles of United States-origin spent nuclear fuel by accepting certain types of spent nuclear fuel and target material containing both high-enriched and low-enriched uranium of U.S.-origin. Forty-one countries host research reactors that have fuel eligible for acceptance under the program.

Approximately 20 metric tons (MT) of material is eligible for acceptance, about 5MT of which contain HEU. As of the end of FY 2005, 32 shipments of material containing nearly 6,783 spent nuclear fuel assemblies have been returned safely to the U.S. where they will be stored. In FY 2007, the FRRSNF program will return to the U.S. 1,000 spent fuel assemblies of United States-origin material.

U.S. Radiological Threat Reduction (Homeland Security).....	**0**	**12,566**	**9,441**

The U.S. Radiological Threat Reduction (USRTR) program primarily recovers and manages excess and unwanted sealed radioactive sources that are in the possession of domestic United States licensees, where such sources are of concern for use in a radiological dispersal device. In addition, the program also addresses sources that exceed the limits for commercial disposal, which are considered Greater Than Class C (GTCC) and are a Department of Energy responsibility under P.L. 99-240. In some cases, the USRTR may also need to address similar radioactive materials not in the form of sealed sources.

The program has worked closely with the United States Nuclear Regulatory Commission (NRC) to develop a source recovery prioritization system, and maintains a registry of excess and unwanted sources identified by licensees and regulatory agencies. The number and type of sources that will become excess and unwanted in the future cannot be known or predicted with any great degree of accuracy. The location of sources needing recovery, the ability of the licensee to participate and assist in the recovery process, the cost of the recovery, and the conditions under which sources must be recovered all vary with each recovery. The USRTR also recovers Department of Energy-owned sources, including those in the possession of United States licensees through loan-lease or other mechanisms where there is no longer a mechanism for the return and acceptance of these sources by the program that originally provided the sources. The program provides support and coordination for the recovery and return of specified sources from outside the United States, including on-site support for recovery, equipment, packaging, transportation, and receipt and acceptance of sources for long-term management by USRTR. Additionally, the USRTR provides, in cooperation with other agencies, training and technical assistance for security evaluations and enhancements for in-use high-risk sources in the United States. In FY 2007, the USRTR plans to complete recovery of 1,578 excess United States sealed sources.

International Radiological Threat Reduction (Overseas Combating Terrorism)	**0**	**23,894**	**18,299**

The International Radiological Threat Reduction (IRTR) Program element identifies and pursues actions that can be taken to reduce the threat of a radiological attack against the U.S. Given the large number of radiological sources and facilities storing these materials worldwide, the IRTR program is continuing to refine a prioritization of those materials that pose the greatest risk. Threat environment and impacts on U.S. national security are also considered in this prioritization. The IRTR program security upgrades will be based upon similar methodology used by the MPC&A program to design security enhancements for nuclear warheads and weapons-usable nuclear material.

As candidate IRTR sites and orphan or surplus radioactive sources are identified, the IRTR Program installs a suite of physical security and material control and accounting upgrades that will significantly enhance the protection of nuclear material at the site to an acceptable level. These upgrades may include: installation of vehicle inspection areas; hardened access control and guard buildings; detection, assessment, and access control systems; exterior access delay systems; additional response force upgrades, if necessary; and the consolidation and securing of radioisotope thermoelectric generators (RTGs). In FY 2007, the IRTR program plans to complete the installation of equipment to secure radiological materials at 92 IRTR sites, increasing the total number of sites secured to 590.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Emerging Threats and Gap Materials (Overseas Combating Terrorism)	**0**	**5,000**	**5,683**

The Emerging Threats and Gap Materials program identifies, secures, recovers, or facilitates disposal of high risk, vulnerable nuclear material (primarily material not included in any existing U.S. take-back or MPC&A programs), located at various nuclear facilities and other locations throughout the world. Highest priority is given to special nuclear material located in countries of high proliferation concern; materials from other regions will be accorded a lower priority. Materials under consideration include, but are not limited to: U.S.-origin HEU nuclear fuel from reactors converted to LEU *not* covered under FRR SNF; separated Plutonium and Plutonium-bearing materials; and HEU materials of non-U.S. and non-Russian origin. In FY 2007, the program funding will continue to support efforts to ensure a rapid response capability and remove gap material from four (4) facilities. GTRI must be positioned to act immediately should the situation arise where nuclear materials need to be secured/recovered (example is Libya materials).

Global Research Reactor Security (GRRS)	**0**	**0**	**1,000**

The Global Research Reactor Security (GRRS) program, transferred from the Nonproliferation and International Security program, provides security upgrades at sites where security is found to be below internationally recognized guidelines to protect vulnerable nuclear material at research reactors and facilities outside the United States and the Former Soviet Union from possible theft, diversion or sabotage. Protection is provided by doing detailed vulnerability assessments and then by providing funding and technical expertise to implement appropriate upgrades. In FY 2007, the program will provide upgrades to one (1) nuclear facility.

Total, Global Threat Reduction Initiative	**0**	**96,995**	**106,818**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
▪ **Reduced Enrichment for Research and Test Reactors**	
Increase in program scope and therefore funding is due to the transfer of mission to convert domestic research reactors under the RERTR program from Office of Nuclear Energy. In FY 2007, the program will begin efforts to convert 3 of 6 domestic reactors for which LEU fuel is available.	**+ 7,364**
▪ **Russian Research Reactor Fuel Return**	
Increase reflects the estimated cost of returning 400 kilograms of Russian-origin spent HEU from five (5) countries.	**+15,322**
▪ **Kazakhstan Spent Fuel**	
Decrease reflects completion of a major procurement of casks in FY 2006.	**- 4,066**
▪ **U.S. Foreign Research Reactor Spent Nuclear Fuel (FRRSNF)**	
Decrease reflects the reduced cost of returning spent fuel assemblies.	**-1,760**
▪ **U.S. Radiological Threat Reduction**	
Decrease reflects a reduction in efforts to recover United States sealed sources and allows funding of higher priority non-proliferation programs.	**-3,125**
▪ **International Radiological Threat Reduction**	
Decrease reflects reduced security enhancement efforts in new countries and cross cutting efforts such as regulatory, IAEA/Interpol assistance and RTG recovery. This allows funding of high priority non-proliferation programs.	**-5,595**
▪ **Emerging Threats and Gap Materials**	
Increase reflects estimated cost associated with removing/securing gap materials from four facilities.	**+683**
▪ **Global Research Reactor Security**	
Reflects estimated cost of providing upgrades to one (1) nuclear facility.	**+ 1,000**
Total Funding Change, Global Threat Reduction Initiatives	**+9,823**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
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 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**	**0**

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, and [$789,500,000] *$795,133,000*, to remain available until expended.

Explanation of Change

Change from the language proposed in FY 2006 consists of a change to the requested funding amount**.**

Naval Reactors

Funding Profile by Subprogram

(dollars in thousands)

	FY 2005 Current Appropriation	FY 2006 Original Appropriation	FY 2006 Adjustments	FY 2006 Current Appropriation	FY 2007 Request
Naval Reactors Development (NRD)					
Operations and Maintenance	765,041	728,800	-7,288	721,512	761,176
Program Direction	29,264	30,300	-303	29,997	31,185
Construction [a]	7,132	30,400	-304	30,096	2,772
Subtotal, Naval Reactors Development	**801,437**	**789,500**	**-7,895**	**781,605**	**795,133**
Use of Prior Year Balances	0	0	0	0	0
Total, Naval Reactors	**801,437**	**789,500**	**-7,895**	**781,605**	**795,133**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Public Law Authorization:

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 Authorization Act of 2002", Title 32, "National Nuclear Security Administration"
P.L. 108-375, National Defense Authorization Act, FY 2005
P.L. 108-447, The Consolidated Appropriations Act, 2005
P.L. 109-163, National Defense Authorization Act, 2006

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Naval Reactors	**811,036**	**827,257**	**843,802**	**860,678**

[a] In the Conference report to Public Law 109-103, Congress directed that NR transfer $13.5 million to DOE-NE to support the Advanced Test Reactor (ATR) Life Extension Program (LEP). However, the report included the $13.5 million specified for ATR under the Construction Heading vice Operations and Maintenance. The additional $13.5 million has been transferred to NE to support the LEP (NR total transfer to NE for ATR in FY 2006 was $70.8 million). Actual NR Construction requirements in FY 2006 are $16.9 million.

Major Outyear Considerations

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Naval Reactors				
Operations and Maintenance	765,186	777,407	780,702	804,078
Program Direction	32,700	33,900	35,100	35,900
Construction	13,150	15,950	28,000	20,700
Total, Naval Reactors	**811,036**	**827,257**	**843,802**	**860,678**

NNSA describes major outyear considerations at each GPRA-Unit level within this appropriation.

Mission
Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.

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 operation of reactor plants in operating 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
As the post-Cold War era evolves, 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.

Strategic and Program Goals

Program Goal, 03.49.00.00: The Naval Reactors Program has one program goal, which contributes to General Goal 3 in the "goal cascade":

General Goal 3, Naval Reactors: Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.

Contribution to General Goal 03
Within the Naval Reactors program, the Plant Technology, Reactor Technology and Analysis, Materials Development and Verification, Evaluation and Servicing, Facility Operations, Construction, and Program Direction subprograms each make unique contributions to Program Goal 03.49.00.00.

Description
Naval Reactors is principally a technology program in the business of power generation for military application. The Program's development work ensures that nuclear propulsion technology provides options for maintaining and upgrading current capabilities, as well as for meeting future threats to U.S. security.

The Program's number-one priority is ensuring the safety and reliability of the 104 operating naval reactor plants. Most of the work within the Naval Reactors Program is directed toward ensuring the safe, reliable operation of these plants. The presence of radiation dictates a careful, measured approach to developing and verifying nuclear technology, designing needed components, systems, and processes, and implementing them into existing and future plant designs. Intricate engineering challenges and long lead times to fabricate the massive, complex components require many years of effort before technological advances can be introduced into the Fleet.

Nuclear power enhances warship capability and creates the flexibility needed to sprint anywhere in the world and arrive ready for around-the-clock power projection and combat operations. Sustained high-speed capability (without dependence on a slow logistics train) enables rapid response to changing world circumstances, allowing operational commanders to surge these ships from the United States (U.S.) to trouble spots or to rapidly redeploy them from one crisis area to another. Nuclear propulsion helps the Navy stretch available assets to meet today's worldwide national security commitments.

Long-term Program goals have been to increase core energy, to achieve life-of-the-ship cores, and to eliminate the need to refuel nuclear powered ships. Although efforts associated with this objective have resulted in planned core lives that are sufficient for the 30-plus year submarine (based on past usage rates) and an extended core life planned for CVN 21, the next generation aircraft carrier, fleet size is down and national security demands require a higher operating tempo and greater speed during deployments.

Naval Reactors is continuing development of a high-energy reactor for CVN 21 and design of the new Transformational Technology Core (TTC), which will provide an energy increase to VIRGINIA-class submarines.

The nuclear propulsion plant design of CVN 21 is well underway. The new high-energy reactor design for CVN 21 represents a critical leap in capability. Not only will the CVN 21 reactor enable the Navy to meet current forecasted operational requirements, but, just as importantly, it will provide flexibility to deal with projected war fighting needs in the future. The CVN 21 reactor will have increased core energy, nearly three times the electric plant generating capability, and will require half of the reactor department sailors when compared to today's operational aircraft carriers. The extra energy will support higher operational tempos or longer reactor life for the CVN 21-class.

The CVN 21-class lead ship is expected to be authorized in 2008 and to go to sea in 2015.

To meet ever increasing national security demands, Naval Reactors is working on the Transformational Technology Core (TTC) to deliver an energy increase to future VIRGINIA-class submarines with minimal impact to the overall ship design. TTC is a direct outgrowth of the Program's advanced reactor technology work and will not only help meet national security demands, but will also act as a stepping stone for future reactor plant development.

TTC will use advanced reactor core materials to achieve a significant increase to the core energy density—more energy without increasing size, weight or space while still at a reasonable cost. With significantly more energy, the objective for TTC is to extend ship life by as much as 30 percent and/or increase operating hours per operating year. The end result is significantly greater operational ability and flexibility.

The timing of TTC development also corresponds with the need to transition from 97 to 93 percent enriched uranium fuel. This transition is necessitated by the shutdown of the high enrichment plant and the decision to use Uranium recovered from retired nuclear weapons as starter material for naval nuclear reactors.

TTC is intended for forward fitting into VIRGINIA-class submarines, which is planned to be the mainstay of the submarine fleet in future decades. TTC development should support a design that could be procured in about FY 2010.

Funding by General and Program Goal

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Goal 3, Naval Reactors			
Program Goal 03.49.00.00 Naval Reactors	801,437	781,605	795,133
Total, Naval Reactors	**801,437**	**781,605**	**795,133**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L.109-148.

Annually, the Office of Procurement and Assistance Management advises each of the Departmental elements of the annual assessment required to pay for the Defense Contract Audit Agency (DCAA) activities performed for the Department. The amount for Naval Reactors is $712,700 in FY 2006 and $720,500 in FY 2007.

Congressionally Directed Activity: The FY 2005 Consolidated Appropriations Act (H.R. 4818, P.L. 108-447) provides $10 million over the request and directs the Naval Reactors Program to transfer these funds to the Office of Nuclear Energy (NE) to support the Idaho National Laboratory's Advanced Test Reactor (ATR). These funds were transferred to NE in January 2005.

The FY 2006 Energy and Water Development Appropriations Bill provides $3.5 million above the FY 2006 Budget Request for the Naval Reactors Program. Naval Reactors FY 2006 funds totaling $13.5 million are directed to be transferred to DOE-NE to support the Advanced Test Reactor. These funds were transferred to NE in the FY 2006 Approved Funding Program.

Outyear Funding by General and Program Goal

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Goal 3, Naval Reactors				
Program Goal 03.49.00.00 Naval Reactors	811,036	827,257	843,802	860,678
Total, Naval Reactors	**811,036**	**827,257**	**843,802**	**860,678**

Major Outyear Considerations

The strategic importance of nuclear-powered warships will continue to require propulsion plants with the highest level of reliability and safety. Heightened demand for and increased operations tempo of nuclear-powered warships are likely to occur. This will place a greater demand on maintaining ships in a ready-to-deploy status and the need for nuclear plant operators will continue at current or higher levels through the planning horizon. In addition to managing this increased demand, the Program will continue to explore and develop new and innovative technology to provide quantum improvements toward meeting its mission and goals. The Program will also continue its commitment to safety, health, radiological controls, environment, and fiscal responsibility. NR will continue to provide for full compliance with applicable laws, regulations, consent orders, and agreements and will exercise prudent management of vulnerabilities and risks.

Program Assessment Rating Tool (PART)

The Department of Energy (DOE) implemented the PART tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness on the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. The DOE has incorporated feedback from the OMB into the FY 2007 Naval Reactors Budget Request, and the Department will take the necessary steps to continue to improve performance.

For FY 2007, the OMB evaluated the Naval Reactors program using the PART. The OMB gave the Naval Reactors program very high scores of 100 percent on the Purpose and Design, Strategic Planning, and Program Management Sections and 92 percent on the Program Results Section. Overall, the OMB rated Naval Reactors 96 percent, its highest category of "Effective." The OMB found the program has a clear and unique purpose; is well-managed; has clear, concise, meaningful, and measurable performance metrics; and has demonstrated good progress in achieving its annual and long-term goals. In addition, the OMB noted that the program strengthened its oversight by recently adding a new metric to assess facility conditions to ensure they do not fall into disrepair. In response to the OMB findings, the NNSA has established annual and long-term targets for the new facility condition metric.

Annual Performance Results and Targets

FY 2002 Results	FY 2003 Results
Naval Reactors safely steamed over two million miles in nuclear–powered ships in 2002. (MET GOAL)	Completed safe steaming of approximately two million miles in nuclear-powered ships in 2003. (MET GOAL)
Naval Reactors exceeded a 90% utilization factor for operation of test reactor plants. (MET GOAL)	Achieved a utilization factor of at least 90% for operation of test reactor plants. (MET GOAL)
Next-generation submarine reactor design 96% complete. (MET GOAL)	Next-generation submarine reactor plant design 99% complete. (MET GOAL)
Next-generation aircraft carrier reactor design 40% complete. (MET GOAL)	Next-generation aircraft carrier reactor plant design 55% complete. (MET GOAL)
No personnel exceeded 5 REM/year. (MET GOAL)	No personnel exceeded 5 REM/year. (MET GOAL)
Operations had no adverse impact on human health or the quality of the environment. (MET GOAL)	Operations had no adverse impact on human health or the quality of the environment. (MET GOAL)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
Cumulative miles steamed, in millions, of safe, reliable, militarily effective nuclear propulsion plant operation supporting National security requirements (Long-term Outcome)	R: 128	R: 130 T : 130	R: 133 T: 132	T: 134	T: 136	T: 138	T: 140	T: 142	T: 144	By 2015, complete safe steaming of approximately 152 million miles in nuclear-powered ships. (Interim Target)
Cumulative percentage of completion on the Transformational Technology Core (TTC) reactor plant design (Long-term Outcome)	N/A	R: 10%	R: 23% T: 23%	T: 34%	T: 43%	T: 52%	T: 63%	T: 70%	T: 77%	By 2015, deliver the first TTC core.
Cumulative percentage of completion on the next-generation aircraft carrier reactor plant design (Long-term Outcome)	R: 55%	R: 60% T : 60%	R: 70% T: 70%	T: 75%	T: 80%	T: 85%	T: 90%	T: 93%	T: 95%	By 2015, provide the reactor plant for the next-generation aircraft carrier.
Cumulative percentage of completion on the next-generation submarine reactor plant design for the VIRGINIA-class submarine (Long-term Outcome)	R: 99%	R: 100% T : 100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	In 2004, the next-generation submarine went to sea.
Annual percentage of Program operations that have no adverse impact on human health or the quality of the environment (Annual Outcome)	R: 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.
Annual utilization factor for operation of test reactor plants (Efficiency)	R: 93.2%	R: 96.7% T :90%	R: 94% 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.

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Endpoint Target
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)	N/A	N/A	N/A	T: 5%	T: 5%	T: 5%	T: 5%	T: 5%	T: 5%	Annually, achieve an FCI of 5% 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 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 Department 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.

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. Owing 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.

Historically Black Colleges and Universities (HBCU) Support

A research and education partnership program with the HBCU's and the Massie Chairs of Excellence was initiated by the Congress through earmarks in the Office of the Administrator appropriation in FY 2005 and FY 2006. 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 NNSA. The NNSA's goal is a stable $10 million effort annually. The majority of the efforts directly support program activities, and it is expected that Naval Reactors programs will fund research with the HBCU's totaling approximately $1 million in FY 2007 in the area of nuclear propulsion systems and engineering.

Indirect-Funded Maintenance and Repair

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Bettis Atomic Power Laboratory	4,617	5,895	5,704
Naval Reactors Facility	302	765	765
Knolls Atomic Power Laboratory	6,514	6,476	6,451
Kesselring Site Operations	4,198	1,827	3,002
Total Direct-Funded Maintenance and Repair	**15,631**	**14,963**	**15,922**

Outyear Indirect-Funded Maintenance and Repair

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Bettis Atomic Power Laboratory	5,776	5,835	5,852	5,920
Naval Reactors Facility	269	269	269	280
Knolls Atomic Power Laboratory	6,167	6,088	6,200	6,079
Kesselring Site Operations	2,404	2,656	2,500	2,810
Total Direct-Funded Maintenance and Repair	**14,616**	**14,848**	**14,821**	**15,089**

Directed-Funded Maintenance and Repair

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Bettis Atomic Power Laboratory	0	0	0
Naval Reactors Facility	1,478	2,309	993
Knolls Atomic Power Laboratory	460	479	521
Kesselring Site Operations	3,561	2,536	3,324
Total Direct-Funded Maintenance and Repair	**5,499**	**5,324**	**4,838**

Outyear Direct-Funded Maintenance and Repair

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Bettis Atomic Power Laboratory	0	0	0	0
Naval Reactors Facility	2,711	2,801	2,939	2,272
Knolls Atomic Power Laboratory	519	520	519	519
Kesselring Site Operations	2,599	3,001	2,997	2,996
Total Direct-Funded Maintenance and Repair	**5,820**	**6,322**	**6,455**	**5,787**

Naval Reactors Development

Operations and Maintenance

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006 [a]	FY 2007 [a]
Naval Reactors Development O&M			
Plant Technology	154,256	142,362	130,470
Reactor Technology and Analysis	230,243	201,861	212,137
Materials Development and Verification	109,256	106,049	117,708
Evaluation and Servicing	150,406	162,766	179,277
ATR Operations and Test Support [b] [c]	67,500	57,400	64,600
Facility Operations	53,380	51,074	56,984
Total, Naval Reactors Development O&M	**765,041**	**721,512**	**761,176**

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Naval Reactors Development O&M				
Plant Technology	115,878	106,337	106,943	112,967
Reactor Technology and Analysis	212,270	226,060	218,605	222,867
Materials Development and Verification	111,475	115,726	118,600	121,539
Evaluation and Servicing	208,523	209,701	224,525	230,898
ATR Operations and Test Support	58,800	59,600	61,100	62,300
Facility Operations	58,240	59,983	50,929	53,507
Total, Naval Reactors Development O&M	765,186	777,407	780,702	804,078

[a] Reflects 1.0 percent rescission based on the Department of Defense Appropriation Act, 2006 (P.L. 109-148).

[b] In the Conference report to P.L. 109-103, Congress directed that NR transfer $13.5 million to DOE-NE to support the Advanced Test Reactor (ATR) Life Extension Program (LEP). However, the report included the $13.5 million specified for ATR under the Construction Heading vice Operations and Maintenance. The additional $13.5 million has been transferred to NE to support the LEP (NR total transfer to NE for ATR in FY 2006 was $70.8 million).

[c] Per the December 19, 2005 memorandum from the Office of Nuclear Energy, Science and Technology (NE) to Naval Reactors, NE will provide $7 million to the ATR which, along with the $64.6 million shown in this budget for ATR Operations and Test Support, will total $71.6 million (the amount the operating contractor, BEA, and NE have identified a need for in FY 2007).

Detailed Justification

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Plant Technology.....	**154,256**	**142,362**	**130,470**

Mission Supporting Goals/Objectives:

Plant Technology focuses on developing, testing and analyzing components and systems, which transfer, convert, store and measure power created by the nuclear reactor in a ship's power plant. 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. Advances in modeling, analysis, and water chemistry are currently permitting the safe operation of components beyond their original design life. Continued progress in various technologies such as manufacturing/welding processes, fluid dynamics, predictive models/analysis and thermal-hydraulics are enhancing operating plant performance and allowing major improvements in performance for new reactor plants.

Reactor plants require constant monitoring and analysis due to exposure to extreme temperatures and pressures. Steam generators are especially susceptible to corrosion due to the intense boiling environment required to convert reactor heat to steam. Naval Reactors is pursuing technologies to greatly reduce corrosion through fundamental design changes in components and water chemistry. New plant designs, such as CVN 21, include improvements in propulsion plant system and component designs to reduce the potential for steam generator chemistry upsets and corrosion. Plant material changes are being pursued to minimize corrosion products and system designs are developed to reduce contaminant sources and improve secondary chemistry monitoring and control.

Wear and tear on operating reactor machinery, such as pumps with constantly rotating parts, limits system and component life and can require extensive and costly maintenance. Plant Technology provides funding for programs to combat wear and tear through the implementation of better materials and lubricants, as well as more resilient designs, creating longer-lived and more reliable components and systems with reduced maintenance requirements. In addition, these programs provide for the comprehensive testing and review required to ensure improvements for one area of the plant do not cause unanticipated problems in another area of the plant.

Extensive development work is devoted to applying advances in electronics to instrumentation and control (I&C) equipment and systems. Due to the harsh and intense operating environment and rapid obsolescence of electronic equipment, this equipment must be replaced during the lifetime of an operating plant. While this presents a continuing challenge, rapid technical advances are providing comparative advantages. For example, the improved accuracy and reliability of new instrumentation designs extend the long-term useable power obtained from the reactor.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Verifiable Supporting Activities:

FY 2005 Initiated design concepts for a replacement solid state or vacuum circuit breaker technology providing circuit breakers with no moving parts and improved reliability.

Initiated OHIO-class generic instrumentation and control preproduction equipment fabrication. Started evaluation testing to identify potential problems before design finalization and minimize development costs

Initiated preliminary design activities necessary to increase VIRGINIA plant components to support TTC performance.

Initiated and completed design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Continued engineering qualification testing of the CVN 21 reactor coolant pump that will maximize pump reliability and efficiency at the plant operating conditions.

Continued use of advanced reactor coolant chemistry analysis methods in OHIO- and NIMITZ-class ships to improve the quality of data and reduce operator-training requirements.

Continued to pursue alternate steam generator concepts for future submarine applications.

Monitored and evaluated LOS ANGELES- and OHIO-class steam generators through the use of corrosion testing to reduce the cost and frequency of inspections and cleaning, as well as prolong steam generator service life.

Developed larger scale integrated thermophotovoltaic system with high-energy conversion efficiency and power density.

Developed modifications to I&C systems to support TTC goals for an extended core life.

Evaluated, developed, and tested new features and materials in various VIRGINIA reactor coolant pump components to improve motor and hydraulic efficiency.

Completed design validation work to improve the S9G new concept steam generator design necessary to support a longer lifetime associated with TTC.

FY 2006 Begin development and testing of engineering models for a replacement solid state or vacuum circuit breaker design that will provide circuit breakers with no moving parts and improved reliability.

Close out and document work on activities related to high performance thermophotovoltaic power conversion integrated systems.

Continue assessments of emergent energy conversion systems.

Continue preliminary design activities necessary to extend VIRGINIA-class plant life to support TTC insertion.

Continue to evaluate, develop, and test new features and materials in various VIRGINIA reactor coolant pump components to improve motor and hydraulic efficiency.

Continue engineering qualification testing of the CVN 21 reactor coolant pump that will maximize pump reliability and efficiency at the plant operating conditions.

Evaluate I&C requirements supporting TTC concepts for extended core life.

Evaluate the effect of advanced reactor coolant chemistry treatment on LOS ANGELES-class ships in which implementation has commenced. Continue use of advanced reactor coolant chemistry analysis methods in OHIO- and NIMITZ-class ships to improve the quality of data and reduce operator-training requirements.

Issue an assessment of steam generator technology development efforts that support future submarine plants with emphasis on enhanced performance and reduced costs. Recommend S9G steam generator improvements to support TTC performance.

Complete the pre-production design of OHIO-class Generic I&C system equipment.

FY 2007 Commence development of requirements for system software for generic I&C building blocks to reduce system lifetime software costs.

Conduct in-situ chemistry/corrosion monitoring in S8G Prototype to obtain data, defining actual conditions in operating steam generators.

Continue to evaluate the effect of advanced reactor coolant chemistry treatment on LOS ANGELES-Class ships in which implementation has commenced. Continue use of advanced reactor coolant chemistry analysis methods in OHIO- and NIMITZ-Class ships to improve the quality of data and reduce operator-training requirements.

Continue assessments of emergent energy conversion systems.

Continue development and testing of engineering models for a replacement solid state or vacuum circuit breaker design that will provide circuit breakers with no moving parts and improved reliability.

Continue to evaluate I&C requirements supporting TTC concepts for extended core life.

Continue engineering qualification testing of the CVN 21 reactor coolant pump that will maximize pump reliability and efficiency at the plant operating conditions.

Complete design validation work for the improved steam generator heat exchanger in support of TTC.

	(dollars in thousands)		
	FY 2005	FY 2006	FY 2007
Reactor Technology and Analysis.....	**230,243**	**201,861**	**212,137**

Mission Supporting Goals/Objectives:

Reactor Technology and Analysis supports the work required to ensure the 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 greater fundamental understanding of reactor behavior; designing new, longer lived reactors with improved reliability, efficiency, and greater energy density; 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.

Development of reactor design and analytical techniques provides a more accurate forecast of reactor performance, thereby yielding next generation designs of a more advanced nature. Likewise, work is underway to improve analysis tools to better understand performance over longer core and reactor lifetimes, which will reduce overall cost.

Development and qualification of improved core and reactor component thermal/hydraulic designs will further optimize reactor power while reducing coolant flow, thus facilitating improved acoustic performance. To accomplish this, emphasis is on thermal/hydraulics, structural/fluid mechanics, vibration analyses, and nuclear core design/analysis work. In addition, improved core manufacturing processes and inspection techniques also are being pursued to improve efficiency and support extended life requirements.

Desirable new core design features and the drive for cost savings necessitate manufacturing process improvements. These improvements are dependent on technological advancements. Fuel and core manufacturing limitations in previously designed naval reactor cores require compensatory margins in core designs and operating limits that constrain power density and life expectancy. Modifying the fuel and core manufacturing process allows cores to operate longer and with greater power output capability. In addition, the modified manufacturing process will minimize waste. This process is technically challenging, but necessary to improve the fuel to produce more energy-dense cores, such as TTC, at a lower operating cost with the new core designs.

Naval Reactors also must develop and qualify reactor heavy equipment, including reactor vessels, closure heads, closure studs, and core baskets that will provide increased operational safety and reliability to accommodate new core designs. Work is focused on extending technologies developed for Next Generation Reactor (NGR) equipment to the design of CVN 21 reactor equipment to support longer carrier service lives. As part of this effort, three-dimensional structural analysis tools will be developed and applied.

Other initiatives are dedicated to designing and testing simpler, more reliable reactor equipment, and developing improved shield designs that reduce cost and minimize weight without increasing personnel radiation exposure. Radiological controls and environmental monitoring and ensure operations are conducted without adverse impact on employees or the environment.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Verifiable Supporting Activities:

FY 2005 Initiated work to extend advanced thermal/hydraulic codes and methodology to evaluate multi-channel analysis capability, which will improve core and component acoustic performance and core thermal performance.

Initiated and completed design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Initiated thermal/structural analysis of the TTC closure head and core basket.

Continued fabrication of fuel model elements and core structural components to qualify new reactor materials, designs, and manufacturing and inspection technologies for future core technologies.

Continued to develop physics data required to support the reference design phase for TTC.

Continued to survey and document radiological conditions; trained personnel for all phases of radiological work and environmental work.

Continued to maintain strict accountability and handling methods for nuclear fuel.

Continued to ensure compliance with all safety and environmental regulations; trained personnel to comply with latest standards and practices.

Continued to provide technical support for TTC advanced material manufacturing development efforts.

Developed and tested advanced thermophotovoltaic (TPV) power conversion modules with improved performance characteristics under prototypic conditions.

Performed A1B hydraulic and mechanical fuel cell testing to validate the design.

Performed design analyses on A1B to support core certification. Additionally, provided structural and thermal-hydraulic analyses and assessments to resolve unforeseen manufacturing developments encountered with A1B core production.

Conducted TTC manufacturing development utilizing advanced clad and fuel materials to support qualification efforts for use in the first VIRGINIA-class lower-enrichment core.

Evaluated core vendor test procedures for discriminating between 93 percent and 97 percent enriched fuel and qualify lower-enriched fuel for S9G fuel element use.

Completed penetration shield design studies and validation of shipyard analysis for CVN 21.

Completed TTC fuel manufacturing development in advance of transition to production support of full-scale manufacturing efforts.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Completed thermal/structural analyses for the TTC pressure vessel.

Completed TTC core conceptual design and begin the reference core design.

Completed development of an A1B core design utilizing lower enriched fuel for use in the CVN 21 follow ship.

Completed engineering certification for the A1B CDM and A1B reactor heavy equipment.

FY 2006 Close out and document activities related to the development of larger scale integrated system incorporating coolant heat transfer, high temperature radiator and high performing thermophotovoltaic power conversions modules.

Commence the final fuel and poison design for TTC.

Continue fabrication of model elements and core structural components to begin qualification of new reactor materials, designs, and manufacturing and inspection technologies for future core technologies.

Continue to survey and document radiological conditions; train personnel for all phases of radiological work and environmental work.

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.

Continue extension of advanced thermal/hydraulic code and methodology to provide multi-channel analysis capability.

Review shipyard generated shield drawings for CVN 21.

Perform qualification of lower-enriched fuel for CVN 21 and NIMITZ fuel elements.

Perform and complete thermal structural analyses of the TTC core basket.

FY 2007 Transition into qualification of manufacturing process utilizing advanced clad materials to support efforts for incorporating these advanced materials into the first lower-enrichment production VIRGINIA core.

Initiate TTC flow device design.

Develop advanced nuclear analysis techniques utilizing Monte Carlo and deterministic transport methods leveraging state-of-the-art computational methods and super computer systems.

Continue fabrication of model elements and core structural components to begin qualification of new reactor materials, designs, and manufacturing and inspection technologies for future core technologies.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Continue to survey and document radiological conditions; train personnel for all phases of radiological work and environmental work.

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.

Continue to review shipyard generated shield drawings for CVN 21.

Continue extension of advanced thermal/hydraulic code and methodology to provide multi-channel analysis capability.

Perform final physics analysis of TTC and perform analysis as required to support TTC manufacturing efforts.

Perform calculations of the thermal capabilities of the A1B core to support the A1B Reactor Systems Performance Analysis (RSPA).

Perform reactor safety tests for the integrated 1/3 scale test, large containment test and complete and review results from reactor safety medium containment test (A1B).

Support NGR physics testing by developing predictions for new construction testing.

Complete the final poison design physics evaluations for TTC.

Materials Development and Verification.... **109,256** **106,049** **117,708**

Mission Supporting Goals/Objectives:

Materials Development and Verification (MD&V) supports the development, testing, and qualification of reactor and plant materials to extend the lifetime of the reactor, which is a collaborative effort between Naval Reactors' atomic power laboratories, the Expended Core Facility, and the Advanced Test Reactor. An important objective of MD&V is to drive the costs of materials and processes to as low a level as possible, without compromising the continuous safe operation of naval reactor plants.

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 environment of a nuclear reactor. Existing or new materials selected for current or future designs must also be economical to acquire and viable for 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.

MD&V funds support the development, testing, examination, and evaluation of nuclear fuel systems, materials, and manufacturing and inspection methods, thus ensuring naval nuclear propulsion plants are able to meet the Navy's goals for extended warship operations. MD&V funding is focused in three

areas: Irradiation Testing and Evaluation, Core and Reactor Structure Materials, and Plant Component Materials. Irradiations testing and detailed examinations provide data for material performance characterization and prediction of potential performance in the reactor environment. Development of improved nuclear fuel, core, and reactor structural materials is required to extend core lifetimes up to the life of the ship (50+ years in some cases). Further, evaluation of irradiation tests on new and existing materials provide the data necessary to verify acceptable lifetime performances and improve analytical capabilities. The testing and evaluation of plant materials are required to characterize the long-term effects of the harsh operating environment. Moreover, the qualification of improved plant materials and processes ensure that endurance requirements will be met.

With MD&V funding, Naval Reactors will continue to provide high performance, cost effective reactor and plant materials that will meet the Navy's goals for extended warship operation and greater power capabilities.

Verifiable Supporting Activities:

FY 2005 Initiated operations in the Fuel Development Laboratory including fuel fabrication and processing of advanced element fabrication lines.

Initiated testing and characterization work to resolve emergent manufacturing and design issues, as well as to improve fundamental understanding to support predictive model development.

Initiated design of the Material Research and Technology Complex major construction project, utilizing advanced design funds for preliminary and final design efforts.

Initiated and completed design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Continued development of semiconductor materials for advanced thermophotovoltaic (TPV) power conversion devices, including larger scale TPV power conversion modules. TPV technology will provide direct thermal-electrical energy conversion to enable propulsion plant simplification.

Continued studies of Pressurized Water Reactor (PWR) fuel and cladding performance by developing and deploying advanced examination techniques for characterization of fuel and structural materials.

Evaluated the potential of applying advanced poison system to future Pressurized Water Reactor (PWR) cores, which will improve the performance and simplicity of the reactor and plant.

Established the processes needed to qualify new materials and manufacturing methods for PWR designs beyond A1B.

Completed the Stress Corrosion Cracking Growth Rate (SCCGR) component of the Advanced Stress Corrosion Cracking (SCC) Model. The improved predictions, resulting

from the Advanced SCC Model, can potentially decrease the number and frequency of required plant component physical inspections.

FY 2006 Close out and document activities related to both the testing of thermophotovoltaic power conversion modules and the evaluation of performance data materials to: (1) improve efficienty and power density of thermophotovoltaic devices; and (2) identify feasible fabrication cost reduction approaches.

Expand Investigation of non-saturated steam on-solid-state energy conversion cycles.

Continue to establish the processes needed to qualify new materials and manufacturing methods for PWR designs beyond A1B.

Provide technical work documents and technical direction to assemble, disassemble, examine and ship approximately 20-30 irradiation tests using the Test Train Cask.

Develop the stress corrosion cracking initiation model component of the Advanced SCC Model.

Develop models based on thermodynamic and kinetic analysis to better understand the role of microstructure on stress corrosion cracking.

Refine the CINCH4 corrosion model, a computer code that models the corrosion of Zircaloy.

FY 2007 Implement finite-element based replacement code for core mechanical analysis.

Continue investigation of non-saturated non-solid-state energy conversion cycles.

Perform poison, moderator, and reflector materials development in support of a high temperature reactor core.

Perform stress corrosion cracking (SCC) testing of X-750 HTH and Alloy 625 fasteners to show acceptability for continued use in fleet cores.

Perform and complete expended core examinations on USS OHIO and D1G core.

Perform destructive and non-destructive testing and evaluation of irradiated fuel, poison, cladding, and plant materials at the low-level exam facility and the Radioactive Material Laboratory 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 support component re-use evaluations.

Develop, test, and examine high temperature ceramic and metallic fuel element constituent materials.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Develop new filler materials for improved weldability, stress corrosion cracking and fracture toughness performance, resulting in potentially significant cost savings.

Continue development of the initiation phase of the Advanced SCC model.

Evaluation and Servicing……. **150,406** **162,766** **179,277**

Mission Supporting Goals/Objectives:

Evaluation and Servicing (E&S) work encompasses the operation, maintenance, and servicing of land-based test facilities, including the Modifications and Additions to Reactor facility (MARF) and S8G prototypes, Idaho Expended Core Facility (ECF), and the Advanced Test Reactor (ATR) at INL. 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.

The Evaluation and Servicing category also funds ongoing cleanup of facilities at all Naval Reactors sites to reduce hazards to personnel, and reduce potential liabilities due to aging facilities, changing conditions or accidental releases. Land-based prototypes and other related laboratory test facilities that have reached the end of their useful life are remediated and, if required, decontaminated prior to dispositioning or inactivating through the use of E&S funds. This effort includes the design of fuel servicing and component disposal equipment and evaluating and resolving design issues, along with the planning and execution of defueling, layup, and disassembly work.

Evaluation and Servicing funds are required to (1) operate land-based test reactor plants, which provide prototypical testing, core depletion analysis, and reactor plant operating training; (2) service land-based reactor plants to ensure they continue to operate safely and efficiently, and develop equipment and procedures to provide for safe efficient servicing of nuclear reactor plants; (3) operate and service the Advanced Test Reactor, which provides for materials irradiations testing; (4) safely and responsibly inactivate shutdown land-based reactor plants in support of the Program's and Department of Energy environmental clean-up goals; (5) complete the certification for unconditional release of the Windsor site and initiate the land transfer process as part of the final inactivation efforts at the Windsor site in Connecticut; (6) continue inactivation efforts at the Kesselring site (KSO) in New York and the Naval Reactors Facility (NRF) in Idaho to eliminate surplus facilities, remediate and dismantle plant facilities, and release applicable areas; (7) conduct ongoing cleanup of test facilities to reduce hazards to personnel, and reduce potential liabilities due to changing conditions or accidental releases; and (8) develop servicing systems and procedures that ensure the safe processing and storage of spent naval fuel.

Vital to Naval Reactors, E&S funding will continue to support the Program's tradition of safety, reliability, and technical excellence through operation, maintenance, remediation, and cleanup of land-based test facilities.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Verifiable Supporting Activities:

FY 2005 Initiated the remediation of the KSO Silo area and commence remediation of Building 29, which includes three Solid Waste Management Units. Building 29 is an inactive wastewater collection system formally used by the S3G Prototype.

Initiated and completed design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Continued development of detailed designs for initial A1B reactor servicing equipment.

Continued the Integrated Condition Assessment System (ICAS) testing in the S8G prototype to support the use of electronic logged data recording. This test will demonstrate automated techniques that reduce the log-keeping burden on watch standers while improving utility of logged data for trend analysis and maintenance.

Continued design of Expended Core Facility (ECF) Dry Storage Process System No. 3, and the system to initiate the return of spent fuel from Idaho Nuclear Technology and Engineering Center (INTEC).

Performed chemistry automation testing at the S8G prototype in support of potential future deployment to the fleet and commenced testing with a new integrated sample sink system.

Provided support to the NNSA Office of Environmental Management in preparing for the remediation of the former fissionable materials reprocessing facility known as SPRU (Separating Process Research Unit).

Completed design of the canister baskets for shipment and long-term storage of S8G spent fuel in the Spent Fuel Canister (SFC).

Completed S9G reactor hardware and software maintenance.

Completed the design of ECF Dry Storage Process Systems No. 1 to prepare and place existing and incoming fuel into dry storage.

Completed a major non-refueling overhaul of the S8G prototype (including overhaul of the S8G main seawater valves and execution of component/weld inspections of the S8G plant).

FY 2006 Initiate the removal of highly contaminated inactive equipment and systems from the L-Building at the Bettis Atomic Power Laboratory, formerly used for the manufacture of fuel.

Develop and implement new fuel handling safety requirements for use at ECF.

Continue chemistry automation testing at the S8G prototype in support of potential future deployment to the fleet and continue testing with a new integrated sample sink system.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Continue remediation of KSO Building 29, which is an inactive wastewater collection system formally used by the S3G Prototype.

Continue the design of new visual examination stations (VES) for use at ECF in examining irradiated test specimens, using latest computer hardware and software.

Provide design engineering and support services to maintain the MARF and S8G prototype related systems, emergency shutdown systems, and containment systems.

Perform testing of new design Ship's Batteries at both S8G and MARF prior to fleet deployment.

Perform the remaining D1G inactivation work covered by the Environmental Impact Statement (EIS) Record of Decision.

Support startup and testing of ECF Dry Storage Process System No. 1, complete the design of ECF Dry Storage Process No. 3, and continue design of the System to initiate the return of spent fuel from INTEC.

Design the canister baskets for shipment and long-term storage of D1G-2 spent fuel in the Spent Fuel Canister (SFC).

Dismantle and remove S3G prototype plant equipment and hull at KSO.

Complete various decontamination work efforts to disposition ECF radiological systems no longer in use, including, but not limited to, Water Pit #1 remediation**.**

FY 2007 Initiate design of basket for shipment and long-term storage of D2W spent fuel in the spent fuel canister transportation cask and develop D2W basket alignment and handling equipment.

Develop South End Extension (SEE) procedures for spent fuel operations.

Continue to provide design engineering and support services to maintain the MARF and S8G prototype related systems, emergency shutdown systems, and containment systems.

Remove highly contaminated inactive equipment and systems from the L-Building in accordance with the project management plan.

Perform equipment checkout and use of grapples used for INTEC spent fuel return operations.

Perform shielding analyses for ECF equipment and support radiation test procedures.

Perform and complete analysis work and obtain Certifications of Compliance for shipment of S9G single unirradiated fuel cell in the new fuel-shipping container.

Perform D1G reactor compartment disassembly and dispose of D1G reactor plant major components.

(dollars in thousands)

FY 2005	FY 2006	FY 2007

Perform and complete a major non-refueling overhaul of the S8G prototype (S8G FY 2007 SRA).

Complete remediation of KSO Building 29.

Complete Safety Analysis Report (SAR) analyses for storage and shipment of S8G and D1G-2 spent fuel in the spent fuel canister and initiate D1G-2 fuel spent fuel canister technical information package development design support for S8G and D1G-2 spent fuel basket procurement.

Complete development of A1B designs for head area seal servicing. Deliver the equipment to the shipyard, including, among other items, the head area protective cover, closure head penetration covers, and clamp ring installation equipment.

ATR Operations and Test Support [a]	**67,500**	**57,400**	**64,600**
Facility Operations.....	**53,380**	**51,074**	**56,984**
Total, Naval Reactors Development: O&M ...	**765,041**	**721,512**	**761,176**

[a] ATR Operations and Test Support includes base operations as well as direct support for the NR irradiation test program (~$7.7 million in FY 2007).

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Plant Technology	
Decrease due to completion of pre-production design of OHIO-class Generic I&C system equipment and other platform I&C development work.	**-11,892**
Reactor Technology and Analysis	
Increase due to a delay in TTC work from FY 2006 to FY 2007.	**+10,276**
Materials Development and Verification	
Increase due to implementation of finite-element replacement code for core mechanical analysis.	**+5,100**
Increase due to additional destructive and non-destructive testing and evaluation of irradiated fuel, poison, cladding, and plant materials at the low-level exam facility and Radioactive Material Laboratory.	**+6,559**
Evaluation and Servicing	
Increase due to initiation of basket design for shipment and long-term storage of D2W spent fuel in the spent fuel canister transportation cask and develop D2W basket alignment and handling equipment.	**+5,900**
Increase due to initiation of D1G-2 spent fuel canister technical information package and design support for S8G and D1G-2 spent fuel basket procurement.	**+10,611**
ATR Operations and Test Support	
As $13.5 million of ATR requirements is identified under NR Construction vice O&M, the change from FY 2006 to FY 2007 inaccurately reflects an increase in requirements. Actual ATR requirements decrease in FY 2007 due to a funding transfer from the Office of Nuclear Energy, Science and Technology.	**+7,200**
Facility Operations	
Increase due to installation of the Composite Test Device (CTD) which will be used to test the instrumentation and Control design for future S8G reactor plants. ..	**+2,000**
Increase due to Radioactive Materials Laboratory (RML) roof and ventilation upgrades.	**+2,910**
Increase reflects a reduction in FY 2006 due to funding transfer to the ATR Operations and Test Support.	**+1,000**
Total Funding Change, Naval Reactors O&M	**+39,664**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
General Plant Projects	20,236	12,167	15,012
Capital Equipment	33,144	38,907	41,972
Total, Capital Operating Expenses	**53,380**	**51,074**	**56,984**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
General Plant Projects	23,372	18,331	11,352	15,500
Capital Equipment	38,800	46,200	43,700	43,800
Total, Capital Operating Expenses	**62,172**	**64,531**	**55,052**	**59,300**

Construction Projects

	Total Estimated Cost (TEC)	Prior Year ApproPriations	FY 2005	FY 2006	FY 2007	Unappropriated Balance
90-N-102 Expended Core Facility Dry Cell	109,371	108,390	981	0	0	0
05-D-900 Materials Development Facility	17,679[a]	0	6,151	9,801	1,287	
06-D-901 Central Office Building #2	7,000	0	0	6,930	0	0
07-D-190 PED Materials Research Technology Complex	3,014	0	1,079[b]	0	1,485	450
ATR Operations and Test Support[c]			0	13,365	0	
Total, Construction			**7,132**	**30,096**	**2,772**	

[a] Design funded within the FY 2004 Naval Reactors Development line ($440,000).

[b] Design funded within the FY 2005 Naval Reactors Development line and carried as a non-add in this table.

[c] This is not construction. In the Conference report to Public Law 109-103, Congress directed that NR transfer $13.5 million to DOE-NE to support the Advanced Test Reactor (ATR) Life Extension Program (LEP). However, the report included the $13.5 million specified for ATR under the Construction Heading vice Operations and Maintenance. The additional $13.5 million has been transferred to NE to support the LEP (NR total transfer to NE for ATR in FY 2006 was $70.8 million). Actual NR Construction requirements in FY 2006 are $16.9 million.

Outyear Construction Projects

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
07-D-190, PED Materials Research Technology Complex	450	0	0	0
Materials Research Technology Complex	0	12,400	11,300	2,600
PED, ECF Water Pit #1	1,100	800	0	0
ECF Water Pit #1	0	0	4,200	2,800
Shipping and Receiving Facility[a]	9,000	0	0	0
PED, Plant Services Building	0	0	500	1,000
PED, ECF Work Area Upgrades	1,000	250	0	0
ECF Work Area Upgrades	0	0	1,900	2,600
KSO Training/Office Facility [a]	600	2,000	6,900	1,900
PED, Omnibus Bettis/KAPL Utility Replacement	1,000	500	0	0
Omnibus Bettis/KAPL Utility Replacement	0	0	3,200	9,800
Total, Construction	**13,150**	**15,950**	**28,000**	**20,700**

Summary Outyear

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Construction Projects	**13,150**	**15,950**	**28,000**	**20,700**

[a] PED funding has not been requested for these projects since a design-build acquisition approach is being used. This acquisition approach does not require PED funds per Chapter 6 of DOE Manual 413.3-1.

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

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2005	FY 2006	FY 2007	Completion Date
Network Upgrade	0	2,800	1,000	1,000	800	0	FY 2006
Low Level Exam Equipment	5,340	5,000	320	3,970	710	0	FY 2006
Scalable Parallel Supercomputer	12,830	12,000	0	0	12,000	0	FY 2006
Scalable Parallel Supercomputer	10,878	10,000	0	0	0	10,000	FY 2007
High Performance Technical Computing System	8,400	8,000	0	8,000	0	0	FY 2005
Network Convergence	0	3,000	0	800	700	1,500	FY 2007
Emergency Safety Fill System	9,678	8,700	0	1,500	2,600	1,900	FY 2010
Total, Major Items of Equipment				**15,270**	**16,810**	**13,400**	

Outyear Major Items of Equipment

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Emergency Safety Fill System	1,500	1,200	0	0
S8G Generic Instrumentation & Control	0	500	1,000	2,800
Advanced Metal Processing Equipment	0	4,000	2,000	2,000
High Performance Technical Computing System	10,000	0	0	0
Network Upgrade	0	0	1,000	1,000
Scalable Parallel Supercomputer	0	10,000	0	0
Scalable Parallel Supercomputer	0	0	10,000	0
High Performance Technical Computing System	0	0	0	10,000
Total, Major Items of Equipment	**11,500**	**15,700**	**14,000**	**15,800**

Summary Outyear

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Major Items of Equipment	**11,500**	**15,700**	**14,000**	**15,800**

Naval Reactors

Program Direction

Funding Schedule by Activity

(dollars in thousands)

	FY 2005	FY 2006	FY 2007
Naval Reactors			
Headquarters			
Salary and Benefits	9,845	10,026	10,326
Travel	560	564	580
Support Services	0	0	0
Other Related Expenses	2,990	3,147	3,526
Total, Headquarters	**13,395**	**13,737**	**14,432**
Full Time Equivalents	67	67	67
Pittsburgh Naval Reactors			
Salary and Benefits	7,789	8,022	8,220
Travel	142	145	153
Support Services	0	0	0
Other Related Expenses	1,127	1,147	1,253
Total, Pittsburgh Naval Reactors	**9,058**	**9,344**	**9,626**
Full Time Equivalents	73	73	73
Schenectady Naval Reactors			
Salary and Benefits	6,153	6,282	6,449
Travel	115	119	124
Support Services	0	0	0
Other Related Expenses	543	545	554
Total, Schenectady Naval Reactors	**6,811**	**6,946**	**6,627**
Full Time Equivalents	64	64	64
Total Naval Reactors Program			
Salary and Benefits	23,787	24,330	24,995
Travel	817	828	857
Support Services	0	0	0
Other Related Expenses	4,660	4,839	5,333
Total, Program Direction	**29,264**	**29,997**	**31,185**
Full Time Equivalents	204	204	204

NOTE: The FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

Outyear Funding Schedule

(dollars in thousands)

	FY 2008	FY 2009	FY 2010	FY 2011
Program Direction				
Headquarters				
Salary and Benefits	11,249	12,181	12,890	13,119
Travel	595	605	620	630
Support Services	0	0	0	0
Other Related Expenses	3,697	3,838	3,983	4,135
Total, Headquarters	**15,541**	**16,624**	**17,493**	**17,884**
Full Time Equivalents	67	67	67	67
Pittsburgh Naval Reactors				
Salary and Benefits	8,442	8,463	8,587	8,769
Travel	155	158	160	163
Support Services	0	0	0	0
Other Related Expenses	1,280	1,295	1,330	1,356
Total, Pittsburgh Naval Reactors	**9,877**	**9,916**	**10,077**	**10,288**
Full Time Equivalents	73	73	73	73
Schenectady Naval Reactors				
Salary and Benefits	6,597	6,660	6,820	7,008
Travel	125	130	135	140
Support Services	0	0	0	0
Other Related Expenses	560	570	575	580
Total, Schenectady Naval Reactors	**7,282**	**7,360**	**7,530**	**7,728**
Full Time Equivalents	64	64	64	64
Total Naval Reactors Program				
Salary and Benefits	26,288	27,304	28,297	28,896
Travel	875	893	915	933
Support Services	0	0	0	0
Other Related Expenses	5,537	5,703	5,888	6,071
Total, Program Direction	**32,700**	**33,900**	**35,100**	**35,900**
Full Time Equivalents	204	204	204	204

Description

Due to the crucial nature of nuclear reactor work, Naval Reactors is a centrally managed organization. This places a heavy burden on the Federal employees who oversee and set policies/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 2005	FY 2006	FY 2007
Salaries and Benefits	**23,787**	**24,330**	**24,995**

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 projected salary adjustments in accordance with allowable inflation.

Travel	**817**	**828**	**857**

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 2007 funding supports travel required for the management and oversight of the Naval Reactors Program, in addition to inflationary growth between FY 2006 and FY 2007.

Support Services	**0**	**0**	**0**

Naval Reactors does not use Support Services contractors.

Other Related Expenses	**4,660**	**4,839**	**5,333**

Includes provision of funds for the Working Capital Fund, based on guideline estimates provided by the Working Capital Fund Manager. Funding also supports goods and services such as training and ADP maintenance, and includes labor costs for Bettis contractor services and ADP requirements for NR Headquarters' internal classified local area network.

Total, Program Direction	**29,264**	**29,997**	**31,185**

Explanation of Funding Changes

	FY 2007 vs. FY 2006 ($000)
Salaries and Benefits	
The change is due to salary adjustments in accordance with allowable inflation in achieving the FY 2007 FTE target. .	+665
Travel	
The change is due to increased travel requirements for the management and oversight of the Naval Reactors Program and to adjustments in accordance with allowable inflation.	+29
Other Related Expenses	
The change is due to increased ADP requirements for NR Headquarters' internal classified local area network and adjustments in accordance with allowable inflation. ..	+494
Total Funding Change, Program Direction	**+1,188**

Other Related Expenses

	FY 2005	FY 2006	FY 2007
Training	185	195	219
Working Capital Fund and Rent	580	595	610
Software Procurement/Maintenance Activities/ Capital Acquisitions	1,644	1,801	1,985
Other	2,251	2,248	2,519
Total, Budget Authority	**4,660**	**4,839**	**5,333**

07-D-190, Project Engineering and Design (PED) - Materials Research Technology Complex, Bettis Atomic Power Laboratory

1. Significant Changes

- N/A.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2007	2Q FY 2005	3Q FY 2008	2Q FY 2009	1Q FY 2011	1Q FY 2012	4Q FY 2042

3. Baseline and Validation Status (dollars in thousands)

(dollars in thousands)

	TEC [a]	OPC, except D&D Costs	D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007	3,014	N/A	N/A	3,014	1Q FY 2007[b]	3,014

4. Project Description, Justification, and Scope

Project Description:

This project provides for Architect-Engineering (A-E) services for the Materials Research and Technology Complex (MRTC) construction project, allowing the project 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 design will be extensive enough to establish a performance baseline and to support construction or long-lead procurements in the fiscal year in which line item construction funding is requested and appropriated.

The conceptual design study was prepared using Operations and Maintenance funds prior to receiving construction design funding. The conceptual design study defines the scope of the project and produces a rough cost estimate and schedule.

Design efforts as described herein reflect a shift in Program priorities. NR has concluded that continuing development of Thermopotovoltaic Direct Energy Conversion (TPV DEC) will not lead to a better overall reactor plant for the Navy. Termination of the TPV DEC program, in light of formidable engineering challenges, obviates the requirement for the Cleanroom Technology Facility (CTF), Project 03-D-201, as originally envisioned (scheduled for completion in FY 2006). To optimize this situation, the design for the MRTC will be modified to accommodate use and integration of the existing CTF

[a] The TEC is for design only.

[b] The Performance Baseline will be revalidated as a result of significant changes to the MRTC project.

building. Further, as Congress did not authorize construction design for the MRTC in FY 2006, final design completion will be delayed until FY 2008. A new performance baseline will be established and independently validated.

The MRTC project will include the construction of an approximately 37,500 gross square feet (GSF) main chemistry building and the modification of the existing 10,500 GSF Cleanroom Technology Facility. The main chemistry building will consolidate general chemistry, metallography, surface science, electron microscopy, and spectroscopy laboratories, while the existing CTF building will house the radiochemistry laboratory as well as technical support laboratories. The adjacent 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.

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.

Costs of preliminary and final design and engineering efforts for the MRTC are provided, as well as very preliminary estimates of the TEC, including physical construction. While preliminary design is complete and the MRTC has an approved performance baseline, the Program will establish and independently validate a new performance baseline to reflect changes to the project as mentioned above. All costs and schedules are preliminary until CD-2 is reapproved.

The project will be conducted in accordance with the essential project management requirements in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2005	1,079	1,079	1,056
2006	0	0	23
2007	1,485	1,485	1,485
2008	450	450	450
Total, Design (07-D-190)	3,014	3,014	3,014
Total, TEC	3,014	3,014	3,014

6. Details of Project Cost Estimate [a]

Total Estimated Costs

(dollars in thousands)

Cost Element	Current Estimate ($000)	Previous Estimate ($000)
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	2,864	N/A
Design Management costs (3% of Design TEC)	90	N/A
Project Management costs (2% of Design TEC)	60	N/A
Total, Design Costs	3,014	N/A
Total, Line Item Costs (TEC, Design Only)	3,014	N/A

Other Project Costs

(dollars in thousands)

Cost Element	Current Estimate	Previous Estimate
Pre-conceptual Design Costs	N/A	N/A
Conceptual Design Costs	N/A	N/A
Relocation Costs	N/A	N/A
D&D of Construction Site	N/A	N/A
D&D Phase		
D&D for removal of the existing facility	N/A	N/A
Other D&D to comply with "one-for-one" requirements	N/A	N/A
D&D contingency	N/A	N/A
Total D&D	N/A	N/A
Contingency for OPC other than D&D	N/A	N/A
Total, OPC	N/A	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	1,079	1,485	450	0	0	0	0	3,014
TEC (Construction)	N/A	N/A	N/A	0	0	0	0	N/A
OPC Other than D&D	N/A	N/A	N/A	0	0	0	0	N/A
D&D Costs	N/A	N/A	N/A	0	0	0	0	N/A
Total Project Costs	1,079	1,485	450	0	0	0	0	3,014

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	2Q FY 2011
Expected Useful Life (number of years)	50
Expected Future start of D&D for new construction (fiscal quarter)	1Q FY 2061

[a] The cost estimate includes design phase activities only. Construction activities will be replaced as an individual line item.

(Related Funding requirements)[a]

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current estimate	Prior Estimate	Current estimate	Prior Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total Related funding	N/A	N/A	N/A	N/A

9. Required D&D Information

N/A

10. Acquisition Approach

The NR Program will outsource design work to an engineering services firm, via approved contracting practices, and will oversee that work.

[a] This data sheet is for design activities only. Costs related to items in this table will be determined when construction funds are requested under a separate line item.

05-D-900, Materials Development Facility Building, Schenectady, New York

1. Significant Changes

- The FY 2005 costs have been reduced by $1.4M and FY 2006 increased by the same amount as a result of delays in awarding support utility construction contracts due to extended durations of design.

- Total Estimated Cost and Other Project Costs have been updated in Section 3 and 6 of this data sheet to reflect the re-categorization of design efforts for support utilities.

- Reflects an across-the-board rescission of 1 percent for FY 2006 in accordance with the Department of Defense Appropriations Act, 2006, P.L.109-148.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Existing Facilities Start	D&D Existing Facilities Complete
FY 2005	1Q FY 2005	4Q FY 2005	4Q FY 2005	4Q FY 2008	N/A	N/A
FY 2006	2Q FY 2005	4Q FY 2006	3Q FY 2005	4Q FY 2008	N/A	N/A
FY 2007	2Q FY 2004	1Q FY 2007	4Q FY 2005	4Q FY 2008	N/A	N/A

3. Baseline and Validation Status (dollars in thousands)

(dollars in thousands)

	TEC	OPC, except D&D Costs	D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005	17,400	2,950	N/A	20,350	2Q FY 2005	20,350
FY 2006	17,351	3,690	N/A	21,041	2Q FY 2005	21,041
FY 2007	17,679	3,250	N/A	20,929	20,929	N/A

4. Project Description, Justification, and Scope

Project Description:

This design-build project provides funding for the construction of the Materials Development Facility (MDF) Project. The objective of this project is to consolidate non-irradiated material development fabrication and characterization activities and provide state-of-the-art industrial space for critical materials work.

The MDF project includes three main parts. First, several small efforts will be completed to run utilities from existing site systems to the MDF location. These include domestic water, water fire protection, chilled water for cooling, steam and condensate, electricity, and other services to support building operations. In parallel with these efforts, a construction work area and an alternate roadway to the construction site will be established. This will allow building construction to be completed while minimizing impact to existing site operations. Upon completion of access to the construction area, the main building construction effort will commence with a design-build contractor. This effort includes

demolition of existing structures, and design and construction of the new MDF, including connection to the utility system installed above.

Project Justification:

A replacement industrial facility building is planned for construction at Knolls Atomic Power Laboratory (KAPL) to consolidate non-irradiated material development fabrication and characterization activities, which are currently located in five separate buildings, and to reduce life cycle cost. A detailed study found constructing a new building vice renovation and expansion of the existing buildings, which date back to the 1950's, is a more cost-effective method of maintaining these critical Program capabilities and over the next 30 years will yield a projected 20 percent life cycle cost savings. Due to historical radiological and hazardous materials contamination, existing facilities require decontamination prior to eventual demolition, which will reduce historical contamination liabilities.

This new facility will provide sufficient industrial space to house the Materials Fabrication Facility, the Component Fabrication Facilities, the Materials Characterization Laboratory, and the Science Autoclave Facility and will consolidate materials/fabrication laboratory efforts into one facility.

Project Scope:

The MDF building will provide state-of-the-art industrial space, will be constructed to the latest energy efficiency and safety standards, and will make use of low maintenance materials to minimize future costs. The building will be a two-story structure providing high bay, medium bay, laboratory space, and an open office layout to provide professional spaces for the technical and administrative personnel. The building's electrical and mechanical needs will be provided by a new double-ended load center and a 400-ton chiller to be located in the adjacent office building. Site preparation work for this project includes demolition of existing facilities and modifications to existing site utilities. The project will also purchase new equipment; however most of the equipment will be moved into the facility from existing facilities.

KAPL has evaluated several alternatives including the construction of a smaller building and a one-story building. All of these alternatives have higher life cycle costs and do not meet laboratory needs.

The project will be conducted in accordance with the essential project management requirements as identified in DOE Order 413.3 and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.

Compliance with Project Management Order (for Design-build projects):

- Critical Decision – 0: Approve Mission Need – FY 2001
- Critical Decision – 1: Approve Preliminary Baseline Range – FY 2001
- Critical Decision – 2: Approve Performance Baseline – 1Q FY 2005
- External Independent Review Final Report – 2Q FY 2005

- Critical Decision – 3: Approve Start of Construction – 4Q FY 2005 (Utilities), 3Q FY 2006 (Main Building)

- Critical Decision – 4: Approve Start of Operations – 4Q FY 2008[a]

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2004[b]	440	440	173
2005	125	125	392
2006	990	990	500
2007			490
Total, Design	1,555	1,555	1,555
Construction			
2005	6,026	6,026	370
2006	8,811	8,811	7,206
2007	1,287	1,287	7,085
2008	0	0	1,463
Total, Construction	16,124	16,124	16,124
Total, TEC (05-D-900)	17,679	17,679	17,679

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

	Current Estimate	Previous Estimate
Preliminary and Final Design [b]	1,555	1,005
Construction Phase		
Site Preparation	4,322	4,345
Equipment	555	555
Design-build Construction	10,203	10,025
Contingency	1,044	1,421
Total, Construction	16,124	16,346
Total, TEC	17,679	17,351

[a] Beneficial occupancy.

[b] Design funding for MDF support utilities in the amount of $440,000 was funded within the Naval Reactors Development line.

Other Project Costs

(dollars in thousands)

	Current Estimate	Previous Estimate
Conceptual Planning	440	440
Preliminary and Final Design Cost (Utility Cost)	0	440
Start-up (Equipment Relocation)	1,100	1,100
Decontamination and Decommissioning (D&D)	1,710	1,710
Contingency for OPC other than D&D	0	0
Total, OPC	3,250	3,690

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design)	1,065	490	0	0	0	0	0	1,555
TEC (Construction)	7,576	7,085	1,463	0	0	0	0	16,124
OPC (includes D&D)	2,035	225	990	0	0	0	0	3,250
Total Project Costs	10,676	7,800	2,453	0	0	0	0	20,929

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2008
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal quarter)	4Q FY 2038

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current estimate	Prior Estimate	Current estimate	Prior Estimate
Operations	861	861	36,489	36,489
Maintenance	729	729	30,894	30,894
Total Related funding	1,590	1,590	67,383	67,383

9. Required D&D Information

N/A

10. Acquisition Approach

Building design and construction will be competitively bid from qualified contractors via one fixed price design-build contract. Utility installations, demolition security/roadway work, and major equipment installations will be performed using conventional competitive contracting methods.

Site Funding Summary

(dollars in millions)

	FY 2005	FY 2006	FY 2007
Chicago Operations Office			
Ames Laboratory	0.3	0.3	0.4
Argonne National Laboratory	29.3	25.9	26.7
Brookhaven National Laboratory	38.8	59.4	36.9
Chicago Operations Office	437.2	274.9	479.2
New Brunswick Laboratory	0.9	0.9	0.9
Lawrence Berkeley National Laboratory	3.1	3.3	4.3
Idaho Operations Office			
Idaho National Laboratory	79.1	73.6	84.9
Idaho Operations Office	1.9	1.9	3.2
Kansas City Site Office			
Kansas City Plant	399.9	339.6	367.8
Kansas City Site Office	6.0	6.3	6.7
Livermore Site Office			
Lawrence Livermore National Laboratory	1,176.8	1,110.7	1,157.1
Livermore Site Office	16.5	16.5	18.3
Los Alamos Site Office			
Los Alamos National Laboratory	1,598.3	1,576.7	1,639.9
Los Alamos Site Office	17.5	17.2	20.2
NETL			
NETL	1.8	1.6	4.5
NNSA Service Center			
Atomic Energy of Canada, Ltd.	0.0	0.0	0.1
General Atomics	0.0	19.8	16.6
National Renewable Energy Laboratory	1.8	1.8	1.8
Naval Research Laboratory	82.7	28.7	0
University of Rochester/LLE	0.0	68.0	44.2
NNSA Service Center (all other sites)	504.6	627.3	661.0
Nevada Site Office			
Nevada Site Office	131.4	103.2	116.8
Nevada Test Site	252.6	299.5	261.7
Oak Ridge Operations Office			
Oak Ridge Institute for Science and Engineering	8.7	6.1	6.3

	(dollars in millions)		
	FY 2005	FY 2006	FY 2007
Oak Ridge National Laboratory	184.9	194.1	148.4
Office of Science and Technical Information	0.1	0.2	0.1
Y-12 Site Office	12.3	12.7	13.5
Y-12 National Security Complex	891.3	813.7	790.0
Pacific Northwest National Laboratory	151.1	136.8	132.4
Oak Ridge Operations Office	27.3	35.0	45.9
Other	2.2	3.3	3.4
Pantex Site Office			
Pantex Plant	512.7	472.0	479.2
Pantex Site Office	12.0	12.4	13.1
Pittsburgh Naval Reactors Office			
Bettis Atomic Power Laboratory	390.5	379.1	385.0
Pittsburgh Naval Reactors Office	9.1	9.3	9.6
Richland Operations Office			
Richland Operations Office	4.2	1.7	2.5
Sandia Site Office			
Sandia National Laboratories	1,402.2	1,256.7	1,221.4
Sandia Site Office	12.3	13.0	14.1
Savannah River Operations Office			
Savannah River Operations Office	1.4	9.7	6.8
Savannah River Site Office	3.2	3.6	3.7
Savannah River Site	323.2	256.8	259.1
Schenectady Naval Reactors Office			
Knolls Atomic Power Laboratory	311.4	299.7	309.8
Schenectady Naval Reactors Office	6.8	6.9	7.1
Washington DC Headquarters	312.8	577.3	579.0
Adjustments	-61.6	-52.2	-67.7
Total, NNSA	**9,298.6**	**9,105.0**	**9,315.9**

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
Chicago Operations Office				
Ames Laboratory	0.4	0.4	0.4	0.4
Argonne National Laboratory	25.5	20.4	17.9	18.8
Brookhaven National Laboratory	40.4	43.4	29.5	36.4
Chicago Operations Office	531.0	583.8	610.7	620.8
New Brunswick Laboratory	0.9	0.9	0.9	0.9
Lawrence Berkeley National Laboratory	5.1	5.1	5.2	5.3
Idaho Operations Office				
Idaho National Laboratory	73.5	73.9	73.6	75.1
Idaho Operations Office	3.3	3.5	3.5	3.6
Kansas City Site Office				
Kansas City Plant	378.3	396.6	395.9	391.8
Kansas City Site Office	6.8	7.0	7.1	7.2
Livermore Site Office				
Lawrence Livermore National Laboratory	1,072.7	1,079.7	1,064.2	1,060.8
Livermore Site Office	18.7	19.0	19.4	19.8
Los Alamos Site Office				
Los Alamos National Laboratory	1,602.9	1,615.7	1,546.5	1,409.7
Los Alamos Site Office	20.6	21.0	21.4	21.8
NETL				
NETL	0	0	0	0
NNSA Service Center				
Atomic Energy of Canada, Ltd.	0	0	0	0
General Atomics	17.9	17.8	17.8	17.2
National Renewable Energy Laboratory	1.8	1.8	1.8	1.8
Naval Research Laboratory	0	0	0	0
University of Rochester/LLE	56.1	60.4	53.3	51.4
NNSA Service Center (all other sites)	665.1	653.1	539.9	558.7
Nevada Site Office				
Nevada Site Office	107.4	107.6	111.5	118.6
Nevada Test Site	257.1	258.7	258.1	263.3
Oak Ridge Operations Office				
Oak Ridge Institute for Science and Engineering	6.6	6.7	6.8	6.9
Oak Ridge National Laboratory	135.6	111.0	115.1	111.6
Office of Science and Technical Information	0.1	0.1	0.1	0.1

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
Y-12 Site Office	13.7	14.0	14.3	14.6
Y-12 National Security Complex	774.8	799.1	830.2	867.2
Pacific Northwest National Laboratory	147.9	160.6	130.6	165.2
Oak Ridge Operations Office	36.2	24.6	21.8	17.8
Other	3.5	3.6	3.7	3.7
Pantex Site Office				
Pantex Plant	521.8	511.3	527.6	511.8
Pantex Site Office	13.4	13.6	13.9	14.2
Pittsburgh Naval Reactors Office				
Bettis Atomic Power Laboratory	393.6	396.9	395.6	406.2
Pittsburgh Naval Reactors Office	9.9	9.9	10.1	10.3
Richland Operations Office				
Richland Operations Office	2.6	2.6	2.6	3.1
Sandia Site Office				
Sandia National Laboratories	1,272.0	1,292.4	1,347.7	1,329.8
Sandia Site Office	14.4	14.7	15.0	15.3
Savannah River Operations Office				
Savannah River Operations Office	8.8	10.5	8.4	8.7
Savannah River Site Office	3.7	3.8	3.9	4.0
Savannah River Site	227.0	215.3	246.4	272.7
Schenectady Naval Reactors Office				
Knolls Atomic Power Laboratory	322.3	333.3	348.6	352.9
Schenectady Naval Reactors Office	7.3	7.4	7.5	7.7
Washington DC Headquarters	735.5	826.4	1,093.9	1,313.8
Adjustments	-34.0	-35.0	-36.0	-37.0
Total, NNSA	**9,502.2**	**9,692.6**	**9,886.4**	**10,084.0**

BETTIS ATOMIC POWER LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Naval Reactors	390.5	379.1	385.0
Total, NNSA	**390.5**	**379.1**	**385.0**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Naval Reactors	393.6	396.9	395.6	406.2
Total, NNSA	**393.6**	**396.9**	**395.6**	**406.2**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
Bettis Atomic Power Laboratory	3,110	3,190	3,156
Total Facility	**3,110**	**3,190**	**3,156**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

Bettis Laboratory is a research and development laboratory operated by Bechtel Bettis, Inc., for the Naval Nuclear Propulsion Program, a joint Department of the Navy-Department of Energy (DOE) organization. The Pittsburgh Naval Reactors Office oversees Bettis operations. Bettis is primarily involved with the design, development, and operational follow 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. The initial efforts of Bettis Laboratory led to the development of the power plant for USS NAUTILUS (SSN 571), the world's first nuclear-powered submarine. 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.

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. Bettis also has lead responsibility for the overall program for training 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.

KANSAS CITY PLANT

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	182.8	169.1	186.1
Engineering Campaign	9.1	8.4	6.7
Pit Manufacturing and Certification Campaign	0	0.1	0.1
Readiness Campaign	42.5	28.8	36.1
Readiness in Technical Base and Facilities	110.8	107.6	105.4
Nuclear Weapons Incident Response	3.6	0.4	0.4
Environmental Projects and Operations Program/LTRA	0	0	1.7
Safeguards and Security	18.2	16.4	14.0
Facilities and Infrastructure Recapitalization Programs	31.5	7.5	15.9
Nonproliferation and International Security	0.7	0.6	1.4
Global Initiative for Proliferation Prevention	0.7	0.7	0.0
Total, NNSA	**399.9**	**339.6**	**367.8**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	195.3	207.4	202.2	197.1
Engineering Campaign	7.0	6.9	6.8	6.7
Pit Manufacturing and Certification Campaign	0.1	0.1	0.1	0.1
Readiness Campaign	28.3	26.3	25.6	25.8
Readiness in Technical Base and Facilities	113.1	119.4	123.2	122.3
Nuclear Weapons Incident Response	0.4	0.5	0.5	0.5
Environmental Projects and Operations Program/LTRA	2.0	2.0	1.8	1.8
Safeguards and Security	14.1	14.4	14.5	14.7
Facilities and Infrastructure Recapitalization Programs	16.6	18.2	19.8	21.4
Nonproliferation and International Security	1.4	1.4	1.4	1.4
Global Initiative for Proliferation Prevention	0	0	0	0
Total, NNSA	**378.3**	**396.6**	**395.9**	**391.8**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	2,664	2,642	2,705
Other	294	278	275
Total Facility	**2,958**	**2,920**	**2,980**

Congressional Items of Interest: None

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 responsible for the development and maintenance of a broad technology base that delivers advance, integrated, and secures solutions as the Department of Energy/National Nuclear Security Administration (DOE/NNSA's) primary nonnuclear production plant.

The current and future missions are consistent with the Record of Decision for the Stockpile Stewardship and Management Preliminary Environment Impact Statement, December 19, 1996.

ACTIVITIES:

Directed Stockpile Work (DSW)
KCP activities include production engineering, tooling, material procurement, and production labor associated with Life Extension Program (LEP). Production continues with the B61 Alteration (Alt) 357 LEP, as well as commencement of production on the Alt 356/8/9. Enduring Stockpile System production activities include Firing Set, Environmental Sensing Devices, and Lightning Arrestor Connector surveillance rebuilds in addition to lab and flight test sampling. Major reservoir production continues for the W76, B61, and W80 Enduring Stockpile Systems. Reservoir production activities will also commence on the W78 and W88 Systems. The site is participating in an approved Reliable Replacement Warhead (RRW) 18-month study.

Engineering Campaign
KCP has a primary role in the development of new flight instrumentation techniques that enable the acquisition of detailed information regarding structure and performance of weapons at the highest possible environmental and configuration fidelity. KCP funding supports the qualification of High Explosive Radio Telemetry phase II (HERT II) and W76 flight-test units, as well as qualification and production of Engineering Development Telemetry (EDTM) for W76 flight test. Funding supports future system deployment including on-board/embedded components, materials, and system sensors. KCP will also support the development of a diverse, long-term monitoring process, including on-board telemetry and RF transceiver communication link.

Pit Manufacturing and Certification Campaign
As part of a complex-wide team, KCP will provide technical and programmatic support to the Pit Campaign and is a member of the Technology Working Group supporting pit manufacturing capability.

Readiness Campaign
Nonnuclear Readiness activities include the replacement of test equipment required to accept new production products in support of LEPs, commercial-off-the-shelf (COTS) support systems and methodologies, deployment of process capabilities, and plant product infrastructure for Process-Prove-In and failure analysis supporting the development, manufacturing, and inspection for production of W76 and W80 components.

Tritium Readiness activities reflect the engineering and production development for the two KCP-assigned components of the Tritium-Producing Burnable Absorber Rod (TPBAR) assembly, including continued development of Physical Vapor Deposition (PVD) production processes, using aluminum and nickel in preparation for full-scale equipment and process characterization.

Advanced Design and Production Technologies (ADAPT) activities include developing manufacturing processes, reviving dormant processes, and identifying/characterizing alternative materials and components to ensure the W76 and W80 programs can meet schedule and budget requirements. Model-based tools and processes will be developed for engineering, manufacturing, and acceptance of weapon components.

Readiness in Technical Base and Facilities
In addition to the continual support of fundamental services, key activities for FY 2007 include construction of two General Plant Projects (GPPs) and design for one GPP to position the KCP for future GPP construction activity. One new line item, Computing Facilities, is starting design in FY 2007. The Consolidate and Renovate Computing Facilities line item project will be designed in FY 2007 to prepare for construction in FY 2008 through FY 2011.

Environmental Projects and Operations
All legacy environmental cleanup activities at the Kansas City Plant (KCP) are scheduled to be completed by the end of FY 2006. Restoration activities for the 43 release sites at KCP were accomplished under an accelerated cleanup approach, with the 95th Terrace completed as the final release site in FY 2006. Long-Term Response Actions (LTRA) will commence in FY 2007. LTRA includes program management, and continued administration of environmental restoration project activities at the site, namely the actual operation and maintenance of treatment and monitoring systems under KCP's RCRA Post Closure Permit issued by the Missouri Department of Natural Resources.

Facilities and Infrastructure Recapitalization Program (FIRP)
The Kansas City Site Office continues to demonstrate aggressive execution of FIRP activities by focusing on reducing the deferred maintenance of mission-essential facilities necessary to the Stockpile Stewardship Program. FIRP is replacing and upgrading systems in essential facilities where Limited Life Component production and Life Extension Programs for the B61, W76, and W80 weapons programs take place. FIRP projects revitalize Heating, Ventilation and Air Conditioning (HVAC) systems, utilities, chilled water, and steam distribution networks. In addition, associated utility upgrades include liquid nitrogen system, city water connection, fire alarm system, and electrical distribution

systems. FIRP projects have replaced 14 obsolete ozone depleting CFC chillers with nine new energy efficient chillers, which use contemporary and environmentally friendly refrigerants. NNSA's Roof Asset Management Program (RAMP), a best business practice employed throughout the weapons complex managed by the Kansas City Site Office, contracts for an integration manager to oversee an economical roof repair program at six of the eight nuclear weapons sites.

Safeguards and Security

The KCP Safeguards and Security program provides plant security consistent with DOE Order requirements documented in its approved facility Master Security Plan.

KNOLLS ATOMIC POWER LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Naval Reactors	311.4	299.7	309.8
Total, NNSA	**311.4**	**299.7**	**309.8**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Naval Reactors	322.3	333.3	348.6	352.9
Total, NNSA	**322.3**	**333.3**	**348.6**	**352.9**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
Knolls Atomic Power Laboratory	2,610	2,580	2,518
Total Facility	**2,610**	**2,580**	**2,518**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Knolls Atomic Power Laboratory (KAPL) is a research and development laboratory operated by KAPL, Inc. (a Lockheed Martin Company) for the Naval Nuclear Propulsion Program, a joint Department of the Navy-Department of Energy organization. The Schenectady Naval Reactors Office oversees KAPL operations. 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 of 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 requirements for new nuclear propulsion plants that meet current and future national defense requirements. The Knolls Site in Niskayuna is situated on approximately 180 acres of land, while the Kesselring Site in West Milton is situated on

approximately 3,905 acres. KAPL field personnel also work at shipyards in New Hampshire, Connecticut, Virginia, Hawaii, and Washington, as well as at the Naval Reactors Facility Site in Idaho.

ACTIVITIES:

Naval Reactors

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. 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. Some additional areas KAPL focuses on are direct energy conversion and advanced composite materials. In addition, KAPL operates two prototype plants located at the Kesselring Site in West Milton, N.Y. The MARF and S8G prototypes began operating in 1976 and 1978, respectively, and 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. S3G and D1G, which started operation in 1958 and 1962, respectively, were used for training and testing until their missions were completed in the 1990s. At that time, the 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.

LAWRENCE LIVERMORE NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	107.1	129.1	128.3
Science Campaign	104.3	91.4	85.7
Engineering Campaign	30.5	29.5	25.2
Inertial Confinement Fusion Ignition and High Yield Campaign	319.3	336.2	352.5
Advanced Simulation and Computing Campaign	290.5	228.9	198.5
Pit Manufacturing and Certification Campaign	10.1	12.9	17.5
Readiness Campaign	7.5	5.1	4.9
Readiness in Technical Base and Facilities	68.7	80.8	104.9
Environmental Projects and Operations Program/LTRA	0	0	12.6
Safeguards and Security	107.6	93.3	100.0
Nuclear Weapons Incident Response	16.9	14.9	21.1
Facilities and Infrastructure Recapitalization Programs	46.5	17.8	35.8
Global Threat Reduction Initiative	0	5.1	0.7
Fissile Materials Disposition	2.9	3.4	1.5
HEU Transparency Implementation	6.6	5.5	0
International Nuclear Materials Protection and Cooperation	19.4	19.3	18.5
Nonproliferation and International Security	11.6	9.7	20.4
Nonproliferation and Verification R&D	27.3	26.9	29.0
Global Initiatives for Proliferation Prevention	0	0.9	0
Total, NNSA	**1,176.8**	**1,110.7**	**1,157.1**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	110.8	132.5	120.4	116.3
Science Campaign	96.0	96.7	92.7	91.3
Engineering Campaign	26.2	26.2	25.7	25.4
Inertial Confinement Fusion Ignition and High Yield Campaign	307.4	288.8	291.4	280.8
Advanced Simulation and Computing Campaign	178.0	174.2	170.1	167.5
Pit Manufacturing and Certification Campaign	22.6	25.5	24.0	19.1

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Readiness Campaign	3.5	3.5	3.4	3.4
Readiness in Technical Base and Facilities	94.5	95.0	89.8	87.1
Environmental Projects and Operations Program/LTRA	12.5	10.6	10.8	10.9
Safeguards and Security	91.2	90.0	94.8	101.3
Nuclear Weapons Incident Response	21.0	21.3	21.4	21.4
Facilities and Infrastructure Recapitalization Programs	37.4	41.0	44.6	48.2
Global Threat Reduction Initiative	0.7	1.7	1.5	1.7
Fissile Materials Disposition	1.5	1.5	2.5	2.5
HEU Transparency Implementation	0	0	0	0
International Nuclear Materials Protection and Cooperation	17.6	14.2	6.4	15.5
Nonproliferation and International Security	18.1	19.7	19.2	20.1
Nonproliferation and Verification R&D	33.7	37.3	45.5	48.3
Global Initiatives for Proliferation Prevention	0	0	0	0
Total, NNSA	**1,072.7**	**1,079.7**	**1,064.2**	**1,060.8**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	5,048	5,180	5,286
Other	2,532	2,370	2,264
Total Facility	**7,580**	**7,550**	**7,550**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

Lawrence Livermore National Laboratory (LLNL) is located on a one-square-mile site in Livermore, California, with a larger (10 square miles) remote explosives testing site (Site 300) situated 18 miles east of the main Livermore site.

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, enable the laboratory 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.

ACTIVITIES:

Directed Stockpile Work (DSW)

Lawrence Livermore National Laboratory (LLNL) DSW supports three major areas: Life Extension Programs (LEPs), enduring weapon system assessment, and certification and stockpile support. LEPs and enduring systems directly support weapons systems, while the Stockpile Services budget category contains activities that support multiple weapons systems. In FY 2007, LLNL is responsible for one life extension program the W80 LEP, five enduring weapons systems theW62, W80, B83, W84, and W87, various studies, and Responsive Infrastructure (RI). The Laboratory is participating in an approved Reliable Replacement Warhead (RRW) 18-month study. The RRW Project Officers Group was tasked to oversee a laboratory design completion for RRW warhead with FPU occurring between FY 2012 and FY 2015.

Science Campaign

LLNL has responsibility for developing the tools and methodology to assess and certify (via the Quantification of Margins and Uncertainty, or QMU process) the safety, reliability, and performance of the stockpile systems for which LLNL is responsible. These tools and methodology also support ongoing activities in RRW, LEPs, Significant Finding Investigations (SFI), and Peer Reviews. The four science program activities are:

- *Primary Certification Assessment Subprogram:* As the QMU tools and methodology, developed as part of the Primary Assessment subprogram, are validated, they will be used in assessment work required to support Directed Stockpile Work (DSW) activities at LLNL. LLNL also has responsibility to execute an experimental program of hydrotesting and plutonium experiments that support assessment and certification, and the validation of Advanced Simulation and Computing (ASC) codes and physics-based models for QMU development and application. Two major deliverables of the Primary Assessment activities are: Hydrotest Program and Plutonium Experiments Program Plans. These plans are to be coordinated with Los Alamos National Laboratories (LANL) National Hydrotest Program and the Primary Physics Certification Plans. A major activity in the Primary Assessment subprogram is the development of the PHOENIX ***project*** for application to Equation of State characterization at very high pressures. The PHOENIX project will conduct a series of isentropic compression experiments (ICE) that are driven by a High Explosive Pulsed Power (HEPP) system.

- *Dynamic Materials Properties Subprogram**:*** LLNL work in the Dynamic Materials Properties subprogram extends key experimental capabilities, data analysis, and materials models used by both the Primary Assessment Technology and Secondary Assessment Technology activities. The focus is on 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 Materials Simulation Program. This activity supports experiments and data analysis at U1a and Joint Actinide Shock Physics Experimental Research Facility (JASPER), and uses a wide range of other experimental tools to create conditions of static and dynamic high pressure and temperature and enable investigations of the dynamic response of materials under ultra-high-pressure conditions of shock loading.

- *Advanced Radiography Subprogram:* The scope of the Advanced Radiography subprogram is to improve the capability to experimentally infer the integral performance of the primary stage of a nuclear weapon. This supports evaluation of the margins and uncertainties for the continuing certification of reliability and safety of the stockpile (Science Campaign and Directed Stockpile Work). Radiographic hydrotest data are critical to major weapon programs, including RRW, the current LEPs, and the development of modern baselines for all weapon systems. LLNL will also support Dual-Axis Radiographic Hydrotest Facility (DARHT-II), as defined by the DARHT refurbishment and commissioning project execution plan. The activity will continue to support LLNL's Contained Firing Facility (CFF) and Flash X Ray accelerator (FXR), which provides a unique combination of capabilities for the national hydrotest plan. In addition to supporting existing fixed-location facilities, LLNL will invest in the development of new advanced technology for diagnosing hydrotest experiments, including technology for high-resolution multi-MeV pulsed sources that are not currently available, but may be required for future experiments.

- *Secondary Assessment Technologies Subprogram:* LLNL's Secondary Assessment Technology subprogram has responsibility for developing 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 LLNL stockpile weapons, including ongoing activities in LEPs, RRW, and 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 LLNL. In FY 2007, LLNL will continue to develop high energy density physics platforms of ICF facilities to focus on increased understanding of secondary energy balance and hydrodynamics to develop a more complete understanding of stockpile weapons. Using QMU methodology, LLNL will continue to identify and quantify technical areas with largest uncertainties and impact to stockpile performance and focus future effort to reduce uncertainties and quantify margins.

- In FY 2007, LLNL will focus on application of these models to develop a more complete understanding of stockpile weapons and the development and refinement of the QMU methodology. Using QMU methodology, LLNL will be able to identify and quantify technical areas with largest uncertainties and impact to stockpile performance and focus future effort to reduce uncertainties and quantify margins.

Engineering Campaign

The Engineering Campaign provides the Nuclear Weapons Complex 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, and a sustained basis for stockpile certification. The LLNL portion of the Engineering Campaign consists of the following: Enhanced Surety, Weapon System Engineering Assessment Technology, Nuclear Survivability and Effects, and Enhanced Surveillance**.**

Readiness Campaign

Advanced Design and Production Technologies (ADAPT) - As originator of several systems currently in the nuclear stockpile, LLNL must ensure and enable the reliable manufacturing and maintenance of its weapon designs by Nuclear Weapons Complex (NWC) production agencies. As such, LLNL has established unique capabilities in the development and deployment of materials, technologies,

techniques, and processes related to weapons production and re-certification that are critical to ADAPT. LLNL centers of excellence in design, modeling, simulation, materials processing, high explosives development, non-destructive evaluation, and information technologies enable ADAPT efforts that, in turn, are of direct benefit to LEPs such as the W80, Core Surveillance and other DSW and Enhanced Surveillance.

Pit Manufacturing and Certification Campaign

LLNL plays three important roles in meeting the nation's effort to re-establish the capability to manufacture pits, and to certify systems using the newly manufactured pits: (1) providing independent technical assessments of the physics performance and engineering response, using the latest legacy and ASC codes, (2) providing key enabling technologies required to improve pit manufacturing capability and capacity, including metal processing, casting, and shaping technologies, and (3) providing requirements and process definitions of technologies required to improve pit manufacturing capability and capacity.

Advanced Simulation and Computing (ASC) Campaign

The ASC program at LANL provides the simulation and computational tools and the computing platforms essential for the Stockpile Stewardship Program to meet its deliverables in the area of advanced nuclear weapon design and manufacturing, accident scenarios, weapons aging, LEPs, and resolving SFIs. This requires a balanced environment of computing hardware and simulation software, and computer science solutions. Since its inception, ASC has delivered capabilities to solve progressively more difficult problems, with a focus on high-resolution, three-dimensional, full-system simulation, using advanced models and algorithms on high-end parallel computers. These tools are playing an increasingly important role in the maturation of Quantification of Margins and Uncertainty into a rigorous methodology to be applied to the certification of systems in the nuclear stockpile. The ASC program includes a vital code validation component that benefits from co-location with numerous experimental resources and tight coupling between experiment and simulation. On the computational side in FY 2007, the ASC Purple and BlueGene/L platforms will be entering full-use status for the program, adding significant computational resources that will require increased support above FY 2006 levels from the Facility Operations & User Support (FOUS) and Computational Systems & Software Environments (CSSE) components of the LLNL ASC program.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign

The ICF Program at LLNL is focused on the construction of the National Ignition Facility (NIF) and its use for ignition and other high energy density physics experiments in support of the SSP. LLNL is responsible for construction of the NIF and also oversees the National Ignition Campaign, an integrated national effort to demonstrate ignition at NIF. LLNL also coordinates complex-wide construction and installation of diagnostics and other experimental equipment required to make NIF a fully functioning user facility for the broader user community.

The NIF is a 192-beam laser due for completion in FY 2009. First NIF ignition experiments are scheduled for 2010. 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, complex 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 NNSA. The LLNL program also executes high energy density physics

experiments in support of the SSP at OMEGA, Z/ZR, 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, special materials-handling facilities, and related support facilities and infrastructure to accomplish the objectives and milestones described in the Campaigns 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 is direct-funded through the RTBF program includes the Nuclear Materials Technology Program (NMTP) facilities (Superblock), the hydrotest bunkers and engineering test facilities at Site 300, the light gas guns (B341), the High Explosive Applications Facility (HEAF), and management and operating (M&O) activities at the Nevada Test Site. Of the total RTBF program at LLNL, the largest program element is Operations of Facilities. Beginning in FY 2006, RTBF Operations of Facilities includes funding for "Newly Generated Waste" activities, formerly funded by Environmental Management.

Environmental Projects and Operations

The Environmental Management Program at LLNL consists of two Soil and Water Remediation projects--one at the Main Site and one at Site 300; and a Legacy Solid Waste Stabilization and Disposition project. The legacy waste project will be completed in FY 2005, and the Soil and Water Remediation project at the Livermore Main Site will be complete in FY 2006. Long-Term Remedial Actions (LTRA) will commence at LLNL-Main Site in FY 2007. LTRA activities include, but are not limited to program management, facility operation and maintenance of contaminated ground water treatment systems; inspection and maintenance of landfill caps (Site 300 only); soil vapor and groundwater monitoring and well field operations and maintenance; modeling; and access controls. LTRA activities will begin at LLNL-Site 300 after the completion of legacy environmental cleanup activities in FY 2008.

Nuclear Weapons Incident Response

For the DOE and the NNSA's Office of Emergency Response, LLNL assists 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. 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.

Facilities and Infrastructure Recapitalization Program (FIRP)

FY 2007 allocated funding for FIRP provides for the recapitalization of aging facilities and infrastructure at the Lawrence Livermore National Laboratory to assure that the quality of the infrastructure keeps pace with the Laboratory's scientific mission requirements. FIRP funds have reduced LLNL's deferred maintenance to a level consistent with industry standards.

For FY 2007, the recapitalization component of FIRP is funding high-priority projects that restore mission-essential and key facilities through reduction of deferred maintenance. Targeted for FY 2007 are buildings B-131 and B-151. Both are being rehabilitated using a total building, all systems/all utilities integrated approach, with a corresponding significant reduction to deferred maintenance. The focus of deferred maintenance reduction activities elsewhere remains on improving utilities through

electrical transformer replacement, minimizing the risk of unscheduled facility outages, and making significant safety improvements throughout the work areas. Specific examples include replacement and upgrades of high-efficiency particulate air filter housings, ductwork, Heating, Ventilation and Air Conditioning (HVAC) systems, and associated equipment to ensure reliability and improve worker safety. The Laboratory aggressively participates in the complex-wide Roof Asset Management Program (RAMP). LLNL's disposition program is a cost-effective program that has demonstrated safety and environmental stewardship. For FY 2007 demolition of facilities will exceed some 36,000 gross square feet.

Safeguards and Security

The LLNL Safeguards and Security program provides protection measures consistent with the requirements documented in its Site Safeguards and Security Plan (SSSP). During FY 2006, validation of the site's revised protection strategy for the 2005 Design Basis Threat will be conducted. In addition, new vehicle denial barriers will be in place to significantly enhance sites protection capability for Category I Special Nuclear Material (SNM). Focus will also be on consolidation of SNM and life cycle replacement of critical detection and assessment systems and other security related equipment.

Nonproliferation and Verification Research and Development

LLNL improves geographic models to locate and identify regional seismic events to support nuclear explosion monitoring assessments. LLNL will deliver field-calibrated models of the seismic response for additional, specified regions of interest, and will demonstrate prototype tools for the automation of incorporating newly acquired data into these models. LLNL develops and tests gamma and neutron detection materials for future commercial systems to search for and locate special nuclear material; and is a member of an inter-laboratory team to investigate methodologies to establish a scientific basis for attribution to determine the origin of fissile materials. LLNL serves as the inter-laboratory coordinator on testing optical remote sensing techniques for weapons of mass destruction proliferation detection/characterization; and is a recognized national leader in developing hyperspectral analysis methods for standoff detection of gases and other materials over denied areas.

International Nuclear Materials Protection and Cooperation (MPC&A)

LLNL provides operational experience in civilian and defense nuclear material protection, control, and accounting 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. LLNL provides security and engineering expertise in support of international MPC&A activities at several Russian Navy, Civilian, and Rosatom Weapons Complex sites. LLNL supports MPC&A sustainability and infrastructure projects for Ministry of Defense, Rosatom, GAN, Ministry of Transportation, and Russian Shipbuilding Agency with efforts in regulatory development and implementation, and a national accounting system.

Fissile Materials Disposition

LLNL provides support for waste management and packaging, transport, and storage infrastructures for plutonium disposition in Russia.

Nonproliferation and International Security

LLNL assists the Dismantlement and Transparency Program by providing support for conducting technical exchanges and technology development under the Warhead Safety and Security Exchange Agreement, Highly Enriched Uranium (HEU) Purchase Agreement policy, HEU Transparency

Implementation and development, Plutonium Production Reactor Agreement implementation, and development of nuclear transparency measures. In addition, LLNL assists technical analysis and technology development, and assists regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. LLNL also provides International Regimes and Agreements with licensing operations, 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. For Global Security Engagement and Cooperation, LLNL supports the safeguards tools and methods development, International Atomic Energy Agency (IAEA) safeguards cooperation and verification of the Democratic People's Republic of Korea (DPRK) and other proliferant states, IAEA environmental sampling needs, vulnerability assessment support for foreign sites of interest, physical protection upgrades, training to foreign nationals as needed, Additional Protocol outreach and training, and Proliferation Resistant Fuel Technology project.

Global Threat Reduction Initiative

LLNL supports planning and scheduling activities under the Emerging Threats and Gap Materials Program. LLNL technical experts participate in the International Radiological Threat Reduction Program (IRTR). LLNL also operates the IRTR Program's Radiological Assessment Service to assess reports of radiological incidents worldwide for programmatic impact.

LOS ALAMOS NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	213.0	252.5	240.0
Science Campaign	87.6	94.3	87.6
Engineering Campaign	28.6	29.2	25.1
Inertial Confinement Fusion Ignition and High Yield Campaign	32.0	12.6	12.5
Advanced Simulation and Computing Campaign	203.6	180.2	227.4
Pit Manufacturing and Certification Campaign	192.4	180.8	194.7
Readiness Campaign	9.6	4.7	5.3
Readiness in Technical Base and Facilities	444.3	397.1	480.9
Nuclear Weapons Incident Response	12.8	9.9	16.1
Safeguards and Security	173.5	173.8	129.8
Facilities and Infrastructure Recapitalization Programs	53.6	27.7	55.5
Global Threat Reduction Initiative	0	13.5	10.0
International Nuclear Materials Protection and Cooperation	17.9	19.2	30.5
Nonproliferation and Verification R&D	78.4	123.2	77.2
Global Initiatives for Proliferation Prevention	5.1	4.3	0
HEU Transparency Implementation	3.6	3.2	0
Fissile Materials Disposition	19.7	40.7	30.0
Nonproliferation and International Security	17.2	9.8	17.3
Offsite Source Recovery Project	5.4	0	0
Total, NNSA	**1,598.3**	**1,576.7**	**1,639.9**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	201.0	202.9	183.7	169.6
Science Campaign	93.2	93.5	90.0	88.2
Engineering Campaign	25.6	25.7	25.2	24.9
Inertial Confinement Fusion Ignition and High Yield Campaign	12.8	13.0	16.0	15.4
Advanced Simulation and Computing Campaign	169.0	165.9	162.2	158.9
Pit Manufacturing and Certification Campaign	190.5	186.1	191.9	190.9

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
Readiness Campaign	4.5	4.3	4.2	4.0
Readiness in Technical Base and Facilities	507.0	520.7	452.1	339.7
Nuclear Weapons Incident Response	16.2	16.4	16.5	16.5
Safeguards and Security	166.0	162.2	171.8	161.3
Facilities and Infrastructure Recapitalization Programs	57.9	63.5	69.1	74.7
Global Threat Reduction Initiative	1.5	1.5	1.2	1.5
International Nuclear Materials Protection and Cooperation	36.0	37.0	31.2	32.6
Nonproliferation and Verification R&D	75.3	80.1	89.2	91.5
Global Initiatives for Proliferation Prevention	0	0	0	0
HEU Transparency Implementation	0	0	0	0
Fissile Materials Disposition	27.7	25.7	22.5	19.5
Nonproliferation and International Security	18.7	17.2	19.7	20.5
Offsite Source Recovery Project	0	0	0	0
Total, NNSA	**1,602.9**	**1,615.7**	**1,546.5**	**1,409.7**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	6,534	6,498	6,633
Other	2,457	2,807	2,440
Total Facility	**8,991**	**9,305**	**9,073**

Congressional Items of Interest: The Safeguards and Security Cyber Security Program received an additional $20 million in FY 2005 and $13.6 million in FY 2006 for expansion of the Red Network project.

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Los Alamos National Laboratory (LANL) is located on approximately 25,000 acres, adjacent to the town of Los Alamos, New Mexico.

LANL is a multi-program laboratory, supporting research predominantly in national security. The laboratory also supports environmental restoration, waste management, general science programs, homeland security, and work for others.

The Record of Decision (ROD) for a Site-Wide Environmental Impact Statement (SWEIS) for the continued operation of LANL was published September 20, 1999. The updated ROD is currently scheduled for November 2006.

ACTIVITIES:

Directed Stockpile Work (DSW)
LANL supports the safety, reliability, and performance of the warheads for which LANL is the responsible Design Agency and for producing some components for all systems. This activity includes the life extension programs (LEPs) for the B61-Alt357 and the W76 Mod-1. The Laboratory is participating in an approved Reliable Replacement Warhead (RRW) 18-month study. The RRW Project Officers Group was tasked to oversee a laboratory design completion for the RRW warhead with FPU occurring between FY 2012 and FY 2015.

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 Campaigns. The four science subprogram activities are:

- *Primary Certification Subprogram* supports the science (including theory, experiment, simulation, and analysis) necessary to develop and improve a validated capability for predicting and certifying primary performance, safety, and quantitative/qualifying margins and uncertainties (QMU) without additional nuclear tests. Approximately half of the subprogram's effort is directed towards boost physics.

- *Dynamic Materials Properties Subprogram* develops physics-based, experimentally validated data and models of all stockpile materials, at a level of accuracy required by the primary and secondary subprograms and engineering campaign.

- *Advanced Radiography Subprogram* 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. The major focus of the campaign in FY 2007 is the refurbishment and commissioning of the DARHT 2nd axis.

- *Secondary Assessment Technologies Subprogram* has responsibility for developing 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, RRW, and 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 2007, LANL will continue to develop high energy density physics platforms of ICF facilities to focus on increased understanding of stockpile weapons. Using QMU methodology, LANL will continue to identify and quantify technical areas with largest uncertainties and impact to stockpile performance and focus future effort to reduce uncertainties and quantify margins.

Engineering Campaign
As the design agency for 60 percent of the total stockpile, Los Alamos is focused on the development of engineering-based development in support of the nuclear weapons stockpile. LANL has long recognized that in addition to ensuring the nuclear stockpile is safe, secure, and reliable, there is a requirement to provide the most modern surety (i.e., safety, security, and use control) possible for nuclear warheads/bombs. The LANL portion of the Engineering Campaign consists of the following: Enhanced Surety, Weapon System Engineering Assessment Technology, Nuclear Survivability and Effects, and Enhanced Surveillance.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
The ICF Campaign provides quantitative experimental data 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. It also designs and fields advanced diagnostics for National Ignition Facility (NIF), Z, and other High-Energy-Density facilities across the weapons complex.

Advanced Simulation and Computing (ASC) Campaign
ASC is a program integrated across the NNSA laboratories, which strives to "help [NNSA] shift from test-based confidence to simulation-based confidence" in order to maintain confidence in the nuclear stockpile without nuclear testing.

The Los Alamos ASC program is aggressively working to "predict with confidence the behavior of nuclear weapons through comprehensive science-based simulation." ASC will continue to assist the weapons complex in meeting DSW schedules, including the annual assessments of safety and reliability and analysis of issues in SFIs and LEPs. The Los Alamos FY 2007 ASC plan calls for the release and use of ASC codes as the primary vehicle for designers to perform assessments for the W76-1 LEP and W88. Los Alamos will finalize and apply two-dimensional modern baselines for the W76-1 LEP and W88 Major Assembly Release. FY 2007 will see an increased emphasis on developing methods for Quantification of Margins and Uncertainty (QMU) in the simulation of weapon system performance and safety. Software quality will continue to be a high priority for the ASC program, as will increasing the fidelity of selected physical models and numerical algorithms, as driven by the requirements of the QMU certification process. Lastly, the linkage of simulation, theory, and experimentation will continue to mature as demonstrated by experimental programs, providing timely data to be used to validate ASC models and codes.

Pit Manufacturing and Certification Campaign
The purpose of the Pit Manufacturing and Certification Campaign is to ensure the readiness of the nuclear weapons complex to manufacture and certify pits. The pit is central to weapon performance, and the current inability to manufacture and certify a pit puts the nation at risk to support the stockpile into the future. The strategy of the Campaign includes reestablishment of the technical capability to manufacture war reserve (WR) pits, establishment of a manufacturing capability required to support the nuclear weapons stockpile, and the ability to certify newly manufactured pits for entry into the stockpile without the use of nuclear testing. The near-term activity is focused on W88 pit manufacturing and certification, and long-term activities include demonstrating the capability to manufacture all pits in the enduring stockpile, as well as plan for long-term pit manufacturing capacity.

The primary goals of the PIT campaign are:

- Plan the certification requirements and processes to certify a W88 weapon system with a pit built at LANL without underground nuclear testing in FY 2007
- Establish a pit-manufacturing capacity of ten pits per year at LANL in FY 2007
- Develop the capability for producing other pit types in the enduring stockpile, as directed by NNSA
- Plan for long-term pit manufacturing

Readiness Campaign

At Los Alamos, two Readiness Subprogram activities are performed: Advanced Design and Production Technologies (ADAPT) and Non-nuclear Readiness. Los Alamos' ADAPT activities reflect both design and production technology development – both major activities at Los Alamos. The scope of work includes all LANL production activities plus supporting capabilities, such as secure networking and certain technical business practices. Activities are principally organized according to the product(s) they are intended to support (e.g., Detonators, Tritium, Beryllium Components, Pits / Mock Pits / Experimental Hardware). Los Alamos also has a significant Non-nuclear production activity in developing capabilities for Los Alamos' and other plants' non-nuclear production. Scope includes deployment of processes, capabilities, and infrastructure required to meet directive schedule requirements for production and surveillance of non-nuclear components. Activities at LANL support detonator manufacturing and surveillance.

Readiness in Technical Base and Facilities (RTBF)

RTBF supports a broad base of activities and facilities that enable the laboratory to meet its mission obligations to the NNSA and the nation. LANL's 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 goal 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. LANL's Operations of Facilities activity includes DP's share of the cost to operate and maintain DP-owned programmatic facilities in "warm standby" 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 Engineering, Manufacturing Systems and Methods Shops, Tritium, Dynamic Experimentation, Los Alamos Neutron Science Center (LANSCE), Waste Management, Nuclear Materials Technology (TA-55 & CMR) and Beryllium Technology. LANSCE is operationally funded in FY 2007; future operations are under study. Upon completion of the transition to a new contractor at LANL, the Department will determine a path forward on LANSCE. Warm standby work scope includes conventional facility management, infrastructure and utilities, and operation and maintenance of real property and special equipment. This activity also includes infrastructure support: Line item Other Project Costs, general plant project construction, seismic studies, authorization basis, monitoring wells, beryllium rule, and program management.

The Special Projects activity at LANL includes landlord costs associated with the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo.

RTBF Construction
There are a number of line item projects in RTBF per the Integrated Construction Program Plan (ICPP). One key element of long-range planning is Integrated Nuclear Planning (INP). The INP project is a high-level effort to plan the future nuclear facilities in the TA-55 technical area. The INP presently includes the integration of the Chemical and Metallurgy Research Facility Replacement (CMRR) project; infrastructure upgrades at TA-55, including a new radiography capability; and proposed safeguards and security upgrades. 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 funded projects are providing improvements to mission essential facilities, improving worker safety, and generally improving the reliability of facilities. For FY 2007, system reliability through electrical system upgrades; Heating, Ventilation and Air Conditioning (HVAC) upgrades; and general construction deficiencies repair projects highlight the facilities management approach to revitalizing the site. The Power Grid Infrastructure Upgrades Project, a Line Item Utility project, which brings long-needed upgrade to the site's power grid will be completed through the FIRP construction program. The project is contributing to the deferred maintenance buy down, while at the same time improving the reliability of vitally needed electrical power through the construction of a third power source to eliminate the risk of a single point power failure. LANL continues to participate in the complex-wide Roof Asset Management Program (RAMP) and is achieving improved cost efficiencies and improved life extension of NNSA's roofing assets. The FY 2007 budget includes the funding of planning for FY 2008 projects. Design of general plant and expense projects in advance of construction is leading to solid project cost estimates and schedule thereby leading to better project execution. With regard to facility disposition, a minimum of 36,000 gross square feet of excess space is targeted for elimination in FY 2007.

Nuclear Weapons Incident Response
For the DOE and the NNSA's Office of Emergency Response, LANL assists 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.

Safeguards and Security
The LANL Safeguards and Security program provides laboratory protection measures consistent with requirements documented in its Site Safeguards and Security Plan (SSSP). During FY 2006, the laboratory will continue making designs on the Nuclear Materials Safeguards and Security Upgrade Project (NMSSUP) Phase II, completion; access control systems begun in FY 2005, as well as implementing new security measures resulting from the completion of the roads project. These upgrades are part of Design Basis Threat (DBT) requirements identified by the laboratory. During FY 2006, validation of the site's revised protection strategy for the 2005 DBT will be conducted. Focus of activities will be the site consolidation of Category I Special Nuclear Material (SNM) and the elimination of one Category I SNM area, which will greatly enhance the protective force posture and reduce out-year safeguards and security costs.

Nonproliferation and Verification Research and Development
LANL provides the U.S. Government with improved analytic tools and sensors to discriminate earthquakes and industrial activities from banned nuclear explosions. LANL continues to deliver the next generation of satellite based electromagnetic pulse sensors and radiation sensors for nuclear explosion monitoring systems. The laboratory will develop expert unattended methods and handheld radiation detection systems to support monitoring operations for compliance to future nonproliferation policies. LANL will continue developing innovative algorithms and specialized processors to process voluminous quantities of remote sensing data into the specific information required by decision makers.

Fissile Materials Disposition
LANL is a multi-program lead laboratory for the development of U.S. weapons pit disassembly and conversion technology. The Advanced Recovery and Integrated Extraction System demonstration system, located at LANL, serves as the prototype demonstration project for the production-scale facility. The laboratory also provides technical services, independent design review, independent assessment of the safety basis for the Mixed-Oxide Fuel Fabrication Facility, and support for technical aspects associated with monitoring and inspection activities.

Global Threat Reduction Initiative
LANL provides support on safeguards activities for the BN-350 spent fuel disposition project, and work in cooperation with Kazakhstan and the International Atomic Energy Agency (IAEA). LANL supports planning and scheduling activities under the Emerging Threats and Gap Materials Program. LANL technical experts participate in the International Radiological Threat Reduction Program. LANL provides support on planning, analysis, identification and tracking of at-risk sealed sources, performing in the field recovery of sources, packaging, transportation, storage, and disposal of at-risk sources for the Off-Site Source Recovery Program under the U.S. Radiological Threat Reduction Program.

International Nuclear Protection and Cooperation (MPC&A)
LANL provides a wealth of expertise to the MPC&A program through material accounting methodologies, specialized material verification techniques, project and construction management for storage facilities, and language specialization. LANL has designed and developed computerized accounting systems that are currently operating at several Russian enterprises. LANL is working with the NNSA in the use of material controls, particularly with the active-nonviolent insider threats when completing MPC&A upgrades at all Russian enterprises. Furthermore, LANL experts provide technical solutions to Second Line of Defense program.

Nonproliferation and International Security
LANL supports safeguards efforts, especially safeguards cooperation and verification of the DPRK nuclear weapons program dismantlement. LANL supports export control work, primarily in the area of licensing operations, policy support in the development of nuclear transparency measures, fuel cycle analysis, and development in the areas of legal regimes and regional security. In addition, LANL provides support for commercialization efforts globally and efforts to downsize the Russian Nuclear Weapons complex and helps create business opportunities for displaced weapons workers.

NEVADA TEST SITE

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	12.8	38.8	37.5
Science Campaign	41.8	39.3	48.9
Inertial Confinement Fusion Ignition and High Yield Campaign	3.8	0	0
Pit Manufacturing and Certification Campaign	48.3	34.9	0
Readiness in Technical Base and Facilities	92.2	138.3	110.3
Nuclear Weapons Incident Response	28.1	34.1	33.6
Facilities and Infrastructure Recapitalization Programs	24.5	12.3	25.1
Global Threat Reduction Initiative	0	0.2	0
Fissile Materials Disposition	0.3	0.3	0.4
International Nuclear Materials Protection and Cooperation	0	0.3	0
Nonproliferation and Verification R&D	0	0	5.4
Nonproliferation and International Security	0.4	0.6	0.5
HEU Transparency Implementation	0.4	0.4	0
Total, NNSA	**252.6**	**299.5**	**261.7**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	33.9	31.6	30.4	30.4
Science Campaign	45.5	43.1	41.5	40.6
Inertial Confinement Fusion Ignition and High Yield Campaign	0	0	0	0
Pit Manufacturing and Certification Campaign	0	0	0	0
Readiness in Technical Base and Facilities	110.7	113.0	112.4	115.4
Nuclear Weapons Incident Response	33.6	34.8	34.8	35.0
Facilities and Infrastructure Recapitalization Programs	26.3	28.8	31.3	33.9
Global Threat Reduction Initiative	0	0	0	0
Fissile Materials Disposition	0.2	0.2	0.2	0.2
International Nuclear Materials Protection and Cooperation	0	0	0	0
Nonproliferation and Verification R&D	6.3	6.6	6.9	7.2
Nonproliferation and International Security	0.6	0.6	0.6	0.6
HEU Transparency Implementation	0	0	0	0
Total, NNSA	**257.1**	**258.7**	**258.1**	**263.3**

NOTE: Funding for Safeguards and Security is provided through the Nevada Site Office.

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	2,118	2,053	2,110
Other	982	951	978
Total Facility	**3,100**	**3,004**	**3,088**

Congressional Items of Interest: The Safeguards and Security Defense Nuclear Security Program has dedicated funding in FY 2006 for protective forces at the Device Assembly Facility and full implementation of the Special Response Team.

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Nevada Test Site (NTS) is approximately 1,375 square miles; 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 which is located 65 miles northwest of Las Vegas. In addition to the NTS, the Nevada Site Office assets include facilities in North Las Vegas; Nellis AFB; Andrews AFB; Livermore, CA; Los Alamos, NM; and Santa Barbara, CA.

The 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 the workers, the public, and the environment. The existing assets of the NTS represent a unique and indispensable extension of the National Weapons Laboratories' (NWL) experimental capabilities, and are essential to the NNSA NA-10 Stockpile Stewardship Program and the nation's ability to return to underground nuclear testing, should the President direct it.

The current and future missions at the NTS are consistent with the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, December 1996, the NTS Site-Wide Environmental Impact Statement (SWEIS), December 1996, and the Supplemental Analysis to the NTS EIS, July 2002.

ACTIVITIES:

Directed Stockpile Work (DSW)

The NTS' role is principally to execute subcritical experiments that collect data on the dynamic materials properties to ensure that the performance of modern pits.

Science Campaign

The four science sub program activities are:

- ***Primary Assessment Technology*** – Subcritical experiments are conducted at the NTS to enable primary assessment by obtaining dynamic physical properties of stockpile materials at relevant temperatures and pressures. Strength, plasticity, failure, spall, and ejecta, are just a few of the material properties investigated during Subcritical experiments. The NTS provides test-bed

engineering and construction, diagnostics fielding, controls, and data reduction for the Subcritical experiments. In FY 2007, the NTS will support Lawrence Livermore National Laboratory (LLNL) in preparatory experiments for the PHOENIX experiments, and will support both LLNL and Los Alamos National Laboratory (LANL) in reanalysis of underground test (UGT) data in support of the Stockpile Stewardship Program Weapons Activities.

Test Readiness is also funded within the Primary Assessment Technology Subprogram, and is designed to ensure than an underground nuclear test could be executed within the established timeframe maintaining critical personnel, equipment, and infrastructure resources. By taking care of the long-lead activities that would be necessary for most underground nuclear tests, authorization basis, diagnostics, equipment and infrastructure, along with planning, the remaining activities could be accomplished with the time allowed by the established readiness posture.

- *Dynamic Materials Properties* – The NTS supports the nuclear weapon laboratories (NWLs) in the Dynamic Materials Properties Subprogram by developing diagnostics and fielding experiments. In FY 2007, planned LLNL special nuclear material experiment series and diagnostic advancements at the Joint Actinide Shock Physics Experimental Research (JASPER) facility will be supported. Support of Sandia National Laboratories (SNL) will include activities on the Z Machine Isentropic Compression Experiment (ICE) program and dynamic ICE facility experiments. Support of LANL will include experiments on the Atlas Pulsed Power Facility (APPF) at the NTS and dynamic shock experiments on gas gun and explosively driven equation-of-state experiments.

- *Advanced Radiography* – The NTS provides support to the LANL Dual Axis Radiographic Hydrodynamics Test (DARHT) and the proton radiography experiments at the Los Alamos Neutron Science Center (LANSCE) and Brookhaven National Laboratory within the Advanced Radiography Subprogram. In FY 2007, NTS will continue to provide accelerator diagnostics for DARHT II activities, focusing on the new commissioning plans and cell-refurbishment project. The Proton Radiography (PRAD) group will support experiments at LANSCE Line C by providing troubleshooting support during the experiments, conducting image analyses, and providing reports to LANL.

- *Secondary Assessment Technology* – Within the Secondary Assessment Technology Subprogram, the 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, the NTS Livermore Technical Facility provides National Institute of Standards and Technology-traceable calibration facilities for radiation-flow diagnostics needed for High Energy Density (HED).

Readiness in Technical Base and Facilities (RTBF)

The RTBF program at the NTS provides essential physical and operational infrastructure required to conduct the engineering, scientific, and technical activities of the Stockpile Stewardship Program. The purpose of the RTBF at the NTS is to ensure the correct program-related facilities and activities are maintained in a warm-standby 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 consist of two program elements: Operation of Facilities and Program Readiness. The Operation of Facilities element includes the operation and maintenance of NNSA-owned programmatic facilities in a warm-standby state of readiness, where the site and each facility is operationally ready to execute programmatic scope

of work. Specific facilities include the Device Assembly Facility (DAF), U1a Complex, JASPER, Control Point (CP) Complex, High Explosive Facility, Bechtel Nevada Los Alamos Technical Facility, Bechtel Nevada Livermore Technical Facility, Atlas Pulse Power Facility (APPF) and the North Las Vegas Complex. Warm-standby operation is currently included in the budget projections for the APPF. Activities supported under Program Readiness include Laboratory Logistics, Other Federal Agencies, Legacy Compliance, Program Operations, Borehole Management Program, and NTS Equipment Revitalization.

Nuclear Weapons Incident Response

For the DOE and the NNSA's Office of Emergency Response, NTS assists 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. 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. The NNSA Nuclear Emergency Support Team (NEST) is based at Nellis AFB, Las Vegas, NV, for West Coast response and Andrews AFB, MD, for East Coast response. The NEST can respond to any type of emergency involving radioactive materials in the U.S. or abroad.

Facilities and Infrastructure Recapitalization Program (FIRP)

FIRP activities being planned for FY 2007 emphasize safety and infrastructure projects.
Specific to this year's program are electrical improvements that support OSHA standards. In addition, more reliable power will be distributed to site facilities. Introduction of new electrical boiler replacements will for improve air quality. The elimination of inefficient oil-fired boilers, requiring NTS Air Quality Operating permits, reduces the emission of air-contaminants, ends storage for flammable liquid fuel, and reduces potential for soil contamination by hydrocarbons. A new water project well will increase the potable water available to the desert site. The new well permits diverting water from two existing wells to use as a non-potable water source (the existing wells cannot meet newly enacted Public Water System Safe Drinking Water Act rules). The Nevada Site Office continues to participate in the complex-wide Roof Asset Management Program (RAMP) and is achieving improved cost efficiencies and life extension of NNSA's roofing assets. With regard to facility disposition, a minimum of 6,000 gross square feet of excess space is targeted for elimination in FY 2007.

Safeguards and Security

The NTS Defense Nuclear Security program is funded through the Nevada Site Office and provides site security consistent with requirements documented in its Site Safeguards and Security Plan. During FY 2006, validation of the site's revised protection strategy for the 2005 Design Basis Threat will be conducted. Focus will be on providing protection for Category I quantities of Special Nuclear Material transferred from Los Alamos National Laboratory in terms of required protective force personnel, equipment and additional detection and assessment capabilities around a planned Category I storage facility at the site.

PANTEX PLANT

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	132.4	134.7	167.7
Engineering Campaign	4.0	3.1	3.0
Pit Manufacturing and Certification Campaign	0	0	0
Readiness Campaign	34.8	17.9	19.6
Readiness in Technical Base and Facilities	189.4	166.2	120.7
Nuclear Weapons Incident Response	1.2	0.8	0.9
Safeguards and Security	109.7	126.1	126.1
Facilities and Infrastructure Recapitalization Programs	35.9	17.5	35.5
Environmental Projects and Operations Program/LTRA	0	0	0
Fissile Materials Disposition	4.5	4.7	5.0
Nonproliferation and International Security	0.7	0.7	0.7
International Nuclear Materials Protection and Cooperation	0.1	0.3	0
Total, NNSA	**512.7**	**472.0**	**479.2**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	147.5	160.4	164.8	164.1
Engineering Campaign	3.1	3.1	3.0	3.0
Pit Manufacturing and Certification Campaign	0	0	0	0
Readiness Campaign	25.3	22.9	20.9	21.2
Readiness in Technical Base and Facilities	187.6	161.4	159.6	133.5
Nuclear Weapons Incident Response	0.9	1.0	1.0	1.1
Safeguards and Security	113.6	112.9	124.7	131.5
Facilities and Infrastructure Recapitalization Programs	37.1	40.7	44.2	47.8
Environmental Projects and Operations Program/LTRA	0	2.2	2.6	2.8
Fissile Materials Disposition	6.0	6.0	6.0	6.0
Nonproliferation and International Security	0.7	0.7	0.8	0.8

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
International Nuclear Materials Protection and Cooperation	0	0	0	0
Total, NNSA	**521.8**	**511.3**	**527.6**	**511.8**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	3,191	3,228	2,958
Other	87	87	25
Total Facility	**3,278**	**3,315**	**2,983**

Congressional Items of Interest: The Safeguards and Security Defense Nuclear Security Program was provided additional funds in FY 2006. These funds will support protection measure actions for the program's compliance with the 2003 Design Basis Threat.

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) Evaluation of the Weapons, 4) High Explosive Research and Development, and 5) Interim Plutonium Pit Storage.

ACTIVITIES:

Directed Stockpile Work (DSW)
Pantex is the assembly/disassembly plant for all nuclear weapons. Pantex supports the Life Extension Program (LEP) First Production Unit (FPU) schedules, Seamless Safety for the 21st Century (SS-21) projects; weapon system surveillance, sustained retired systems dismantlement, and required production support. The site is participating in an approved Reliable Replacement Warhead (RRW) 18-month study.

Engineering Campaign
Pantex supports the Enhanced Surveillance subprogram of Engineering Campaign strategic objectives by performing aging studies on explosives and non-nuclear materials and components and providing the results to the Design Agencies. Pantex also works with the Design Agencies to develop and deploy new diagnostics tools for implementation into DSW. Pantex will develop and maintain 1-2 mil resolution upgrade for Pit Computed Tomography.

Readiness Campaign
Pantex supports the Advanced Design and Production Technologies (ADAPT) and the High Explosives and Weapons Operations (HEWO) Readiness Campaign subprograms.

The ADAPT subprogram assesses advanced technologies that have the potential for use in design and manufacturing and demonstrates new process tools and capabilities that will provide safety, quality, and productivity enhancements as well as reduce cycle time. In FY 2007, the Pantex Plant plans to continue its work in high explosive chemistry process development and testing capabilities.

HEWO was established to assure that the Complex is ready to support mission and workload requirements associated with production of high explosive components, the requalification of components for reuse to support Stockpile Management requirements, and the assembly and disassembly of war reserve nuclear weapons. Specifically the work addresses the gaps that exist in operations in support of the Base Workload, B61, W80, and W76 LEPs and 36 month readiness. In FY 2007, this work continues demonstration of high explosive chemistry processes and fabrication techniques and interactive electronic procedure deployment as well as other activities in support of the continuing LEPs and Base Workload.

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, 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.

Facilities and Infrastructure Recapitalization Program (FIRP)
Pantex FIRP activity is a balanced mix of Recapitalization projects, elimination of excess infrastructure through Facility Disposition, and Utility Line Item construction projects. Pantex has established a deferred maintenance reduction strategy that is focused on supporting NNSA's Stockpile Stewardship objectives, with the deferred maintenance reduction in mission essential facilities that support Stockpile Systems, Stockpile Refurbishment/Life Extension Program, Retired Weapons Systems and Production Support. FY 2007 Recapitalization projects are focused on improving facility systems reliability, minimizing the risk of unscheduled facility outages, and improving safety. The Facility Disposition projects in FY 2007 will remove a minimum of 8,000 gross square feet of excess facilities. Pantex continues to participate in the complex-wide Roof Asset Management Program (RAMP). Ongoing FIRP Utility Line Item projects will continue in FY 2007 with upgrades to the electrical distribution system, gas distribution system and the high-pressure fire system.

Environmental Projects and Operations
The Pantex Plant legacy environmental cleanup program, consisting of an environmental restoration project and a decontamination and decommissioning project, is scheduled for completion in FY 2008. Long-Term Remedial Actions (LTRA) activities, which include long-term surveillance and maintenance and stewardship activities, will be integrated into the ongoing NNSA landlord site operations beginning in FY 2009 and will continue as long as necessary to assure protection of public health and the environment.

Safeguards and Security

The Pantex Safeguards and Security program provides protection measures consistent with requirements documented in the Site Safeguards and Security Plan (SSSP). During FY 2006, validation of the site's revised protection strategy for the 2005 Design Basis Threat will be conducted. The program will continue to focus heavily on life cycle replacement of aging intrusion detection and assessment systems and other protection systems with the focus on utilization of new technologies to minimize protective force staffing costs.

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 Facility (PDCF) technology demonstration. The Pantex Plant also packages and stores surplus pits for future shipment to the Savannah River Site for conversion in the PDCF prior to fabrication into mixed-oxide fuel.

SANDIA NATIONAL LABORATORIES

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	430.3	403.2	393.6
Science Campaign	17.0	13.2	25.3
Engineering Campaign	178.1	164.1	89.4
Inertial Confinement Fusion Ignition and High Yield Campaign	54.1	47.5	17.6
Advanced Simulation and Computing Campaign	178.3	137.0	153.3
Pit Manufacturing and Certification Campaign	0.7	1.1	0.8
Readiness Campaign	23.1	15.4	18.4
Readiness in Technical Base and Facilities	215.8	183.1	192.8
Nuclear Weapons Incident Response	10.3	9.9	11.8
Safeguards and Security	96.2	89.6	86.9
Facilities and Infrastructure Recapitalization Programs	31.3	16.4	33.4
Environmental Projects and Operations Program/LTRA	0	0	3.0
Global Threat Reduction Initiative	0	6.3	3.3
Nonproliferation and Verification R&D	66.2	65.4	57.3
HEU Transparency Implementation	1.5	1.5	0
International Nuclear Materials Protection and Cooperation	73.2	84.5	115.3
Global Initiatives for Proliferation Prevention	4.5	4.0	0
Nonproliferation and International Security	21.6	14.1	18.8
Fissile Materials Disposition	0	0.4	0.4
Total, NNSA	**1,402.2**	**1,256.7**	**1,221.4**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	441.1	448.7	511.0	499.3
Science Campaign	26.6	27.1	29.7	28.6
Engineering Campaign	95.0	78.5	77.0	76.0
Inertial Confinement Fusion Ignition and High Yield Campaign	23.1	24.5	24.3	24.0
Advanced Simulation and Computing Campaign	141.4	138.4	135.1	132.0
Pit Manufacturing and Certification Campaign	1.6	2.3	2.4	2.9

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
Readiness Campaign	27.1	24.1	23.8	23.0
Readiness in Technical Base and Facilities	190.1	237.2	217.3	226.0
Nuclear Weapons Incident Response	11.9	11.9	11.9	12.2
Safeguards and Security	87.7	89.1	89.9	91.6
Facilities and Infrastructure Recapitalization Programs	34.9	38.3	41.6	45.0
Environmental Projects and Operations Program/LTRA	3.0	2.9	2.9	2.9
Global Threat Reduction Initiative	2.4	4.9	2.4	4.9
Nonproliferation and Verification R&D	67.7	70.9	75.6	77.7
HEU Transparency Implementation	0	0	0	0
International Nuclear Materials Protection and Cooperation	98.2	73.0	82.8	60.5
Global Initiatives for Proliferation Prevention	0	0	0	0
Nonproliferation and International Security	19.8	20.2	19.6	22.8
Fissile Materials Disposition	0.4	0.4	0.4	0.4
Total, NNSA	**1,272.0**	**1,292.4**	**1,347.7**	**1,329.8**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	5,241	5,102	5,067
Other	3,320	3,611	3,586
Total Facility	**8,561**	**8,713**	**8,653**

Congressional Items of Interest: The Safeguards and Security Cyber Security Program has dedicated $1.9 million in FY 2006 to support the DOE-wide public key infrastructure effort.

Major Changes or Shifts: None

Site Description

INTRODUCTION:

Sandia National Laboratories/New Mexico (SNL/NM) is located on the 75,520-acre Kirtland Air Force Base military reservation 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).

Sandia'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)

SNL supports DSW activities to ensure the reliability, safety, and security of the current and future nuclear weapons stockpile. SNL supports the Life Extension Program (LEP) activities for the B61-Alt 357, W76-Mod1, and W80-Mod 3. SNL supports Retired Systems activities, including required characterization of stockpile weapon components. SNL DSW activities support multiple systems in the enduring stockpile including: surety assessments, the Annual Assessment Report, the semi-annual weapon reliability reports, support the Nuclear Explosive Safety Study (NESS), laboratory and flight surveillance, neutron generator design and development, cross-cutting support of significant finding investigations (SFIs), aircraft compatibility, and military liaison with the Department of Defense (DoD). The activities will develop technology and sub-systems that will be options for the future sustainable stockpile, such as the Reliable Replacement Warhead (RRW). The Laboratory is participating in an approved RRW 18-month study. The RRW Project Officers Group was tasked to oversee a laboratory design competition for the RRW warhead with FPU occurring between FY 2012 and FY 2015.

Science Campaign

SNL leverages its unique capabilities in Pulsed Power Science and Materials and Process Science to support the Science Campaign missions. In pulsed power, these capabilities include design, development, and deployment of state-of-the-art, compact, reliable, and high-intensity flash x-ray radiographic sources for SubCritical Experiments at the Nevada Test Site (NTS), and for above-ground dynamic experiments at the Los Alamos National Laboratory (LANL) and Atomic Weapons Enterprise (AWE). At the Z facility, SNL also develops intense energetic radiation sources, sophisticated x-ray diagnostics, Z-Beamlet-Laser-radiography capability, and supports their utilization by LANL for Secondary Assessment Technology in radiation transport, complex hydrodynamics, and integrated implosions. The Z pulsed power facility also provides a unique capability to isentropically (i.e., shocklessly) compress and/or to accelerate flyer plates to shock-compress materials to high pressures, thus providing equation-of-state and constitutive property data to SNL, LANL, and the Lawrence Livermore National Laboratory (LLNL) material communities for inclusion in models and the quantification of margins process. 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.

Engineering Campaign

The Engineering Campaign is key to realizing the 21st-century goal of transforming to a responsive complex with a sustainable stockpile. The Engineering Campaign at SNL provides the Nuclear Weapons Complex (NWC) with modern tools and capabilities in engineering sciences and technologies to ensure the safety, security, reliability, and performance of the enduring and future sustainable stockpile, and to provide a sustained engineering basis for stockpile assessment and certification. The campaign is based on a continually improving, engineering-science foundation, world-class experimental and diagnostic capabilities, life-cycle-engineering-assessment perspective, and responsive life-cycle engineering processes. The SNL portion of the Engineering Campaign consists of the following: Enhanced Surety; Weapon System Engineering Assessment Technology; Nuclear Survivability and Effects; Enhanced Surveillance; and Microsystem & engineering Science Application (MESA).

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
The SNL ICF activities support the High Energy Density Physics (HEDP) experimental program on the Z pulsed power facility. SNL is currently operating with partial second shift operations of the Z Facility, and performed over 200 Z shots per year, which represents approximately half of the requested stockpile stewardship experiments (Dynamic Materials, Secondary Assessment Technology, and Nuclear Survivability Campaigns and DSW), pulsed-power-ICF and x-ray-source-development experiments, and a combination of basic science, z-pinch physics, power flow, and Inertial Fusion Energy experiments. This ICF Campaign also develops, maintains, and operates the diagnostics capability associated with the Z-Beamlet backlighter facility that is coupled to the Z pulsed-power facility; design, fabricates, and assembles the majority of the load and target hardware; develops, maintains, and operates all of the x-ray, particle, and laser-based diagnostics; develops, maintains, and operates multi-dimensional simulation codes, and supports the staff who design, perform, and analyze the experiments. Research on Z and Z-Beamlet is performed in cooperation and collaboration with the other national laboratories, Defense Threat Reduction Agency laboratories, universities, and AWE (Aldermaston).

Advanced Simulation and Computing (ASC) Campaign
The ASC Campaign at SNL supports SNL's nuclear weapons stockpile mission, development of a responsive nuclear weapons infrastructure, and development of technology to enable removal of Special Nuclear Material (SNM) from site operations. SNL's ASC program develops and improves codes for high-fidelity simulations of weapon system responses; develops microscopic and macroscopic physics and material models required by the codes; and develops and applies methodologies for establishing a technically rigorous foundation for demonstrating credibility of code results. Further, the program provides engineers and designers with a stable and seamless computing environment.

Readiness Campaign
The Readiness Campaign supports development of advanced design and production technologies as required to support production at SNL and some of the other Production Agencies. Readiness Campaign activities at SNL involve at least two of the five subprograms within the Campaign. In the Advanced Design and Production Technologies (ADAPT) subprogram, ongoing areas include development of processes as required for production of neutron generator and Concurrent Design and Manufacturing (CDM) components, Commercial Off-The-Shelf (COTS) insertion, micro-modular telemetry, and transformation of Technical Business Practices (TBPs) and supporting standards. FY 2007 planning will address technology maturation supporting the future LEPs and/or the RRW program, including advanced firing system options (e.g., direct optical initiation, integrated micro-firing systems) and will revisit technology options for a more integrated model-based design and development capability across the NWC.

In the NonNuclear Readiness subprogram, the principal Sandia thrust has been achieving "Readiness" through continued modernization of neutron-generator testers. In the Tritium Readiness subprogram, Sandia will continue 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 rods.

Readiness in Technical Base and Facilities (RTBF)

RTBF supports a broad base of activities that enable the laboratory to meet its mission obligations to the NNSA and the nation. The activities are derived from the staffing and operation of a number of critical Nuclear Weapon (NW) 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 types of projects within RTBF range from the staffing and operation of complex experimental capabilities (Z, SNL Pulsed Reactor, Tech Area III Full Scale Test Facilities) or production capabilities (Microelectronics Development Laboratory, Neutron Generator Plant) to the infrastructure fundamentals of Decommissioning and Demolition (D&D), and General Plant Projects. NNSA expects substantial reductions in mission activity at Tonopah Test Range during the FY 2007-2011 FYNSP period. In FY 2006, Sandia National Laboratories has been tasked to work with the weapon design laboratories to complete a future options strategy for Tonopah Test Range. Following receipt of the future options strategy and in consultation with the weapons design laboratories, NNSA will select a course of action for Tonopah Test Range for FY 2007-2011 consistent with stockpile requirements and ongoing responsive infrastructure activities.

Safeguards and Security

The SNL Safeguards and Security program provides laboratory protection measures consistent with requirements documented in its Site Safeguards and Security Plan (SSSP). Beginning in FY 2007, the focus of activities will be to reduce Category I holdings of Special Nuclear Material to minimum levels required to support Program operations with corresponding reductions to follow in subsequent fiscal years in the Safeguards and Security area.

Nuclear Weapons Incident Response

For the DOE and the NNSA's Office of Emergency Response, SNL assists 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. 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. 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.

Facilities and Infrastructure Recapitalization Program (FIRP)

Sandia National Laboratories (SNL) is addressing the needed refurbishment of mission essential building systems and utility infrastructure. Recapitalization projects planned for FY 2007 include heating, ventilation, fire protection, and air conditioning system upgrades, site electrical transmission distribution system upgrades, and primary arterial roadway refurbishments. These projects support facility condition improvements to mission essential infrastructure directly supporting inertial confinement fusion, directed stockpile work, neutron generator production, and surveillance and engineering campaigns supporting NNSA's Stockpile Stewardship Program. Facility footprint reduction is especially important at SNL because any modernization is confined to existing boundaries. The Facility Disposition FY 2007 target for reducing the physical footprint currently is established at a minimum of 56,000 gross square feet. In the Line Item area, the Technical Area-I Heating System Modernization begins construction in FY 2007. This construction project will convert the centralized, fifty year old steam system to a more efficient distributed system for heating and process related hot

water requirements. Execution of the project will buy down over $37.4 million of deferred maintenance. FIRP planning funds for FY 2007 will allow for design of FY 2008 FIRP recapitalization projects a year early to ensure competent design and credible costs, which ensure the start of construction early in the funding year.

Environmental Projects and Operations
The legacy environmental cleanup activities at the SNL will be completed by the end of FY 2006 including closure of two landfills. The funding requested in FY 2007 for this project is in support of Long-Term Remedial Actions (LTRA) for program management, the maintenance of remedies at 265 environmental restoration sites at SNL/New Mexico, and groundwater monitoring at SNL/California.

Nonproliferation and Verification Research and Development
SNL will develop, demonstrate, and validate improvements to data processing and analysis tools in support of nuclear explosion monitoring. SNL will support the development of new optical detectors for next generation of U.S. satellite-based monitoring to detect nuclear detonations. SNL serves as the national center on research on Synthetic Aperture Radar systems and analysis methods for national security applications. SNL will continue field-testing a remote chemical detection system for stand off detection of nuclear weapon production activities. SNL will continue to develop radiation algorithms to improve performance of commercially available hand-held and portal systems.

International Nuclear Materials Protection and Cooperation
Based on their extensive work for the NNSA, Department of Defense, and other federal agencies, 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. SNL also provides expertise to advise Russian institutes and enterprises as they develop and implement physical protection systems, regulations, and training programs and to support the Second Line of Defense program.

Global Threat Reduction Initiative
SNL provides support on physical protection for the BN-350 spent fuel disposition project. SNL also supports bilateral and IPPAS work to provide physical protection upgrades to research reactors outside of Russia under the Global Research Reactor Security Program. SNL management and technical experts participate in the International Radiological Threat Reduction Program (IRTR). In particular, SNL is providing project management, health physics, and physical protection technical expertise for several IRTR project teams including the Russian Ministry of Defense Radioisotopic Thermoelectric Generator project. SNL also provides a physical protection training course for IRTR staff personnel.

Nonproliferation and International Security
SNL provides support for Global Security Engagement and Cooperation regional security efforts, conducts technical exchanges and technology development under the U.S.-Russian Warhead Safety and Security Exchange Agreement, development of nuclear transparency measures, including through technical analysis and technology development, policymaking and negotiations regarding various arms control and nonproliferation regimes, and export control activities and, NNSA regional security objectives, particularly with Cooperative Monitoring Center. For International Regimes and Agreements, SNL supports licensing operations, 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. In addition, SNL supports safeguards cooperation, provides vulnerability assessment support for foreign sites of interest, training to foreign nationals as needed, Additional Protocol outreach and training, and safeguards agreement implementation. Furthermore, SNL provides support for commercialization efforts globally and efforts to downsize the Russian Nuclear Weapons complex and helps create business opportunities for displaced weapons workers.

SAVANNAH RIVER SITE

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	37.9	27.0	28.0
Science Campaign	1.3	0	0
Engineering Campaign	2.3	1.1	1.8
Pit Manufacturing and Certification Campaign	6.8	1.1	0.5
Readiness Campaign	57.2	54.8	33.1
Readiness in Technical Base and Facilities	110.8	96.8	104.4
Nuclear Weapons Incident Response	1.3	1.3	2.0
Safeguards and Security	13.9	12.4	12.6
Facilities and Infrastructure Recapitalization Programs	10.4	0.5	0
Global Threat Reduction Initiative	0	0.8	0.4
Fissile Materials Disposition	67.7	56.6	67.8
Nonproliferation and Verification R&D	2.0	2.0	5.5
Nonproliferation and International Security	10.6	1.7	3.0
Global Initiatives for Proliferation Prevention	1.0	0.7	0
Total, NNSA	**323.2**	**256.8**	**259.1**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	30.4	31.0	31.6	31.3
Science Campaign	0	0	0	0
Engineering Campaign	1.8	1.8	1.8	1.8
Pit Manufacturing and Certification Campaign	1.0	1.8	1.7	2.2
Readiness Campaign	19.3	19.8	23.6	22.7
Readiness in Technical Base and Facilities	108.2	111.5	114.3	116.7
Nuclear Weapons Incident Response	2.1	2.1	2.2	2.4
Safeguards and Security	12.6	12.8	12.9	13.1
Facilities and Infrastructure Recapitalization Programs	0	0	0	0
Global Threat Reduction Initiative	0.4	0.4	0.4	0.4
Fissile Materials Disposition	42.0	24.5	47.5	71.3

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Nonproliferation and Verification R&D	6.2	6.5	6.8	7.1
Nonproliferation and International Security	3.0	3.1	3.6	3.7
Global Initiatives for Proliferation Prevention	0	0	0	0
Total, NNSA	**227.0**	**215.3**	**246.4**	**272.7**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	1,752	1,520	1,613
Other	8,943	8,453	8,373
Total Facility	**10,695**	**9,973**	**9,989**

Congressional Items of Interest: None

Major Changes or Shifts: None

Site Description

INTRODUCTION:

The Savannah River Site (SRS) covers approximately 310 square miles bordering the Savannah River in western South Carolina. Environmental Management is the site landlord. The Savannah River Site is designated as a National Environmental Research Park and covers a portion of Aiken, Barnwell, and Allendale counties.

The SRS Tritium Facilities 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 four core missions:

- Provide tritium and non-tritium loaded reservoirs to meet Nuclear Weapons Stockpile Plan requirements
- Conduct Stockpile Evaluation Program
- Restore the capability to extract tritium
- Develop plutonium pit manufacturing facility Conceptual Design

ACTIVITIES:

Directed Stockpile Work (DSW)
DSW activities include processing tritium and inert reservoirs and associated components in support of Life Extension Programs (LEPs), Stockpile Services, and Production Support. LEPs include, pre-production, production, and evaluation associated with the refurbishment of the B61, W76, and W80. Stockpile Systems categories include Limited Life Component Exchange (LLCE), Reservoir 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 includes reservoirs returned from retired weapons that will be unloaded, welded closed for disposal, or managed per SLT requirements.

Engineering Campaign
The Enhanced Surveillance (ES) subprogram develops the tools, techniques, and procedures to advance the capabilities of the Nuclear Weapons Complex (NWC) to measure, analyze, calculate, and predict the effect of aging on weapons materials, components, and systems to determine if and/or when these effects will impact weapon reliability, safety, or performance. SRS' role in this campaign is to develop methods for surveillance of tritium reservoirs and other gas transfer system (GTS) components.

Pit Manufacturing and Certification Campaign
The Savannah River National Laboratory is supporting development of an improved plutonium purification process and is a member of the Technology Working Group.

Readiness Campaign
The SRS role in support of the Tritium Readiness subprogram is to design, construct, start up, and operate a Tritium Extraction Facility (TEF). The TEF will provide the capability to receive and extract tritium-containing gases from TPBARs. This will provide sufficient tritium to support stockpile requirements per the baseline schedule, the TEF project will be completed in FY 2007 and operations will begin. There is no scope for Tritium Readiness Construction in FY 2007 due to completion of TEF Construction.

The Advanced Design and Production Technologies (ADAPT) subprogram serves as a catalyst to change the way the NNSA creates its nuclear weapon products through development, demonstration, and deployment of new information, design, and manufacturing technologies. ADAPT at SRS has been organized into projects:

- The Reservoir Development project
- The Tritium Processing project
- The Metal Alloy project
- The Automated Reservoir Management System (ARMS) Replacement project.

In addition to these site-specific projects, SRS also supports ADAPT projects across the NWC:
- The Technology Investment
- The Thrust Areas project
- The Program Management Control project

Readiness in Technical Base and Facilities (RTBF)
RTBF work maintains the facilities and infrastructure in a state of readiness in support of DSW missions, including LEPs, Stockpile Services, and Production Support. Operations of Facilities include facilities management and support activities that maintain the facilities and infrastructure in a state of readiness 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. 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 vessel, and facility effluent-cleanup systems. SRS performs physical maintenance of various shipping containers, and provides operational, regulatory, and technical support and Pressure Vessels.

Safeguards and Security

The SRS Safeguards and Security program provides security for the Tritium Facility consistent with requirements documented in its approved facility Master Security Plan.

Facilities and Infrastructure Recapitalization Program (FIRP)

The Defense Programs Savannah River Site (SRS) will achieve the NNSA corporate goal of 5 percent facility condition index (FCI) for mission-essential facilities at the end of FY 2006. The FY 2007 budget request reflects the successful completion of FIRP at SRS and refocuses funding on higher priority projects at other sites. Other achievements include meeting the goal of less than 10 percent FCI for non-mission essential buildings and a reduction of 2,364 gross square feet of excess facilities through the Facilities Disposition subprogram. SRS has achieved a steady reduction of deferred maintenance and improvements to facilities and infrastructure, including roof repairs, renovations of electrical distribution systems, HVAC upgrades and associated building monitoring and control systems.

Fissile Materials Disposition

SRS is the site selected for disposition of U.S. plutonium and, as such, provides design authority for the Pit Disassembly and Conversion Facility (PDCF) and site coordination services for the Mixed-Oxide (MOX) Fuel Fabrication Facility (FFF). SRS also supports design review of the MOX FFF and integration of the two plutonium disposition facilities with other site support services (actual design of facilities is contracted to private sector firms). In addition, SRS provides down-blending services for off-specification highly enriched uranium (HEU). During the construction phases of the MOX FFF and PDCF, SRS will be responsible for site integration and construction of site infrastructure including electric power, water & sewer, roads, communications, waste management, fire protection, security and related services. The H-Canyon is being used to down blend HEU fuel assemblies to Low Enriched Uranium for transfer to the Tennessee Valley Authority (TVA) for use in nuclear power plants. In addition, other forms of HEU are being transferred directly to TVA for conversion to reactor fuel. This is reducing the HEU inventory and the threat of HEU being used for weapons and reduces the long-term storage cost of HEU.

Global Threat Reduction Initiative

SRS provides support to the Russian Research Reactor Fuel Return (RRRFR) Program, participates in fact-finding missions to the eligible countries and is assisting on the development of a Mobile Melt and Dilute system to help accelerate RRRFR. SRS supports the Foreign Research Reactor Spent Nuclear Fuel Acceptance Program to return U.S.-origin fuel to the United States from research reactors around the world. SRS supports planning and scheduling activities, equipment procurement and technical program management under the Emerging Threats and Gap Materials Program. SRS and laboratory management and technical experts participate in the International Radiological Threat Reduction Program.

Nonproliferation and Verification Research and Development

SRS provides nuclear materials analysis efforts (advance mass spectrometry developments, ultra-sensitive separation, and detection techniques) and characterization of nuclear materials.

Nonproliferation and International Security
SRS provides safeguards and export control support for the International Regimes and Agreements Program 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.

Y-12 NATIONAL SECURITY COMPLEX

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	228.0	151.8	184.8
Science Campaign	1.9	0	0
Engineering Campaign	5.7	4.1	3.9
Pit Manufacturing and Certification Campaign	0	0.1	0.1
Readiness Campaign	57.2	35.5	26.4
Readiness in Technical Base and Facilities	333.3	377.8	332.7
Safeguards and Security	139.8	161.2	137.2
Facilities and Infrastructure Recapitalization Programs	76.2	35.8	71.5
Nuclear Weapons Incident Response	1.1	1.3	1.4
Nonproliferation and International Security	0.5	0	2.1
International Nuclear Materials Protection and Cooperation	0.4	0	0
Fissile Materials Disposition	44.6	43.4	26.6
Global Initiatives for Proliferation Prevention	1.5	1.0	0
Global Threat Reduction Initiative	0	0.6	3.3
HEU Transparency Implementation	1.1	1.1	0
Total, NNSA	**891.3**	**813.7**	**790.0**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	178.1	166.6	172.0	169.9
Science Campaign	0	0	0	0
Engineering Campaign	4.1	4.0	4.0	3.9
Pit Manufacturing and Certification Campaign	0.1	0.1	0.1	0.1
Readiness Campaign	29.8	28.8	26.3	25.2
Readiness in Technical Base and Facilities	321.6	342.4	386.0	419.4
Safeguards and Security	140.9	158.3	136.2	138.6
Facilities and Infrastructure Recapitalization Programs	74.6	81.8	89.0	96.2
Nuclear Weapons Incident Response	1.4	1.4	1.5	1.6
Nonproliferation and International Security	2.1	2.1	2.1	2.1

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
International Nuclear Materials Protection and Cooperation	0	0	0	0
Fissile Materials Disposition	20.1	10.6	10.0	7.2
Global Initiatives for Proliferation Prevention	0	0	0	0
Global Threat Reduction Initiative	2.0	3.0	3.0	3.0
HEU Transparency Implementation	0	0	0	0
Total, NNSA	**774.8**	**799.1**	**830.2**	**867.2**

EMPLOYMENT:

Contractor Employment (End of Year)	FY 2005	FY 2006	FY 2007
NNSA	4,158	4,120	3,975
Other	298	380	325
Total Facility	**4,456**	**4,500**	**4,300**

Congressional Items of Interest: The Safeguards and Security Defense Nuclear Security Program has dedicated FY 2006 funds to support protection requirements for compliance with the 2003 DBT policy.

Major Changes or Shifts: None

Site Description

INTRODUCTION:

BWXT Y-12, L.L.C., a BWXT and Bechtel enterprise, operates Y-12 and is located on the Department of Energy's (DOE's) Oak Ridge Reservation (ORR), which covers approximately 35,000 acres. Most of the ORR lies within the corporate limits of the city of Oak Ridge, Tennessee, and is located approximately 2 miles southwest of its population center. In addition to Y-12, the ORR is home to Oak Ridge National Laboratory (ORNL) and East Tennessee Technology Park. The ORR is bordered on the north and east by the city and on the south and west by the Clinch River/Melton Hill Lake impoundment.

Y-12's role includes the following activities:

- Manufacturing and assessing nuclear-weapon secondaries, cases, and other weapons components
- Dismantling weapons returned from the stockpile
- Providing safe and secure storage and management of special nuclear material (SNM)
- Supplying SNM for use in naval reactors
- Promoting international nuclear safety and nonproliferation
- Reducing global dangers from weapons of mass destruction
- Supporting U.S. leadership in science and technology

ACTIVITIES:

Directed Stockpile Work (DSW)
Y-12 maintains the only capability in the U.S. to fabricate precision parts and components from certain materials for nuclear weapons. Y-12 is also involved in the evaluation of components and sub-systems returned from the stockpile, dismantlement of secondaries, and processing of recovered SNM. Significant FY 2007 activities include Process Prove-In (PPI), First Production Unit (FPU), and production ramp-up for the B61 life extension program (LEP); production preparation and PPI for the W76 LEP; and continuation of stockpile-evaluation activities. The site is participating in an approved Reliable Replacement Warhead (RRW) 18-month study.

Engineering Campaign
Enhanced Surveillance (ES) subprogram provides lifetime prediction and improved surveillance diagnostics and methods, including non-destructive techniques for canned sub-assemblies, cases, and non-nuclear 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. ES work also includes development of tools to predict the future condition of the stockpile with enough lead-time to enable preventive maintenance of the stockpile. Diagnostic activities include full deployment of new quality-evaluation technologies, focused on evaluating the condition and aging behavior of canned sub-assemblies, cases, and non-nuclear components. The behavior of materials and components as they age beyond past experience must be defined in terms that can facilitate preventive maintenance of the stockpile.

Readiness Campaign
The Stockpile Readiness (SR) subprogram examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases for which modern technology would lead to cost-effective, lean processes, shortened cycle times, built-in quality and acceptance, closer integration of activities across the NWC, a more productive workforce, and agile processes that enhance responsiveness to future national security needs. These efforts will revitalize Y-12's ability to meet its mission requirements in a more efficient and cost-effective manner, and provide new or enhanced capabilities to meet the future needs of the nuclear weapons complex (NWC).

The Advanced Design and Production Technologies (ADAPT) subprogram continues and accelerates the development of advanced, cost-effective, and environmentally acceptable nuclear weapons-production technologies and design processes required to maintain an affordable and reliable nuclear weapons stockpile. The ADAPT technologies will result in reduced operating costs, improved manufacturing flexibility, and improved quality.

Readiness in Technical Base and Facilities (RTBF)
The purpose of the RTBF program is to ensure the readiness of the facilities, infrastructure, materials, and personnel to support Defense Programs mission objectives. By design, Y-12 is the NNSA home for all aspects of the complex secondary manufacturing, testing, and disposition. Changes in the complex mission, from designing, producing, and monitoring new weapons to maintaining the stockpile and ensuring its safety and reliability in the absence of underground testing, have placed increased emphasis on conducting surveillance of the existing stockpile, predicting its life, performing LEPs, dismantling the weapons removed from the stockpile under treaty provisions, and providing safe, secure

management and storage of the nation's strategic reserve of highly enriched uranium (HEU) and other weapons materials.

The elements of the Y-12 RTBF Program include the following:
- Maintaining base operations for thirteen of the Y-12 major production and production-support buildings, plus deactivation activities in building 9206
- Providing construction line item management, including all pre-conceptual planning and other project costs (OPC) for all RTBF-funded line items
- Providing management of the capital program, capital equipment and general plant projects activities on the site
- Developing and updating the BWXT Y-12 strategic plan, master site plan, and the Ten-Year Comprehensive Site Plan (TYCSP)
- Providing containers for the off-site transportation of SNM and waste
- Providing for the management and storage of HEU and other materials, and legacy-materials disposition to promote footprint reduction
- Providing for the recycle and recovery of HEU
- Managing Program Readiness activities that include the cross-cutting responsibilities of Chronic Beryllium Disease Prevention Program (CBDPP) and RTBF Program Management.

Two major projects, the Highly Enriched Uranium Materials Facility and the Uranium Processing Facility are underway to provide replacement facilities. Planning is underway to accelerate the modernization activities at the site, resulting in a much smaller footprint with associated operational efficiencies

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. Y-12 has established a deferred maintenance reduction program that is focused on ensuring viable facilities and infrastructure are available to support Directed Stockpile Work (DSW), Campaigns including Enhanced Surveillance and Readiness, and other primary site Defense Program Missions including management and storage of nuclear materials. For FY 2007, recapitalization projects address deficiencies for electrical, mechanical, utility, specialty and structural systems within mission essential facilities and infrastructure. Also within the recapitalization area, the site continues to participate in the complex-wide Roof Asset Management Program (RAMP) to correct priority deficiencies and extend the life on the roofing assets at the site. In the area of facility disposition for FY 2007, the Y-12 site has targeted some 85,000 gross square feet for demolition which will provide significant benefit in eliminating increasing maintenance requirements. Y-12 is executing several Line Item projects that address the most demanding utility issues at Y-12, including Compressed Air Upgrade, Steam Plant Life Extension, and a Potable Water System Upgrade.

Safeguards and Security
The Y-12 Safeguards and Security program provides protection measures consistent with protection requirements documented in the facility Site Safeguards and Security Plan (SSSP). Activities will include consolidation of Special Nuclear Material, adding protective force posts and redeploying protective force personnel to lengthen adversary delay times, implement new vehicle delay measures, and other interim barrier features. During FY 2006, validation of the site's revised protection strategy for the 2005 Design Basis Threat will be conducted. A comprehensive review of the Y-12 Security Improvement Line Item Construction Project (LICP) is expected to result in a construction project that

better fulfills future programmatic needs and be more affordable and effective from a security protection standpoint.

Fissile Materials Disposition

Y-12 serves as the lead for all surplus highly enriched uranium (HEU) disposition activities through the HEU Disposition Program Office. Y-12 is also providing storage and repackaging for surplus HEU pending disposition via shipment to the U.S. Enrichment Corporation/Tennessee Valley Authority (USEC/TVA).

ORO/Y-12 provides for the planning and implementation of HEU disposition activities, which includes the transfer of materials to the United States Enrichment Corporation, blending and transfer of off-specification materials to the Tennessee Valley Authority, transfer of materials to the commercial processor contracted to downblend the material associated with the IAEA material disposition project, tracking and evaluation of surplus HEU inventories, and planning for disposition of unallocated surplus HEU material. The NNSA Y-12 Site Office and the Y-12 National Security Complex HEU Disposition Program Office at Y-12 assist the Office of Fissile Materials Disposition in planning and implementing the disposition program in the areas of strategic and tactical planning, oversight, technical analyses, regulatory coordination, business development and marketing, and coordination of interfaces among key participants and stakeholders.

ARGONNE NATIONAL LABORATORY

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Readiness Campaign	0.3	0	0
Readiness in Technical Base and Facilities	0.8	0.7	0
Nuclear Weapons Incident Response	1.4	2.5	2.5
Nonproliferation and International Security	23.6	6.8	5.5
International Nuclear Materials Protection and Cooperation	2.1	0.4	0.5
Global Initiatives for Proliferation Prevention	0	1.0	0
HEU Transparency Implementation	1.1	1.1	0
Global Threat Reduction Initiative	0	13.4	18.2
Total, NNSA	**29.3**	**25.9**	**26.7**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Readiness Campaign	0	0	0	0
Readiness in Technical Base and Facilities	0	0	0	0
Nuclear Weapons Incident Response	2.7	2.8	2.9	3.1
Nonproliferation and International Security	4.2	4.2	4.3	4.3
International Nuclear Materials Protection and Cooperation	0.5	0.6	0.2	0.7
Global Initiatives for Proliferation Prevention	0	0	0	0
HEU Transparency Implementation	0	0	0	0
Global Threat Reduction Initiative	18.1	12.8	10.5	10.7
Total, NNSA	**25.5**	**20.4**	**17.9**	**18.8**

EMPLOYMENT: Data not available, site is not NNSA landlord responsibility.

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:

Global Threat Reduction Initiative
ANL supports the Reduced Enrichment for Research and Test Reactors (RERTR) program, including reactor analysis, conversion assistance, molybdenum-99 target development, advanced fuel development, and technical integration. ANL provides technical support for the subcritical assemblies conversion work under the Russian Research Reactor Fuel Return program. ANL also supports bilateral work to provide physical protection upgrades to research reactors outside of Russia under the Global Research Reactor Security Program. ANL management and technical experts participate in the International Radiological Threat Reduction Program. In particular, ANL supports the technical aspects of the program's work with Interpol to a) compile and assess theft and diversion information relative to nuclear and radiological materials, and b) the graphical information system including the development of the programs country prioritization process.

Nonproliferation and International Security
ANL supports export control work in the areas of licensing and international cooperation; safeguards work, especially in the non-Russian republics of the Former Soviet Union, fuel cycle analysis, and policymaking and negotiations regarding various arms control and nonproliferation regimes. In addition, ANL supports the activities involving International Emergency Management and Cooperation program.

BROOKHAVEN NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Readiness in Technical Base and Facilities	0.1	0.1	0
Nuclear Weapons Incident Response	1.1	1.3	1.3
Nonproliferation and Verification R&D	6.0	6.0	1.5
Global Threat Reduction Initiative	0	1.3	0.7
Nonproliferation and International Security	2.1	2.1	4.7
International Nuclear Materials Protection and Cooperation	26.1	46.1	28.7
Global Initiatives for Proliferation Prevention	3.4	2.5	0
Total, NNSA	**38.8**	**59.4**	**36.9**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Readiness in Technical Base and Facilities	0	0	0	0
Nuclear Weapons Incident Response	1.4	1.5	1.6	1.6
Nonproliferation and Verification R&D	1.9	1.9	1.9	1.9
Global Threat Reduction Initiative	0.7	0.9	0.7	0.9
Nonproliferation and International Security	4.7	6.3	6.3	6.3
International Nuclear Materials Protection and Cooperation	31.7	32.8	19.0	25.7
Global Initiatives for Proliferation Prevention	0	0	0	0
Total, NNSA	**40.4**	**43.4**	**29.5**	**36.4**

EMPLOYMENT: Data not available, site is not NNSA landlord responsibility.

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:

International Nuclear Materials Protection and Cooperation (MPC&A)

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. 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. BNL provides support in the development and delivery of MPC&A training courses. BNL is the lead laboratory that provides support for the MPC&A Operations Monitoring Project and for MPC&A Culture Enhancement Project.

Nonproliferation and International Security

BNL supports international cooperation (sister labs) efforts and the activities in the Russian closed cities in the area of economic development.

Nonproliferation and Verification Research and Development

BNL develops radiation detection, scientific foundations, and instrumentation.

Global Threat Reduction Initiative

BNL provides technical and management support to the Emerging Threats and Gap Materials program.

CHICAGO OPERATIONS OFFICE

TABLES

FUNDING BY PROGRAM:

(dollars inmillions)

	FY 2005	FY 2006	FY 2007
NNSA			
Science Campaign	0.4	0.1	0
Engineering Campaign	0.1	0	0
Readiness Campaign	24.5	23.0	39.9
Nonproliferation and Verification R&D	0.4	0.4	0
Fissile Materials Disposition	410.2	249.9	437.7
Office of the Administrator	1.6	1.5	1.6
Total, NNSA	**437.2**	**274.9**	**479.2**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Science Campaign	0	0	0	0
Engineering Campaign	0	0	0	0
Readiness Campaign	46.6	45.1	41.9	38.5
Nonproliferation and Verification R&D	0	0	0	0
Fissile Materials Disposition	482.8	537.0	567.1	580.5
Office of the Administrator	1.6	1.7	1.7	1.8
Total, NNSA	**531.0**	**583.8**	**610.7**	**620.8**

EMPLOYMENT: Data not available, site is not NNSA landlord responsibility.

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 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:

Fissile Materials Disposition

CHO provides project and contract management support for the U.S. plutonium disposition program, which includes the Mixed Oxide (MOX) Fuel Fabrication Facility and the Pit Disassembly and Conversion Facility. During construction, CHO will continue to provide contract management services such as funding direction and authority to contractors, overseeing contract performance, and providing legal and accounting services in support of NNSA Headquarters.

Readiness Campaign

CHO supports the Tritium Readiness activity to re-establish and operate the Department's capability for producing tritium to maintain the national inventory of tritium to support 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 millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	0.1	0	0
Science Campaign	0	1.0	0
Readiness Campaign	1.7	0	4.9
Readiness in Technical Base and Facilities	1.9	1.9	0
Nuclear Weapons Incident Response	0.7	0.2	0.2
Safeguards and Security	3.6	0	0
Nonproliferation and Verification R&D	0.2	0.2	2.5
Nonproliferation and International Security	1.2	0	0.5
International Nuclear Materials Protection and Cooperation	0.9	0	0
Global Initiatives and Proliferation Prevention	0.5	0.5	0
Global Threat Reduction Initiative	0	13.4	12.2
Naval Reactors	68.3	56.4	64.6
Total, NNSA	**79.1**	**73.6**	**84.9**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	0	0	0	0
Science Campaign	0	0	0	0
Readiness Campaign	0	0	0	0
Readiness in Technical Base and Facilities	0	0	0	0
Nuclear Weapons Incident Response	0.2	0.2	0.3	0.3
Safeguards and Security	0	0	0	0
Nonproliferation and Verification R&D	3.0	3.0	3.1	3.1
Nonproliferation and International Security	0.5	0.5	0.5	0.5
International Nuclear Materials Protection and Cooperation	0	0	0	0
Global Initiatives and Proliferation Prevention	0	0	0	0
Global Threat Reduction Initiative	11.0	10.3	8.6	8.9

	(dollars in millions)			
	FY 2008	FY 2009	FY 2010	FY 2011
Naval Reactors	58.8	59.9	61.1	62.3
Total, NNSA	**73.5**	**73.9**	**73.6**	**75.1**

EMPLOYMENT: Data not available, site is not NNSA landlord responsibility.

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:

Global Threat Reduction Initiative
INL is the technical lead for work on advanced fuel development on the Reduced Enrichment for Research and Test Reactors program. INL provides support to the Russian Research Reactor Fuel Return (RRRFR) program, participates in fact-finding missions to the eligible countries, and works on the development of a Mobile, Melt & Dilute system to help accelerate RRRFR. INL provides technical support to the BN-350 Spent Fuel Project for site design and construction.

Nonproliferation and Verification Research and Development
INL provides research to assess alternative fissile material production methods and advanced nuclear fuel cycle development.

Naval Reactors (NR)
The 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. NR 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 millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Directed Stockpile Work	2.2	1.5	2.8
Science Campaign	3.6	1.7	0
Advanced Simulation and Computing Campaign	0	0	0
Readiness in Technical Base and Facilities	5.5	5.0	0
Nuclear Weapons Incident Response	0.4	0.3	0.3
Global Threat Reduction Initiative	0	4.2	3.6
Nonproliferation and Verification R&D	3.6	5.6	8.5
HEU Transparency Implementation	4.0	4.0	0
Nonproliferation and International Security	16.0	11.2	17.6
International Nuclear Materials Protection and Cooperation	114.5	137.6	103.1
Fissile Materials Disposition	35.1	23.0	12.5
Total, NNSA	**184.9**	**194.1**	**148.4**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Directed Stockpile Work	1.8	1.9	1.9	1.8
Science Campaign	0	0	0	0
Advanced Simulation and Computing Campaign	0	0	0	0
Readiness in Technical Base and Facilities	0	0	0	0
Nuclear Weapons Incident Response	0.4	0.4	0.4	0.4
Global Threat Reduction Initiative	2.6	5.8	3.6	6.6
Nonproliferation and Verification R&D	10.0	10.7	11.5	12.3
HEU Transparency Implementation	0	0	0	0
Nonproliferation and International Security	18.4	18.7	19.5	20.2
International Nuclear Materials Protection and Cooperation	88.2	60.3	55.5	47.6
Fissile Materials Disposition	14.2	13.2	22.7	22.7
Total, NNSA	**135.6**	**111.0**	**115.1**	**111.6**

EMPLOYMENT: Data not available, site is not NNSA landlord responsibility.

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 (MPC&A)
ORNL 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. ORNL'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. ORNL also provides training expertise and technical support to Second Line of Defense program. ORNL also serves as the laboratory intermediary for complementary DOE and Defense Threat Reduction Agency project areas related to sustainability.

Nonproliferation and International Security
ORNL supports safeguards work verification of nuclear weapons program dismantlement; licensing activities, and export control cooperation with international partners. ORNL supports the development of nuclear transparency measures. The facility also provides expertise on various arms control and nonproliferation agreements and treaties. 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). The facility provides further technical support related to safeguards and verification measures and uranium enrichment processing facilities, and supports work with Russia to negotiate and implement transparent nuclear reductions. ORNL also provides specialized expertise in the control of nuclear reactor-related technology, prepares analyses to revise U.S. and international nuclear export control lists, studies the export control implications of the development of advanced fuel cycle technologies, and tracks global machine tool supply trends. ORNL provides the HEU TI program one segment of the Blend Down Monitoring System (BDMS) that measures the flow of HEU as it is blended-down at Russian uranium processing facilities and traceability of HEU converted to LEU. ORNL personnel support the development, shipping, installation, licensing and maintenance of BDMS equipment, as well as training of both Russian and U.S. personnel on BDMS equipment, operations and

maintenance. Additionally, ORNL provides technical experts to serve as permanent and special monitors at Russian facilities and to interpret resultant BDMS data.

Fissile Materials Disposition
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 supervises fuel qualification R&D. ORNL supports the Parallex project and disposition of Russian plutonium.

Global Threat Reduction Initiative (GTRI)
ORNL will support conversion analysis activities for the HFIR research reactor under the Reduced Enrichment for Research and Test Reactors program. ORNL provides support on cask design for the BN-350 spent fuel disposition project as well as a contract for NAC support on transportation and handling equipment; ORNL experts conduct site analysis, provide support for the spent fuel shipment from Uzbekistan, and provide supporting equipment for the Russian Research Reactor Fuel Return program. ORNL also supports bilateral work to provide physical protection upgrades to research reactors outside of Russia under the Global Research Reactor Security Program. ORNL supports planning and scheduling activities under the Emerging Threats and Gap Materials program. ORNL management and technical experts participate in the International Radiological Threat Reduction Program. In particular, this includes the efforts of experts in health physics, physical protection and project management on a number of IRTR programs including IAEA, Iraq, Afghanistan and Russia. ORNL staff also participates and leads the effort on assessing the threshold of radioactivity impacts on the Program.

Nonproliferation Verification Research and Development
ORNL conducts research to address the threat from nuclear weapons and radiological disposal devices. ORNL also provides leading-edge research into candidate materials, which could replace exiting nuclear detectors used for gamma spectroscopy and neutron detection. ORNL provides nuclear material analysis efforts using advanced mass spectrometry and characterization of nuclear materials.

PACIFIC NORTHWEST NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

(dollars in millions)

	FY 2005	FY 2006	FY 2007
NNSA			
Readiness Campaign	4.5	8.9	12.8
Nuclear Weapons Incident Response	1.0	0.5	0.5
Safeguards and Security	1.0	0	0
Nonproliferation and Verification R&D	20.1	32.6	37.4
Nonproliferation and International Security	16.3	11.2	15.7
International Nuclear Materials Protection and Cooperation	97.1	64.9	54.0
Global Initiatives for Proliferation Prevention	6.8	4.8	0
Global Threat Reduction Initiative	0	10.2	8.0
Elimination of Weapons Grade Plutonium Production	0.6	0.9	0.9
Fissile Materials Disposition	3.7	2.8	3.1
Total, NNSA	**151.1**	**136.8**	**132.4**

OUT-YEAR FUNDING:

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011
NNSA				
Readiness Campaign	18.2	23.1	22.7	23.8
Nuclear Weapons Incident Response	0.5	0.5	0.5	0.6
Safeguards and Security	0	0	0	0
Nonproliferation and Verification R&D	47.4	46.7	46.7	48.0
Nonproliferation and International Security	16.4	15.7	16.1	16.5
International Nuclear Materials Protection and Cooperation	58.3	62.4	36.8	64.3
Global Initiatives for Proliferation Prevention	0	0	0	0
Global Threat Reduction Initiative	3.2	7.8	4.0	9.1
Elimination of Weapons Grade Plutonium Production	0.5	0.5	0.9	0
Fissile Materials Disposition	3.4	3.9	2.9	2.9
Total, NNSA	**147.9**	**160.6**	**130.6**	**165.2**

EMPLOYMENT: Data not available, site is not NNSA landlord responsibility.

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:

Nonproliferation and Verification Research and Development
PNNL provides tools for radionuclide detection and statistical expertise (seismic discrimination) in the ground-based portion of NA-22's nuclear explosion monitoring efforts. PNNL plays a key role in the identification of detection signatures and observables, nonproliferation data exploitation, leading edge research and in development of "spectral signatures library" to aid in proliferation signatures detection. The spectral measurements being conducted at PNNL are state-of-the-art in accuracy and sensitivity. PNNL provides nuclear materials analysis efforts (advanced mass spectrometry developments, ultra-sensitive separation and detection techniques) and in radiation detection R&D (HEU detection, long-range SNM detection, and new room-temperature, high-resolution materials). PNNL provides capabilities replacement efforts for NNSA in the 300 Area. The acceleration of Environment Management clean-up activities, with respect to the River Corridor Contract, forces the evacuation of these facilities by 2009. This project supports a joint effort with the DOE Office of Science to construct the 300 Area PNNL Replacement Facility at Hanford.

Nonproliferation and International Security
PNNL assists Dismantlement and Transparency program by providing support for conducting technical exchanges and technology development under the Warhead Safety and Security Exchanges Agreement, HEU Purchase Agreement policy and transparency development, Plutonium Production Reactor Agreement implementation, development of nuclear transparency measures, technical analysis and technology development, and regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. In addition, PNNL provides International Regimes and Agreements program with licensing operations, including Chemical/ Biological Weapons related training to Department of Homeland Security, multilateral outreach through support efforts for policymaking and negotiations various nonproliferation control regimes, and international cooperation, primarily in the Former Soviet Union but increasingly in transit states as well. For the Global Security Engagement and Cooperation program, PNNL supports the safeguards tools and methods development, IAEA safeguards cooperation and verification of DPRK and other proliferant states, IAEA environmental sampling QA/QC, vulnerability assessment support for foreign sites of interest, physical protection upgrades, training to foreign nationals as needed, Additional Protocol implementation, Proliferation Resistant Fuel Technology project, and Trilateral Initiates. In addition, PNNL provides support for commercialization efforts globally and efforts to downsize the Russian nuclear weapons complex and helps create business opportunities for displaced weapons workers.

International Nuclear Materials Protection and Cooperation
PNNL provides technical, contracting, and management expertise for DOE's INMP&C Program. In particular, this includes the efforts of experts in physical security, material control and accounting (MC&A), and protective forces, as well as experienced project managers. PNNL also manages several projects related to MPC&A infrastructure in Russia, including physical protection, MC&A, and protective forces training, regulatory development, and inspections/oversight. In addition, PNNL management and technical experts provide project management support and training expertise to the Second Line of Defense program.

Fissile Materials Disposition
PNNL provides support to the U.S. Plutonium Disposition Program in the development of a monitoring and inspection regime for disposition facilities. PNNL also supports nuclear facility licensing and regulatory activities in the Russian Surplus Fissile Materials Disposition program.

Global Threat Reduction Initiative (GTRI)
PNNL provides support on transportation and handling equipment, as well as technical integration for the BN-350 spent fuel disposition project. PNNL supports planning and scheduling activities under the Emerging Threats and Gap Materials program. PNNL supports activities in the NIS/Baltics for the Global Research Reactor Security Program. PNNL management and technical experts participate in the International Radiological Threat Reduction Program. In particular, this includes the efforts of experts in regulatory development, health physics, and physical protection and project management. PNNL also provides technical program managers to Headquarters for selected projects.