DOE/ME-0046
Volume 1

Department of Energy
FY 2006 Congressional Budget Request

National Nuclear Security Administration

Office of the Administrator

Weapons Activities

Defense Nuclear Nonproliferation

Naval Reactors

February 2005

Office of Management, Budget and Evaluation/CFO

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The Department of Energy's FY 2005 Congressional Budget justification is available on the Office of Management, Budget and Evaluation/CFO homepage at http://www.mbe.doe.gov/budget/

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

	FY 2004 Comparable Approp	FY 2005 Comparable Approp	FY 2006 Request to Congress	FY 2006 vs. FY 2005	
Energy And Water Development					
Energy Programs					
Energy supply	794,897	932,319	902,674	-29,645	-3.2%
Non-Defense site acceleration completion	167,272	157,316	172,400	15,084	+9.6%
Uranium enrichment D&D fund	414,027	495,015	591,498	96,483	+19.5%
Non-Defense environmental services	307,795	288,966	177,534	-111,432	-38.6%
Science	3,536,373	3,599,546	3,462,718	-136,828	-3.8%
Nuclear waste disposal	188,879	343,232	300,000	-43,232	-12.6%
Departmental administration	109,276	119,284	130,259	10,975	+9.2%
Inspector general	39,229	41,176	43,000	1,824	+4.4%
Total, Energy Programs	5,557,748	5,976,854	5,780,083	-196,771	-3.3%
Atomic Energy Defense Activities					
National nuclear security administration:					
Weapons activities	6,447,159	6,583,350	6,630,133	46,783	+0.7%
Defense nuclear nonproliferation	1,367,709	1,422,103	1,637,239	215,136	+15.1%
Naval reactors	761,872	801,437	786,000	-15,437	-1.9%
Office of the administrator	352,949	357,051	343,869	-13,182	-3.7%
Total, National nuclear security administration	8,929,689	9,163,941	9,397,241	233,300	+2.5%
Environmental and other defense activities:					
Defense site acceleration completion	5,433,423	5,725,935	5,183,713	-542,222	-9.5%
Defense environmental services	895,015	845,704	831,331	-14,373	-1.7%
Other defense activities	675,824	672,590	635,998	-36,592	-5.4%
Defense nuclear waste disposal	387,699	229,152	351,447	122,295	+53.4%
Total, Environmental & other defense activities	7,391,961	7,473,381	7,002,489	-470,892	-6.3%
Total, Atomic Energy Defense Activities	16,321,650	16,637,322	16,399,730	-237,592	-1.4%
Defense EM privatization (rescission)	-15,329	—	—	—	—
Power marketing administrations:					
Southeastern power administration	5,070	5,158	—	-5,158	-100.0%
Southwestern power administration	28,431	29,117	3,166	-25,951	-89.1%
Western area power administration	176,873	171,715	53,957	-117,758	-68.6%
Falcon & Amistad operating & maintenance fund	2,625	2,804	—	-2,804	-100.0%
Total, Power marketing administrations	212,999	208,794	57,123	-151,671	-72.6%
Federal energy regulatory commission	—	—	—	—	—
Subtotal, Energy And Water Development Appropriation	22,077,068	22,822,970	22,236,936	-586,034	-2.6%
Uranium enrichment D&D fund discretionary payments	-449,333	-459,296	-451,000	8,296	+1.8%
Excess fees and recoveries, FERC	-19,000	-15,000	-13,000	2,000	+13.3%
Colorado River Basins	1,458	-23,000	-23,000	—	—
Total, Energy And Water Development	**21,610,193**	**22,325,674**	**21,749,936**	**-575,738**	**-2.6%**

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

	FY 2004 Comparable Approp	FY 2005 Comparable Approp	FY 2006 Request to Congress	FY 2006 vs. FY 2005	
Interior And Related Agencies					
Fossil energy research and development	658,981	571,854	491,456	-80,398	-14.1%
Naval petroleum and oil shale reserves	17,995	17,750	18,500	750	+4.2%
Elk Hills school lands fund	36,000	36,000	84,000	48,000	+133.3%
Energy conservation	867,967	868,234	846,772	-21,462	-2.5%
Economic regulation	1,034	——	——	——	——
Strategic petroleum reserve	170,948	169,710	166,000	-3,710	-2.2%
Northeast home heating oil reserve	4,939	4,930	——	-4,930	-100.0%
Energy information administration	81,100	83,819	85,926	2,107	+2.5%
Subtotal, Interior Accounts	1,838,964	1,752,297	1,692,654	-59,643	-3.4%
Clean coal technology	-98,000	-160,000	——	160,000	+100.0%
Total, Interior And Related Agencies	**1,740,964**	**1,592,297**	**1,692,654**	**100,357**	**+6.3%**
Total, Discretionary Funding	**23,351,157**	**23,917,971**	**23,442,590**	**-475,381**	**-2.0%**

National Nuclear Security Administration
Overview

Appropriation and Program Summary

(dollars in millions)

	FY 2004 Comparable Appropriation	FY 2005 Original Appropriation	FY 2005 Adjustments	FY 2005 Comparable Appropriation	FY 2006 Request
Office of the Administrator	353	356	+1	357	344
Weapons Activities......................................	6,447	6,226	+357	6,583	6,630
Defense Nuclear Nonproliferation	1,368	1,420	+2	1,422	1,637
Naval Reactors	762	808	-6	801	786
Total, NNSA..	8,930	8,811	+353	9,164	9,397

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,* requires the Administrator to submit to Congress each year at the time the budget is submitted the estimated expenditures necessary to support the programs, projects and activities of the NNSA for a five fiscal year period, in a level of detail comparable to that contained in the budget. The Future Years Nuclear Security Program (FYNSP) was provided as a separate document; starting in FY 2005, NNSA included outyear budget and performance information as part of a fully integrated budget submission.

Future Years Nuclear Security Program (FYNSP) Schedule

(dollars in millions)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Total
Office of the Administrator	344	358	372	387	402	1,863
Weapons Activities.................................	6,630	6,780	6,921	7,077	7,262	34,671
Defense Nuclear Nonproliferation..........	1,637	1,674	1,711	1,748	1,787	8,556
Naval Reactors	786	803	821	839	857	4,106
Total, NNSA target.................................	9,397	9,615	9,825	10,051	10,308	49,196

This year's five year projections show a decrease of $496 million over the FYNSP approved for the FY 2005 President's Request. Within this total, there is an increase associated with the transfer of the Environmental Management scope for projects at NNSA sites ($696 million). We have also programmed enhanced efforts in several NNSA programs during the 5 year period: Defense Nuclear Nonproliferation increases $1.4 billion; Safeguards and Security increases $979 million; Emergency Response activities increase $154 million, and Office of Administration increases $98 million. These increases are offset by reductions in Defense Programs (-$3.0 billion), the Facilities Recapitalization efforts (-$752 million), and Naval Reactors (-$64 million). NNSA plans to rebalance outyear funding during the FY 2007-2011 PPBE process.

FY 2004 Execution

(dollars in millions)

	FY 2004 Approp	PY Balance/ General Reduction	Rescission	Reprogrammings and Other Transfers	Comp Adjustments	Current FY 2004 Comp
Office of the Administrator....	340.0	0	-2.0	+12.4	+2.5	352.9
Weapons Activities................	6,367.3	-94.8	-37.0	-25.3	+237.0	6,447.2
Defense Nuclear Nonproliferation	1,372.6	-45.0	-7.8	+42.0	+5.9	1,367.7
Naval Reactors.......................	768.4	-2.0	-4.5	0	0	761.9
Total, NNSA..........................	8,848.3	-141.8	-51.3	29.2	+245.3	8,929.7

FY 2005 Execution

(dollars in millions)

	FY 2005 Approp	PY Balance/ General Reduction	FY 2005 Original Appropriation	Rescission	Other Transfers	Comp Adjust-ments	Current FY 2005 Comp
Office of the Administrator....	356.2	0	356.2	-2.8	0	+3.7	357.1
Weapons Activities................	6,312.5	-86.0	6,226.5	-49.8	+154.9	+251.8	6,583.4
Defense Nuclear Nonproliferation.....................	1,435.4	-15.0	1,420.4	-11.4	+19.1	-6.0	1,422.1
Naval Reactors.......................	807.9	0	807.9	-6.5	0	0	801.4
Total, NNSA..........................	8,912.0	-101.0	8,811.0	-70.5	+174.0	+249.5	9,163.9

Preface

The NNSA was created by the Congress in 2000 to focus the management of the nation's defense nuclear security 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 weapon 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. Within the Weapons Activities appropriation, NNSA has one program, Weapons Activities, and 14 subprograms. The Defense Nuclear Nonproliferation appropriation has one program, Defense Nuclear Nonproliferation, with 8 subprograms. The Naval Reactors appropriation supports all activities for that program, with no subprograms. The Office of the Administrator appropriation provides support for all Federal NNSA employees in Headquarters (except those supporting Environmental Programs) and the field elements (except couriers), and has no subprograms.

This overview will describe Strategic Context, Mission, Benefits, Strategic Goals, and Funding by General Goal. These items together put the appropriation in perspective. It will also address the

Program Assessment Rating Tool (PART) assessments for NNSA subprograms, and Significant Program Shifts.

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. A diagram showing the linkages of NNSA's goals, programs, subprograms and activities is included at the end of this section.

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 Environmental Strategic Goal via general goal 6 on Environmental Management. 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, to date 10 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

The international community faces a variety of new and emerging threats. As the events of September 11, 2001 made clear, new sub-national threats are emerging that involve hostile groups willing to use or support the use of low-tech weapons of great destructive capability. If these groups come to possess nuclear weapons or other weapons of mass destruction (WMD), U.S. nuclear forces might not deter their use. Thus, diplomatic, political, and other military efforts to prevent the acquisition of nuclear weapons, weapons-usable materials, or chemical or biological weapons, in conjunction with a robust counter-terrorism effort and defenses, may be the only means available to address this threat.

In this new, broader threat environment, nuclear weapons will play a critical but reduced role in the overall United States security posture. Nuclear forces – linked with an advanced conventional strike capability and integrated with a responsive infrastructure – continue to be an essential element of national security by strengthening our overall ability to reassure allies of U.S. commitments, dissuade arms competition from potential adversaries, and deter threats to the U.S., its overseas forces, allies, and friends.

Based on potential threats to the U.S. and its allies, NNSA faces several broad challenges in carrying out nuclear threat management and threat reduction. NNSA must:

- Sustain its nuclear weapons capabilities, and other contributions to deterrence, in a safe, secure, and reliable manner;

- Establish a nuclear weapons infrastructure that can be responsive to future needs;

- Maintain a robust and effective Naval Reactors program;

- Develop and implement innovative technical and policy approaches for detecting, preventing, and reversing or, failing that, managing the proliferation of WMD; and,

- Respond to nuclear and other emergencies worldwide.

Key elements of our nuclear posture involve strategies that enable the U.S. to quickly adapt and respond to unanticipated changes in the international security environment or to unexpected problems or "surprises" in the status of our nuclear forces. In the near term, as the Nation draws down to levels established in the Treaty of Moscow – between 1,700-2,200 operationally deployed nuclear warheads – the U.S. will maintain capability to augment warhead levels on available delivery vehicles if circumstances require.

A critical strategy – a key leg in the Nuclear Posture Review's "New Triad" – is to establish a flexible and responsive nuclear weapons infrastructure. A responsive NNSA infrastructure – people and facilities – includes innovative science and technology research and development at the National laboratories and agile production facilities that are able to meet identified needs and capable of responding to surprises. It will provide enhanced surveillance to better "know the stockpile," an improved understanding of nuclear weapons physics and engineering, and flexible production capacity. Responsive infrastructure will enable timely reconstitution to larger force levels, if needed; field new or modified nuclear warheads either to respond to a stockpile "surprise" or to meet new military requirements; and, ensure readiness to conduct an underground nuclear test, if necessary.

Program Benefits

As the post-Cold War era evolves, the NNSA is managing the Nation's nuclear weapons and ensuring that they are capable of responding to the challenges of the 21st century security environment. The DOE, through the NNSA, works to assure that the nation's nuclear stockpile remains safe, secure, reliable, and ready, and to extend the life of that stockpile in support of Department of Defense (DoD) military requirements. Our nation will continue to benefit from the security that results from an effective nuclear deterrent, with confidence that our nation is ready and prepared to respond rapidly and effectively if required.

Stockpile stewardship activities are carried out without the use of underground nuclear testing, continuing the moratorium initiated by the U.S. in the early 1990's. The NNSA maintains a robust infrastructure of people, programs, and facilities to provide specialized scientific and technical capability for stewardship of the nuclear weapons stockpile. The NNSA also works in partnership with the Department of Defense (DoD) to meet their needs for reliable and militarily effective nuclear propulsion for the U.S. Navy.

The nation continues to benefit from advances in science, technology and engineering fostered by the national security program activities, including cutting edge research and development carried out in partnership with many of the Nation's colleges, universities, small businesses and minority educational institutions. The NNSA programs, including three national laboratories, the Nevada Test Site, and research, development and production facilities across the U.S. employ nearly 2,400 Federal employees and approximately 35,000 contractor employees to carry out this work.

In June 2002, the United States championed a new, comprehensive nonproliferation effort known as the Global Partnership. World leaders committed to raise up to $20 billion over 10 years to fund nonproliferation programs in the former Soviet Union. The NNSA contributes directly to this effort by carrying out programs with the international community to reduce and prevent the proliferation of nuclear weapons, materials and expertise. The security of our nation and the world are enhanced by NNSA's ongoing work to provide security upgrades for military and civilian nuclear sites and enhanced border security in Russia and the Former Soviet Union. We are reducing the world's stocks of dangerous materials such as plutonium through NNSA-sponsored Fissile Materials Disposition programs in the U.S. and Russia as well as through elimination of Russian plutonium production. We have also initiated the Global Threat Reduction Initiative (GTRI) to remove and/or secure high-risk nuclear and radiological materials and equipment around the world that pose a threat to the United States and to the international community.

The Nation benefits from NNSA's work in partnership with the Department of Homeland Security to develop and demonstrate new detection technologies to improve security of our cities and ports. Perhaps the most tangible benefits to the Nation following the September 11, 2001 terrorist attacks are the "first responder teams" of highly specialized scientists and technical personnel from the NNSA sites who are deployed across the nation to address threats of weapons of mass destruction. These teams work under the direction of the NNSA Office of Emergency Operations, the Department of Homeland Security and the Federal Bureau of Investigation to respond to nuclear emergencies in the U. S. and around the world. The teams adapt to changing technologies and evolving challenges associated with combating terrorism and accident/incident scenarios in today's world. Outstanding performance in training, exercises, and real world events continues to justify NNSA's reputation as the one of the world's premier nuclear and radiological technical emergency response capabilities.

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 supports the following goals:

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

Environmental 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.

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 and remediated 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.

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.

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. 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.

Contribution to General Goal 6

NNSA activities funded by the Weapons Activities' Environmental Projects and Operations Program contributes to General Goal 6. These activities provide for the acceleration of risk reduction and cleanup of environmental legacy at National Nuclear Security Administration (NNSA) sites.

Funding by General Goal

(dollars in millions)

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
General Goal 1, Nuclear Weapons Stewardship							
Directed Stockpile Work	1,291	1,277	1,421	1,459	1,487	1,516	1,545
Science Campaign	259	276	262	264	264	264	264
Engineering Campaign	265	261	230	172	182	165	165
ICF and High Yield Campaign	512	536	460	462	462	462	462
Advanced Simulation and Computing Campaign	715	697	661	666	666	666	666
Pit Manufacturing and Certification Campaign	263	263	249	251	251	251	251
Readiness Campaign	294	261	219	220	220	220	220
Readiness in Technical Base and Facilities	1,650	1,786	1,631	1,746	1,817	1,916	2,000
Nuclear Weapons Incident Response	96	108	119	125	131	138	144
Secure Transportation Asset	186	200	212	223	234	246	258
Facilities and Infrastructure Recapitalization Program	239	314	284	289	296	302	308
Safeguards and Security	629	752	740	777	815	855	897
Program Direction	297	302	284	296	307	320	332
Offset/PY Balance	-133	-341	-32	-33	-34	-35	-36
Total Goal 1, Nuclear Weapons Stewardship	6,563	6,693	6,740	6,916	7,097	7,285	7,477
General Goal 2, Control of Weapons of Mass Destruction							
Nonproliferation and Verification Research & Development	228	224	272	279	288	301	312
Nonproliferation and International Security	86	91	80	82	83	85	87
International Nuclear Material Protection and Cooperation	229	295	343	351	358	366	373
Global Initiatives for Proliferation Prevention	40	41	38	39	39	40	41
HEU Transparency Implementation	18	21	20	21	21	22	22
International Nuclear Safety and Cooperation	20	0	0	0	0	0	0
Elimination of Weapons-Grade Plutonium Production	82	44	132	138	137	140	143
Fissile Materials Disposition	645	613	653	667	680	693	708
Global Threat Reduction Initiative	69	94	98	98	102	101	101

	(dollars in millions)						
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Program Direction	56	55	60	62	65	67	70
Offset/PY Balances	- 49	0	0	0	0	0	0
Total Goal 2, Control of Weapons of Mass Destruction	1,424	1,477	1,697	1,735	1,775	1,815	1,857
General Goal 3, Defense Nuclear Power (Naval Reactors)	764	801	786	803	821	839	857
Use of PY Balances	- 2	0	0	0	0	0	0
Total Goal 3, Defense Nuclear Power (Naval Reactors)	762	801	786	803	821	839	857
General Goal 6, Environmental Management							
Environmental Projects and Operations	182	192	174	160	132	113	117
Total Goal 6, Environmental Management	182	192	174	160	132	113	117
Total, NNSA	8,929	9,164	9,397	9,615	9,825	10,051	10,308

NNSA Program Direction expenditures funded in the Office of the Administrator appropriation have been allocated in support of 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. Program Direction expenditures for Environmental Projects and Operations, supporting Goal 6, are funded separately within the EPO GPRA Unit.

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 in terms of planning, management and results. The PART process links seamlessly with NNSA's new 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 establish outcome- and output-oriented goals, which when successfully completed will lead to benefits to the public, such as increased national security, energy security, and improved environmental conditions. NNSA has incorporated the results and recommendations from these reviews into the decision-making processes for this budget, and continues to take steps to improve performance.

For the FY 2006 budget, OMB rated three NNSA programs (Directed Stockpile Work (DSW), Secure Transportation Asset (STA), and Nonproliferation and International Security (NIS) and re-assessed one (S&S). One program was rated as "Effective" (NIS) and the other three were rated as "Moderately Effective."

DSW, STA, and NIS received perfect scores for program purpose, design, strategic planning, and performance measurement data. NIS also received a perfect score on program management. S&S reassessed score dramatically improved from the PART review two years ago from “Adequate” to “Moderately Effective”. OMB recognized the improvement in the S&S program’s performance data. All programs scored relatively high in results.

For the FY 2005 budget, OMB rated three NNSA programs. NNSA received ratings of “Moderately Effective” for two programs (Inertial Confinement Fusion and High Yield Campaign/National Ignition Facility (ICF) and Readiness in Technical Base and Facilities – Operations (RTBF)) and “Results Not Demonstrated” for the Elimination of Weapons Grade Plutonium Production (EWGPP) program, a new activity transferred to NNSA from DoD in FY 2003. Each of the programs scored strongly in the Purpose, Planning and Management assessments. Lower scores in the “results and accountability” section reflected the need for improvement in performance metrics for the ICF and RTBF programs.

For the FY 2004 budget, OMB rated four NNSA programs: two programs as “Effective”, the Advanced Simulations and Computing Campaign (ASC) and the International Nuclear Materials Protection and Cooperation Program (MPC&A); one program as “Moderately Effective”, Facilities and Infrastructure Recapitalization Program (FIRP); and one program as “Adequate”, Safeguards and Security. ASCI, MPC&A and FIRP were given very high marks for program purpose and performance measurement data. FIRP scored Moderately Effective because it was a new program and therefore had not had time to achieve results. The Safeguards and Security program was praised by OMB for providing one of the most secure sets of facilities in the country. However, OMB found the program did not clearly define its performance measures (goals and targets), which resulted in the overall rating of Adequate, and the re-review as part of the FY 2006 process.

Significant Program Shifts

The FY 2006-2010 budget proposal contains several significant shifts in program effort from the FY 2005 President’s Budget Request.

In the past year, the size and composition of the remaining nuclear weapon stockpile has been the focus of a great deal of analysis, and a new stockpile plan was approved by the President in June 2004. These changes will result in reduction to some previously planned Directed Stockpile workload, as well as initiation of a “responsive infrastructure” approach to maintaining the capabilities and capacities of the nuclear weapons complex to ensure that the Nation retains the ability and expertise to respond to geopolitical changes that may challenge American security in the future. Also within Weapons Activities, the Inertial Confinement Fusion and High Yield Campaign was re-aligned to directly support the goal of ignition.

The Safeguards and Security program is responding to a revision to threat guidance affecting all NNSA sites. According to the September 2004 guidance, the Design Basis Threat (DBT) implementation requires upgrades to equipment, personnel and facilities to enhance security throughout the nationwide nuclear weapons complex. Meeting the revised threat by the currently planned FY 2008 date is discussed in the detailed budget justification.

Beginning in FY 2006, $6 million in funding for the storage of surplus Highly Enriched Uranium (HEU) materials at the Y-12 National Security Complex was transferred from Fissile Materials Disposition within the Defense Nuclear Nonproliferation account to Readiness in Technical Base and Facilities –

Storage within Weapons Activities. This move consolidates funding for the storage of HEU, alleviating administrative burdens in tracking and managing storage from two different appropriation accounts.

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 is included in the Nuclear Weapons Incident Response Program within Weapons Activities account and the Office of the Administrator account.

The convergence of heightened terrorist activities and the associated revelations regarding 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 2006 budget request for Defense Nuclear Nonproliferation represents an unprecedented effort to protect the homeland and U.S. allies from this threat.

The U.S. Department of Energy (DOE) has several ongoing efforts to combat this threat. In the latest step to increase effectiveness in preventing nuclear and radiological materials from falling into the hands of terrorists or other rogue actors, the Secretary of Energy announced the Global Threat Reduction Initiative (GTRI). The mission of the GTRI is to remove and/or secure high-risk nuclear and radiological materials and equipment around the world that pose a threat to the United States and to the international community. This initiative will comprehensively address all vulnerable nuclear and radiological materials throughout the world and secure and/or remove these materials and equipment of concern as expeditiously as possible. The FY 2006 request is $93 million.

To provide an integrated effort, NNSA has consolidated a number of the Department's current programs related to nuclear materials removal and radioactive source security and recovery: the entire Off-site Source Recovery Program; U.S. Foreign Research Reactor Spent Fuel Return program from the Office of Environmental Management, the Reduced Enrichment for Research and Test Reactor, the Russian Research Reactor Fuel Return, the Kazakhstan Spent Fuel, and the HEU Research Reactor Fuel Purchase programs from Nonproliferation and International Security; and the Radiological Dispersal Devices program from the International Nuclear Materials Protection and Cooperation program.

A transfer of responsibility has also been made for the U.S. Foreign Research Reactor Spent Nuclear Fuel Return program from the Office of Environmental Management. This program eliminates stockpiles of U.S.-origin spent nuclear fuel from foreign research reactors through repatriation to the U.S. This program is part of the GTRI decision unit and is funded at $14.3 million.

The FY 2006 Budget Request reflects a transfer from the Office of Environmental Management (EM) of environmental scope, funding, and associated Federal personnel beginning in FY 2006. This functional transfer will improve management efficiency and effectiveness by allowing the Department to eliminate a dual chain of command caused by provisions of the NNSA Act, and clarify the lines of authority, accountability and responsibility for environmental activities at NNSA sites. The environmental transfer activities include environmental restoration, legacy waste management and disposition, and decontamination and decommissioning for sites where NNSA will have continuing operations, as well as newly generated waste at the Lawrence Livermore National Laboratory and the Y-12 National Security Complex (responsibility for newly generated waste at other NNSA sites was previously transferred by prior agreements.) Additionally, the realignment includes the waste disposal facilities at the Nevada Test Site. The transferred mission from EM is included in NNSA's budget request within the Weapons Activities appropriation. This is a zero sum transfer of funding and full time equivalents from EM to NNSA.

Consistent with the provisions of the Consolidated Appropriations Act, 2005, (P.L. 108-447) funding included in this request will not be used as advance funds for LDRD based upon work for others.

Funding of up to $3.6 million will be used to for External Independent Reviews on NNSA's pending construction projects. Funding will be made available to the DOE Office of Engineering and Construction Management from the appropriate appropriation account during the execution of FY 2006 budget.

Institutional General Plant Projects (IGPP)

Institutional General Plant Projects (IGPP) provides funding for minor new construction of a general institutional nature at multi-program sites. The cost of IGPP projects is less than $5 million, and projects benefit multiple cost objectives. IGPP's do not include projects whose benefit can be directly attributed to a specific or single program. The following table reflects current site planned IGPP targets as of the latest Ten Year Comprehensive Site Plan.

Institutional General Plant Projects Estimates

(dollars in millions)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Los Alamos National Laboratory.......	3.4	10.0	10.0	0.0	0%
Livermore National Laboratory	6.5	9.7	8.3	-1.4	-14.4%
Sandia National Laboratories.............	10.7	9.8	9.8	0.0	0%
Total Site IGPP	20.6	29.5	28.1	-1.4	-4.7%

Funding Summary by Site

(dollars in millions)

	FY 2004	FY 2005	FY 2006 Office of the Admin	FY 2006 Weapon Activities	FY 2006 Nuclear Nonprolif	FY 2006 Naval React	Total FY 2006
Chicago Operations Office							
Ames Laboratory	0.3	0.3	0	0	0.3	0	0.3
Argonne National Laboratory	22.1	28.7	0	3.2	33.0	0	36.2
Brookhaven National Laboratory	34.1	61.1	0	2.2	58.0	0	60.2
Chicago Operations Office	488.4	439.8	1.7	33.7	391.0	0	426.4
New Brunswick Laboratory	1.1	1.1	0	0	1.1	0	1.1
Lawrence Berkeley National Laboratory	3.8	3.0	0	0	2.7	0	2.7
Idaho Operations Office							
Idaho National Engineering and Environmental Laboratory	65.8	70.5	0	2.3	2.8	56.4	61.5
Idaho Operations Office	1.7	1.6	0	1.9	0.7	0	2.6
Kansas City Site Office							
Kansas City Plant	428.7	363.5	0	355.6	1.4	0	357.0
Kansas City Site Office	6.0	6.0	6.3	0	0	0	6.3
Livermore Site Office							
Lawrence Livermore National Laboratory	1,208.2	1,170.6	0	997.5	70.2	0	1,067.7
Livermore Site Office	17.9	18.4	16.4	2.7	0	0	19.1
Los Alamos Site Office							
Los Alamos National Laboratory	1,487.7	1,555.4	0	1,351.8	219.2	0	1,571.0
Los Alamos Site Office	15.6	15.5	15.5	0.9	0	0	16.4
NNSA Service Center							
Atomic Energy of Canada, Ltd.	0.5	0	0	0	0	0	0.0
General Atomics	14.4	13.2	0	14.5	0	0	14.5
National Renewable Energy Laboratory	1.8	1.8	0	0	1.8	0	1.8
Naval Research Laboratory	25.3	35.6	0	0	0	0	0.0
University of Rochester/LLE	62.4	72.6	0	45.6	0	0	45.6
NNSA Service Center (all other sites)	502.7	442.3	91.1	264.7	201.8	0	557.6

(dollars in millions)

	FY 2004	FY 2005	FY 2006 Office of the Admin	FY 2006 Weapon Activities	FY 2006 Nuclear Nonprolif	FY 2006 Naval React	Total FY 2006
Nevada Site Office							
Nevada Site Office	114.9	83.5	18.0	56.4	0.8	0	75.2
Nevada Test Site	369.3	335.5	0	376.0	1.3	0	377.3
Oak Ridge Operations Office							
Oak Ridge Institute for Science and Engineering	8.4	7.8	0	7.9	0	0	7.9
Oak Ridge National Laboratory ...	118.1	171.2	0	8.2	173.7	0	181.9
Office of Science and Technical Information	0.1	0.1	0	0.1	0	0	0.1
Y-12 Site Office	11.7	12.4	13.1	0	0	0	13.1
Y-12 National Security Complex.	761.3	906.0	0	741.9	43.7	0	785.6
Pacific Northwest National Laboratory...................................	119.0	107.5	0	4.0	119.1	0	123.1
Oak Ridge Operations Office.......	23.7	27.5	0	5.9	36.3	0	42.2
Pantex Site Office							
Pantex Plant	450.7	514.9	0	441.8	5.7	0	447.5
Pantex Site Office	11.5	12.0	12.3	0.1	0	0	12.4
Pittsburgh Naval Reactors Office							
Bettis Atomic Power Laboratory .	375.5	391.9	0	0	0	388.2	388.2
Pittsburgh Naval Reactors Office.	8.6	9.1	0	0	0	9.4	9.4
Richland Operations Office							
Richland Operations Office..........	0.8	1.3	0	2.2	0	0	2.2
Sandia Site Office							
Sandia National Laboratories.......	1,462.5	1,360.2	0	1,119.5	137.9	0	1,257.4
Sandia Site Office	14.9	12.9	13.1	0.3	0	0	13.4
Savannah River Operations Office							
Savannah River Operations Office	15.2	11.3	0	0	13.0	0	13.0
Savannah River Site Office..........	3.0	3.1	3.3	0	0	0	3.3
Savannah River Site	296.2	305.1	0	212.7	69.5	0	282.2

(dollars in millions)

	FY 2004	FY 2005	FY 2006 Office of the Admin	FY 2006 Weapon Activities	FY 2006 Nuclear Nonprolif	FY 2006 Naval React	Total FY 2006
Schenectady Naval Reactors Office							
Knolls Atomic Power Laboratory	301.8	316.8	0	6.5	0	308.0	314.5
Schenectady Naval Reactors Office	6.7	6.8	0	0	0	7.0	7.0
Washington DC Headquarters	247.7	602.7	159.8	601.8	52.5	13.9	828.0
Other	3.9	3.1	0.2	0	0	3.1	3.3
Subtotal, NNSA	9,114.0	9,503.7	350.8	6,661.9	1,637.5	786.0	9,436.2
Adjustments	- 184.4	- 340.8	- 6.9	- 32.0	0	0	-38.9
Total, NNSA	8,929.7	9,163.9	343.9	6,630.1	1,637.2	786.0	9,397.2

DOE/NNSA Goal Cascade

Shaded Areas Indicate NNSA Budget Justification Levels

BUDGET DOCUMENT	OVERVIEW	PROGRAM	SUBPROGRAM	ACTIVITY
DOE Goal Cascade	***DOE Strategic Goal***	***DOE General Goals***	***DOE Program Goals (goal number)***	
NNSA Cascade	NNSA, Defense Strategic Goal	Weapons Activities, General Goal 1, Nuclear Weapons Stewardship	Directed Stockpile Work (01.27.00.00)	By weapon system
			Science Campaign (01.28.00.00)	By Campaign
			Engineering Campaign (01.29.00.00)	By Campaign and Construction Project
			Readiness Campaign (01.33.00.00)	By Campaign
			Inertial Confinement Fusion and High Yield/NIF Campaign (01.30.00.00)	
			Advanced Simulation and Computing Campaign (01.31.00.00)	
			Pit Manufacturing and Certificaiton Campaign (01.32.00.00)	
			Readiness in Technical Base and Facilities (01.34.00.00 O&M, 01.35.00.00 Construction)	By Activity and Construction Project
			Nuclear Weapons Incident Response (01.37.00.00)	
			Secure Transportation Asset (01.36.00.00)	
			Facilities and Infrastructure Recapitalization (01.38.00.00)	
			Safeguards and Security (01.39.00.00)	
		Defense Nuclear Nonproliferation, General Goal 2, Nuclear Nonproiferation	Research and Development (02.40.00.00)	
			HEU Transparency (02.41.00.00)	
			Elimination of Weapons Grade Plutonium Production (02.42.00.00)	
			Nonproliferation and International Security (02.44.00.00)	
			Global Initiatives for Proliferation Prevention (02.45.00.00)	
			International Materials Protection and Cooperation (02.46.00.00)	
			Fissile Materials Disposition (02.47.00.00)	
			Global Threat Reduction Initiative (02.64.00.00)	
		Naval Reactors, General Goal 3, Naval Reactors (03.49.00.00)	No subprograms	
		Office of the Administrator supports General Goals 1 and 2 (01, 02.50.00.00)	No subprograms	
	Environmental Strategic Goal	General Goal 6, Environmental Management	Environmental Projects and Operations (06.65.00.00)	

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), [$357,051,000] *$343,869,000*, to remain available until expended.

Explanation of Change

The decrease in FY 2006 is related primarily to the new program for Historically Black Colleges and Universities (HBCUs) added by the Congress in FY 2005; no new funds are required to support this effort during FY 2006. The new budget authority requested in FY 2006 has been reduced by $6,896,000 through the planned use of prior year unobligated balances.

Office of the Administrator
Overview

Funding Schedule by Appropriation

(dollars in thousands)

	FY 2004 Comparable Appropriation	FY 2005 Original Appropriation	FY 2005 Adjustments	FY 2005 Comparable Appropriation	FY 2006 Request
Office of the Administrator	352,949[a]	356,200	851[b]	357,051[c]	343,869[d]
Full Time Equivalents (FTEs)	1,720	1,818	-6	1,812	1,857

Public Law Authorization:
FY 2005 National Defense Authorization Act, P.L. 108-375; FY 2005 Consolidated Appropriations Act, P.L. 108-447

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Office of the Administrator	343,869[d]	357,679	372,093	387,143	402,383	1,863,167

FY 2004 Execution

(dollars in thousands)

	FY 2004 Appropriation	Rescission	Reprogrammings	Comp Adjustments	FY 2004 Comparable
Office of the Administrator	339,980	-2,006	+12,395	+2,580	352,949[a]

FY 2005 Execution

(dollars in thousands)

	FY 2005 Enacted Appropriation	Rescission	Reprogramming	Comp Adjustments	FY 2005 Comparable
Office of the Administrator	356,200	-2,850	0	+3,701	357,051[c]

[a] The FY 2004 program level for the Office of the Administrator was achieved through the planned use of prior year unobligated balances in the amount of $11,763,481. These balances were available from FY 2002 and earlier years.

[b] Reflects the 0.8% rescission of $2,849,600, the transfer of $4,542,368 from the Office of Security Performance and Assurance, the transfer of $395,000 to the Office of Nuclear Energy, the transfer of $391,000 from the Office of Environmental Management, and the transfer of $837,000 to Departmental Administration.

[c] The FY 2005 program level for the Office of the Administrator will be achieved through the planned use of prior year unobligated balances in the amount of $10,367,685. Of that amount, $7,000,000 will be obligated in FY 2005 to complete NNSA re-engineering efforts and support Defense Nuclear Nonproliferation activities. The balance of $3,367,685 will be used as an offset to the new budget authority requested in FY 2006.

[d] The FY 2006 program level for the Office of the Administrator will be achieved through the planned use of prior year unobligated balances in the amount of $6,896,000.

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 recent re-engineering of the NNSA Federal organizations and staff that demonstrated that the staff deployment is regularly assessed against current and future program needs, rigorous program management standards in the Program Assessment Rating Tool (PART), and 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.

The Office of the Administrator appropriation has one program goal that contributes to General Goals 1 and 2 in the "goal cascade." This goal is:

Create 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.

Major FY 2004 Achievements

- Decreased NNSA Federal staff by 132 full time equivalents (FTEs)
- Completed 85 Permanent Change of Station (PCS) moves at a cost of $10.1 million
- Relocated 58 Service Center staff to Albuquerque from Oakland, Nevada, and Germantown
- Vacated space in the Oakland Federal building by September 30, 2004, resulting in savings of approximately $3.3 million annually
- Initiated Service Center Standup Project for Information Technology
- Re-engineering results: reduced the NNSA Federal workforce funded from the Office of the Administrator account by 17 percent since the end of FY 2002 (340 positions)
  - Staff subject to re-engineering reduced 383 FTEs (-20.5 percent)
    - NNSA Service Center (-310 FTEs)
    - Headquarters (-88 FTEs)
    - Nevada Site Office (-43 FTEs)
    - Other Site Offices (+58 FTEs)
  - Staff exempt from re-engineering increased by 43 FTEs (+15 percent)
    - Defense Nuclear Nonproliferation (+37 FTEs)
    - Emergency Operations (+6 FTEs)

Planned use of FY 2005 carryover balances

- Beginning unobligated carryover of $10,367,685
  - $6,000,000 to complete re-engineering efforts
    - $2,857,098 to complete final Permanent Change of Station moves
    - $1,842,902 to reconfigure the office space in the Forrestal building
    - $1,300,000 to provide management support service contracts to support the close out of NNSA's re-engineering efforts
  - $3,367,685 to offset FY 2006 Budget Request and decrease the ending unobligated balances to less than one percent of the total funding availability for FY 2005
  - $750,000 to support critical travel requirements in the Office of Defense Nuclear Nonproliferation
  - $250,000 to provide the Department of State assessment for security charges associated with the international offices

Annual Performance Results and Targets (R=Results; T=Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual percentage of approved Managed Staffing Plan positions filled by year-end	NA	R: 92%	T: 96%	T: 97%	T: 98%	T: 98%	T: 98%	T: 98%	By FY 2007, maintain the percentage of approved positions filled to at least 98% of levels in the approved Managed Staffing Plans
Cumulative average NNSA Program score on the OMB PART assessment indicating progress in budget performance integration and results (Efficiency measure)	R: 76.8%	R : 81.2% T: 70%	T : 75%	T : 80%	T : 85%	T : 85%	T : 85%	T: 85%	By FY 2007, increase average PART scores to 85%
Percentage of NNSA federal offices consolidated to the NNSA Information Technology (IT) Common Environment/Service Center	R: NNSA sites integrated to a single IT Enterprise Service Level Agreement	R: Baseline completed and project initiated T: Baseline and initiate NNSA IT Service Center Stand-up and Common Environment project	T: 50%	T: 75%	T: 100%	Target completed	Target completed	Target completed	By FY 2007, complete consolidation of NNSA Federal offices to the NNSA IT Common Environment

Means and Strategies

The Office of the Administrator program will use various means and strategies to achieve its goals. The program also performs collaborative activities to help meet its goals. The NNSA is adopting a number of enhanced business systems to make sure that we are excellent stewards of U.S. national nuclear security matters. We have implemented a disciplined planning, programming, and budgeting process to assure taxpayers that these programs are integrated and cost effective. We are adopting information and acquisition management tools and practices to do our job better and more efficiently. We 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 concept that has been developed jointly by managers throughout the organization has redeployed technical staff 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 approximately 70 percent Salaries and Benefits for NNSA Federal staff. The remaining 30 percent includes several major efforts with largely fixed costs in the areas of Information Technology, Space and Occupancy Costs, 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, NNSA will conduct various internal and external reviews and audits. 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. 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 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 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.

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 a second 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 two reviews work together to ensure that advance warnings are given to NNSA managers in order for corrective actions to be implemented.

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

In addition, NNSA programs are independently reviewed. The General Accounting Office, Inspector General, National Security Council, Foster Panel, Defense Nuclear Facilities Safety Board, Secretary of Energy Advisory Board, and others conduct these independent reviews. Recent Inspector General and General Accounting Office reports on the Office of the Administrator include PPBE Process and Structure (A02AL048) and Review of NNSA's Management Structure (360337).

Significant Program Shifts in FY 2006

- Overall non-payroll funding is decreased 20 percent from FY 2004 program levels.

- 27 employees have been transferred to the NNSA from the Office of Security Performance and Assurance for the Emergency Operations Center and Threat Assessment functions (+$4,785,000).

- FY 2006 includes $1,195,000 for deployment (operating and maintenance costs), of the Standard Accounting and Reporting System (STARS), within the Working Capital Fund. The total NNSA contribution in FY 2006 is $1,306,000.

- Provides $1,878,255 in FY 2006 for E-Government initiatives ($146,285 for E-Travel; $71,511 for Business Gateway, $731,423 for Integrated Acquisition Environment; $9,925 for Grants.gov; and $911,111 for SAFECOM). The total NNSA contribution in FY 2006 is $1,957,753.

- Supports full year payroll funding for 12 new hires for the Global Threat Reduction Initiative and another 13 new hires for various offices in Defense Nuclear Nonproliferation that are all planned to be hired by the end of FY 2005.

- Includes 12 new hires to support safeguards and security requirements, three new hires to support International Nuclear Materials Protection and Cooperation, and one new hire to support Nonproliferation and Verification R&D.

- FY 2006 provides funding to support another 30 interns (approximately 10 each supporting security, technical, and business areas). The NNSA intern program supports the interns for two years, during which they are not counted against the site's managed staffing targets. After the two years, the interns assume a position within the staffing targets at the receiving locations.

- In FY 2006, $866,000 has been transferred out of the NNSA to operate the new consolidated financial services capability associated with A-76 Financial Services Savings. Comparable amounts have been transferred out of the NNSA in FY 2004 and FY 2005.

- The FY 2006 Budget Request reflects the transfer of three employees from the Office of Environmental Management (+$408,000). This transfer is due to the realignment of responsibility for foreign research reactor spent nuclear fuel from the Office of Environmental Management to the National Nuclear Security Administration's Office of Defense Nuclear Nonproliferation.

- The FY 2006 Budget Request also reflects the transfer of two employees to the Office of Nuclear Energy, Science and Technology (- $406,000). This transfer is due to the realignment of responsibility for International Nuclear Safety activities related to Soviet-designed reactor safety to the Office of Nuclear Energy, Science and Technology from the National Nuclear Security Administration's Office of Defense Nuclear Nonproliferation.

- Funding provided for Historically Black Colleges and Universities (HBCUs) in the FY 2005 appropriation will be obligated by the end of FY 2005, but will be executed over both FY 2005 and FY 2006 due to the time required to establish the program. No new funds are required to support this effort during FY 2006.

- The new budget authority requested in FY 2006 has been reduced by $6,896,000 through the planned use of prior year unobligated balances. This offset will reduce the Office of the Administrator's ending unobligated balances to less than one percent of FY 2005 available funds.

- The staffing estimate for the FY 2005 Congressional Budget Request was 1,705 FTEs. Since then, 27 FTEs have been transferred to the NNSA from the Office of Security Performance and Assurance for the Emergency Operations Center and Threat Assessment functions, 13 new hires are planned for various offices in Defense Nuclear Nonproliferation, 12 new hires are planned for the Global Threat Reduction Initiative (GTRI), 8 new hires are planned to support the most efficient organization at the NNSA Service Center for logistics support, 8 new hires are planned to support the new Office of Defense Nuclear Safety, 6 new hires are planned to support the Office of Counter Terrorism, 1 new hire is planned for the Savannah River Site Office, 3 FTEs are being transferred from the Office of Environmental Management for the foreign research reactor spent nuclear fuel function, 2 FTEs are being transferred to the Office of Nuclear Energy, Science and Technology for the Soviet-designed reactor safety function, and 31 interns are now counted in the staffing estimate (previously interns were not included in any of the NNSA staffing projections). The current projected staffing level for FY 2005 is 1,812 FTEs.

NNSA Staffing Summary
(Full Time Equivalents)

	Actual FY 2004	Projected FY 2005	Projected FY 2006
Office of the Administrator			
Headquarters	649	732	777
NNSA Service Center	496	472	472
Livermore Site Office	88	90	90
Los Alamos Site Office	91	103	103
Sandia Site Office	86	89	89
Nevada Site Office	94	92	92
Pantex Site Office	72	82	82
Y-12 Site Office	72	81	81
Kansas City Site Office	50	50	50
Savannah River Site Office	22	21	21
Subtotal, Office of the Administrator	**1,720**	**1,812**	**1,857**
Weapons Activities			
Secure Transportation Asset Program Direction	404	555	575
Environmental Projects and Operations	121	122	100
Subtotal, Weapons Activities	**525**	**677**	**675**
Naval Reactors			
Program Direction	179	204	204
TOTAL, NNSA FTEs	**2,424**	**2,693**	**2,736**

Office of the Administrator
Funding by Site

(dollars in thousands)

	FY 2004 Request	FY 2005 Request	FY 2006 Cong Request	$ Change	% Change
NNSA Program Direction					
Headquarters	151,029	175,744	159,817	-15,927	-9.1%
NNSA Service Center	106,615	84,443	91,097	+6,654	+7.9%
Livermore Site Office	15,777	16,185	16,392	+207	+1.3%
Los Alamos Site Office	14,808	14,753	15,524	+771	+5.2%
Sandia Site Office	12,662	12,738	13,059	+321	+2.5%
Nevada Site Office	18,527	17,819	17,966	+147	+0.8%
Pantex Site Office	11,054	11,914	12,316	+402	+3.4%
Y-12 Site Office	11,742	12,387	13,081	+694	+5.6%
Kansas City Site Office	5,996	6,038	6,263	+225	+3.7%
Savannah River Site Office	3,035	3,136	3,268	+132	+4.2%
Chicago (Non-NNSA)	1,457	1,660	1,736	+76	+4.6%
Idaho (Non-NNSA)	118	126	133	+7	+5.6%
Richland (Non-NNSA)	134	108	113	+5	+4.6%
Subtotal	**352,954**	**357,051**	**350,765**	**-6,286**	**-1.8%**
Use of Prior Year Balances	(5)	-	(6,896)	-6,896	
Total	**352,949**	**357,051**	**343,869**	**-13,182**	**-3.7%**

Office of the Administrator
Funding by Object Class

(dollars in thousands)

	FY 2004 Request	FY 2005 Request	FY 2006 Cong Request	$ Change	% Change
NNSA Program Direction					
Salaries and Benefits	218,728	218,784	244,006	+25,222	+11.5%
Travel	12,543	11,945	11,942	-3	-0.0%
Support Services	41,779	34,613	28,732	-5,881	-17.0%
Other Related Expenses					
Information Technology	33,368	31,537	28,541	-2,996	-9.5%
Space and Occupancy Costs	35,069	30,837	30,728	-109	-0.4%
Other Related Expenses	10,322	27,660	5,041	-22,619	-81.8%
Training	1,145	1,675	1,775	+100	+6.0%
Subtotal, Other Related Expenses	79,904	91,709	66,085	-25,624	-27.9%
Subtotal	**352,954**	**357,051**	**350,765**	**-6,286**	**-1.8%**
Use of Prior Year Balances	(5)	-	(6,896)	-6,896	
Total	**352,949**	**357,051**	**343,869**	**-13,182**	**-3.7%**

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Salaries and Benefits...	**218,728**	**218,784**	**244,006**

Provides support for the National Nuclear Security Administration (NNSA) Federal staff (1,857 Full Time Equivalents or FTEs in FY 2006), including annual Cost of Living Adjustments (COLAs), within-grade increases, promotions, permanent change of station (PCS) moves, 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.

The FY 2006 Congressional Budget Request reflects a cost avoidance of over $40 million realized by the reduction in NNSA Federal staffing levels of over 300 FTEs by the end of FY 2004 (payroll would have been $40 million higher in FY 2006 if those staff reductions had not been realized). Payroll has been provided to fully fund staffing in Defense Nuclear Nonproliferation up to 283 FTEs.

FY 2006 supports full year payroll funding for 12 new hires for the Global Threat Reduction Initiative and 13 new hires for various offices in Defense Nuclear Nonproliferation (hired by the end of FY 2005). FY 2006 includes 12 new hires to support safeguards and security requirements, three new hires to support International Nuclear Materials Protection and Cooperation, and one new hire to support Nonproliferation and Verification R&D.

FY 2006 provides payroll funding to support another 30 interns (approximately 10 each supporting security, technical, and business areas). The NNSA intern program supports the interns for two years, during which they are not counted against the site's managed staffing targets. After the two years, the interns assume a position within the staffing targets at the receiving locations.

FY 2006 also provides $1,781,000 in corporate PCS funding estimated to support one percent of the on-board staff at the beginning of the fiscal year (half of the historical attrition rate). FY 2005 funding for PCS moves of $2,857,098 is being provided by unobligated carryover from the reprogramming approved in the fourth quarter of FY 2004 (these funds are excluded from the FY 2005 estimate shown).

Salaries consume approximately 80 percent of the estimate, leaving about 20 percent for benefits. Benefits 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	**12,543**	**11,945**	**11,942**

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 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. FY 2005 estimate excludes the use of $750,000 in unobligated funds for Defense Nuclear Nonproliferation.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Support Services..	**41,779**	**34,613**	**28,732**

Provides Technical Support for highly specialized analytical expertise required to address critical technical program issues in nonproliferation and national security (FY 2006 $14,152,276). Also provides Management Support for studies and review of NNSA corporate policies and procedures concerning management operations and planning (FY 2006 $3,119,810) as well as Administrative Support such as operation of mailrooms and maintenance of various databases (FY 2006 $11,459,968).

Management Support will receive another $1,300,000 in unobligated funding during FY 2005 to support the closeout of NNSA's re-engineering efforts (excluded from the FY 2005 estimate shown).

Information Technology also provides $16,695,000 of Automated Data Processing (ADP) support in FY 2006 (shown in the Other Related Expenses object class in total).

Other Related Expenses	**79,904**	**91,709**	**66,085**

Provides all Information Technology 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 M&O facilities. The Information Technology program for FY 2006 of $28,541,000 is managed on the Plan, Build, and Operate model and budgeted as follows: Plan (including M&O oversight) $3,600,000; Build $4,000,000; and Operate $20,941,000.

Supports $30,728,510 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 2006 allocation for space and occupancy costs is comprised of the following areas and associated funding estimates:

- Rental payments $13,270,950
- Facilities and maintenance $6,644,353
- Utilities $4,277,875
- Building occupancy costs $2,587,653
- Supplies and materials $1,304,150
- STARS $1,195,000 (Supports $1,195,000 in FY 2006 for deployment (operating and maintenance costs), of the Standard Accounting and Reporting System (STARS), within the Working Capital Fund. The total NNSA contribution in FY 2006 is $1,306,000.)
- Equipment maintenance $897,961
- Printing and production $483,568
- Janitorial $67,000

(dollars in thousands)

	FY 2004	FY 2005	FY 2006

The Working Capital Fund will receive another $1,842,902 in unobligated funding during FY 2005 to reconfigure the office space in the Forrestal building (excluded from the FY 2005 estimate shown).

Provides for necessary training and skills maintenance of the NNSA Federal staff in FY 2006 of $1,774,755 (includes $504,000 to support extensive training for 60 NNSA interns).

Provides $1,878,255 in FY 2006 for E-Government initiatives ($146,285 for E-Travel; $71,511 for Business Gateway, $731,423 for Integrated Acquisition Environment; $9,925 for Grants.gov; and $919,111 for SAFECOM). The total NNSA contribution in FY 2006 is $1,957,753.

Provides $1,746,160 in FY 2006 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 international offices received another $250,000 in unobligated funding during FY 2005 for the Department of State security assessment (excluded from the FY 2005 estimate shown).

Supports $1,278,156 in funding for all other 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.

Supports Defense Contract Audit Agency (DCAA) audit assessment of $126,137 in FY 2006. The total NNSA contribution in FY 2006 is $3,614,100.

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

Funding provided for Historically Black Colleges and Universities (HBCUs) in the FY 2005 appropriation of $22,320,000 will be obligated by the end of FY 2005, but will be executed over both FY 2005 and FY 2006 due to the time required to establish the program. No new funds are required for this activity during FY 2006. The indirect program funds supporting Hispanic Serving Institutions (HSIs) are estimated at approximately $10,000,000 per year in FY 2004 and beyond. The indirect program funding for HSIs, and the direct program direction funding for HBCUs are planned to be requested in future years budgets of approximately the same size.

Subtotal, Office of the Administrator	**352,954**	**357,051**	**350,765**

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Use of Prior Year Balances	**-5**	**0**	**-6,896**

The FY 2006 offset is available without any adverse impact to NNSA's support for Federal staffing. This planned use of prior year unobligated balances will reduce the Office of the Administrator's ending unobligated balances to less than one percent of the total funding availability for FY 2005.

$3,367,685 in unobligated funding is currently available for reallocation from FY 2004 and prior years. Another $2,312,988 in unobligated funding is available from prior year deobligations.

FY 2005 new budget authority of $947,768 is available in payroll due to savings realized by NNSA being understaffed at the beginning of the year. Finally, another $267,559 in FY 2005 new budget authority is available in the Working Capital Fund due to beginning carryover balances being used during the first quarter of the year.

Total, Office of the Administrator................................	**352,949**	**357,051**	**343,869**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 Request ($000)
▪ **Salaries and Benefits**	
Reflects an 11.5 percent increase associated with 16 new hires, 30 new interns, full year funding for 25 new employees hired by the end of FY 2005, permanent change of station moves (FY 2005 PCS moves are being provided by planned unobligated carryover), the cost of living adjustment, benefits escalation, promotions, and within-grade increases	+25,222
▪ **Travel**	
Reflects a flat request; any increases required for escalation costs or new priority mission areas will be met by efficiencies realized from the NNSA re-engineering efforts completed in FY 2005	-3
▪ **Support Services**	
Reflects a 17.0 percent decrease; any increases required for escalation costs or new priority mission areas will be met by efficiencies realized from the NNSA re-engineering efforts completed in FY 2005.	-5,881
▪ **Other Related Expenses**	
Reflects a 27.9 percent decrease, largely attributable to the $22,320,000 HBCU funding provided in FY 2005; any increases required for escalation costs or new priority mission areas will be met by efficiencies realized from the NNSA re-engineering efforts completed in FY 2005	-25,624
Subtotal Funding Change, Office of the Administrator	**-6,286**
▪ **Use of Prior Year Balances**	
Reflects the planned use of unobligated carryover and is intended to reduce the Office of the Administrator's ending unobligated balance to less than one percent of the account's FY 2005 funding availability	-6,896
Total Funding Change, Office of the Administrator	**-13,182**

Funding Profile by Category

	FY 2004	FY 2005	FY 2006	$ Change	% Change
	(dollars in thousands)				
Headquarters					
Salaries and Benefits	85,505	93,907	106,637	+12,730	+13.6%
Travel	7,937	8,189	8,561	+372	+4.5%
Support Services	23,643	19,932	16,329	-3,603	-18.1%
Other Related Expenses	33,944	53,716	28,290	-25,426	-47.3%
Total, Headquarters	151,029	175,744	159,817	-15,927	-9.1%
Total, Full Time Equivalents	623	702	747	+45	+6.4%
NNSA Service Center					
Salaries and Benefits	58,074	44,504	52,187	+7,683	+17.3%
Travel	1,916	1,488	1,230	-258	-17.3%
Support Services	8,211	7,712	6,876	-836	-10.8%
Other Related Expenses	38,414	30,739	30,804	+65	+0.2%
Total, NNSA Service Center	106,615	84,443	91,097	+6,654	+7.9%
Total, Full Time Equivalents	496	474	474	+0	+0.0%
Livermore Site Office					
Salaries and Benefits	11,252	12,112	12,772	+660	+5.4%
Travel	317	375	383	+8	+2.1%
Support Services	2,157	1,751	1,174	-577	-33.0%
Other Related Expenses	2,051	1,947	2,063	+116	+6.0%
Total, Livermore Site Office	15,777	16,185	16,392	+207	+1.3%
Total, Full Time Equivalents	89	91	91	+0	+0.0%
Los Alamos Site Office					
Salaries and Benefits	11,875	12,894	13,871	+977	+7.6%
Travel	444	425	390	-35	-8.2%
Support Services	1,777	950	789	-161	-16.9%
Other Related Expenses	712	484	474	-10	-2.1%
Total, Los Alamos Site Office	14,808	14,753	15,524	+771	+5.2%
Total, Full Time Equivalents	91	103	103	+0	+0.0%
Sandia Site Office					
Salaries and Benefits	10,669	11,216	11,706	+490	+4.4%
Travel	291	282	188	-94	-33.3%
Support Services	1,284	771	774	+3	+0.4%
Other Related Expenses	418	469	391	-78	-16.6%
Total, Sandia Site Office	12,662	12,738	13,059	+321	+2.5%
Total, Full Time Equivalents	86	89	89	+0	+0.0%

Funding Profile by Category (continued)

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Nevada Site Office					
Salaries and Benefits	13,261	13,350	13,993	+643	+4.8%
Travel	640	160	162	+2	+1.3%
Support Services	1,669	1,233	721	-512	-41.5%
Other Related Expenses	2,957	3,076	3,090	+14	+0.5%
Total, Nevada Site Office	18,527	17,819	17,966	+147	+0.8%
Total, Full Time Equivalents	106	104	104	+0	+0.0%
Pantex Site Office					
Salaries and Benefits	8,915	10,318	10,888	+570	+5.5%
Travel	176	292	300	+8	+2.7%
Support Services	1,483	1,125	945	-180	-16.0%
Other Related Expenses	480	179	183	+4	+2.2%
Total, Pantex Site Office	11,054	11,914	12,316	+402	+3.4%
Total, Full Time Equivalents	72	82	82	+0	+0.0%
Y-12 Site Office					
Salaries and Benefits	9,477	10,252	11,183	+931	+9.1%
Travel	400	310	310	+0	+0.0%
Support Services	1,375	1,005	1,005	+0	+0.0%
Other Related Expenses	490	820	583	-237	-28.9%
Total, Y-12 Site Office	11,742	12,387	13,081	+694	+5.6%
Total, Full Time Equivalents	73	82	82	+0	+0.0%
Kansas City Site Office					
Salaries and Benefits	5,405	5,596	5,870	+274	+4.9%
Travel	179	179	179	+0	+0.0%
Support Services	44	44	44	+0	+0.0%
Other Related Expenses	368	219	170	-49	-22.4%
Total, Kansas City Site Office	5,996	6,038	6,263	+225	+3.7%
Total, Full Time Equivalents	50	50	50	+0	+0.0%
Savannah River Site Office					
Salaries and Benefits	2,586	2,741	2,917	+176	+6.4%
Travel	243	245	239	-6	-2.4%
Support Services	136	90	75	-15	-16.7%
Other Related Expenses	70	60	37	-23	-38.3%
Total, Savannah River Site Office	3,035	3,136	3,268	+132	+4.2%
Total, Full Time Equivalents	23	22	22	+0	+0.0%

Funding Profile by Category (continued)

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	$ Change	% Change
Chicago Operations Office (Non-NNSA)					
Salaries and Benefits	1,457	1,660	1,736	+76	+4.6%
Travel	-	-	-	+0	+0.0%
Support Services	-	-	-	+0	+0.0%
Other Related Expenses	-	-	-	+0	+0.0%
Total, Chicago Operations Office	1,457	1,660	1,736	+76	+4.6%
Total, Full Time Equivalents	9	11	11	+0	+0.0%
Idaho Operations Office (Non-NNSA)					
Salaries and Benefits	118	126	133	+7	+5.6%
Travel	-	-	-	+0	+0.0%
Support Services	-	-	-	+0	+0.0%
Other Related Expenses	-	-	-	+0	+0.0%
Total, Idaho Operations Office	118	126	133	+7	+5.6%
Total, Full Time Equivalents	1	1	1	+0	+0.0%
Richland Operations Office (Non-NNSA)					
Salaries and Benefits	134	108	113	+5	+4.6%
Travel	-	-	-	+0	+0.0%
Support Services	-	-	-	+0	+0.0%
Other Related Expenses	-	-	-	+0	+0.0%
Total, Richland Operations Office	134	108	113	+5	+4.6%
Total, Full Time Equivalents	1	1	1	+0	+0.0%
Office of the Administrator					
Salaries and Benefits	218,728	218,784	244,006	+25,222	+11.5%
Travel	12,543	11,945	11,942	-3	-0.0%
Support Services	41,779	34,613	28,732	-5,881	-17.0%
Other Related Expenses	79,904	91,709	66,085	-25,624	-27.9%
Subtotal, Office of the Administrator	352,954	357,051	350,765	-6,286	-1.8%
Use of Prior Year Balances	-5	-	-6,896	-6,896	
Total, Office of the Administrator	352,949	357,051	343,869	-13,182	-3.7%
Total, Full Time Equivalents	1,720	1,812	1,857	+45	+2.5%

Support Services

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	$ Change	% Change
Administrative support	13,938	13,089	11,460	-1,629	-12.4%
Management support					
Re-engineering support	3,233	975	678	-297	-30.5%
Other management support	3,193	3,530	2,442	-1,088	-30.8%
Subtotal, Management support	6,426	4,505	3,120	-1,385	-30.7%
Technical support					
Security support	5,556	5,105	4,216	-889	-17.4%
Facility representative support	488	283	273	-10	-3.5%
ES&H technical support	4,104	2,855	2,119	-736	-25.8%
Project management support	2,388	1,794	1,584	-210	-11.7%
Other technical support	8,879	6,982	5,960	-1,022	-14.6%
Subtotal, Technical support	21,415	17,019	14,152	-2,867	-16.8%
Total, Support Services	**41,779**	**34,613**	**28,732**	**-5,881**	**-17.0%**

Other Related Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Training	1,145	1,675	1,775	+100	+6.0%
Space and Occupancy Costs					
Facilities and maintenance	11,205	8,384	6,644	-1,740	-20.8%
Rental payments	14,090	12,937	13,271	+334	+2.6%
STARS	-	-	1,195	+1,195	+100.0%
Equipment maintenance	975	736	898	+162	+22.0%
Utilities	3,912	4,232	4,278	+46	+1.1%
Janitorial	82	67	67	+0	+0.0%
Supplies and materials	1,604	1,372	1,304	-68	-5.0%
Printing and production	598	479	483	+4	+0.8%
Building occupancy costs	2,603	2,630	2,588	-42	-1.6%
Subtotal, Space and Occupancy Costs	35,069	30,837	30,728	-109	-0.4%
Other Expenses					
DCAA audits	532	91	126	+35	+38.5%
HBCUs	-	22,320	-	-22,320	-100.0%
Re-engineering	1,652	446	-	-446	-100.0%
Pueblos	750	750	-	-750	-100.0%
PILT (LASO)	-	250	-	-250	-100.0%
International Offices	1,662	1,927	1,746	-181	-9.4%
PCS moves	3,781	104	-	-104	-100.0%
Other Services	1,834	1,671	1,278	-393	-23.5%
Reception and representation	12	12	12	+0	+0.0%
Egov initiatives	99	89	1,879	+1,790	+2011.2%
Subtotal, Other Expenses	10,322	27,660	5,041	-22,619	-81.8%
Subtotal, Other Related Expenses	**46,536**	**60,172**	**37,544**	**-22,628**	**-37.6%**
Information Technology	33,368	31,537	28,541	-2,996	-9.5%
Total, Other Related Expenses	**79,904**	**91,709**	**66,085**	**-25,624**	**-27.9%**

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 [19] 40 passenger motor vehicles, for replacement only, including not to exceed two buses; [$6,629,190,000], *$6,630,133,000* to remain available until expended.

Explanation of Change

Changes from the language proposed in FY 2005 consist of a change to the number of proposed motor vehicles and funding amounts.

Weapons Activities

Funding Profile by Subprogram

(dollars in thousands)

Weapons Activities	FY 2004 Comparable Appropriation[a]	FY 2005 Original Appropriation	FY 2005 Adjustments[b]	FY 2005 Comparable Appropriation	FY 2006 Request
Directed Stockpile Work	1,290,525	1,316,936	-39,782	1,277,154	1,421,031
Science Campaign	258,856	279,462	-3,469	275,993	261,925
Engineering Campaign	265,206	260,830	555	261,385	229,756
Inertial Confinement Fusion and High Yield Campaign	511,767	541,034	-5,130	535,904	460,418
Advanced Simulation and Computing Campaign	715,315	703,760	-7,013	696,747	660,830
Pit Manufacturing and Certification Campaign	262,544	265,671	-2,651	263,020	248,760
Readiness Campaign	294,490	272,627	-11,181	261,446	218,755
Readiness in Technical Base and Facilities	1,649,959	1,670,420	116,033	1,786,453	1,631,386
Secure Transportation Asset	186,452	201,300	-1,591	199,709	212,100
Nuclear Weapons Incident Response	96,197	99,209	9,167	108,376	118,796
Facilities and Infrastructure Recapitalization Program	238,755	273,544	40,178	313,722	283,509
Environmental Projects				0	
and Operations	181,652	0	192,200	192,200	174,389
Safeguards and Security	628,861	757,678	-5,749	751,929	740,478
Subtotal, Weapons Activities	6,580,579	6,642,471	281,567	6,924,038	6,662,133
Use of Prior Year Balances	- 104,435	-86,000	72,912	-13,088	0
Security Charge for Reimbursable Work	- 28,985	-30,000	0	-30,000	- 32,000
Transfer from DOD Appropprations		-300,000		-300,000	0
Undistributed Adjustment	0	0	2,400	2,400	0
Total, Weapons Activities	6,447,159	6,226,471	356,879	6,583,350	6,630,133

Public Law Authorization:
P.L. 108-375, National Defense Authorization Act, FY 2005
P.L. 108-447, The Consolidated Appropriations Act, 2005

[a] FY 2004 reflects distribution of the rescission of $37,007,815 from the Energy and Water Development Appropriations Act for FY 2004, approved reprogrammings, and comparability adjustments. Reference the "FY 2004 Execution" table for additional details on these adjustments.

[b] The FY 2005 adjustments column reflects distribution of the rescission of $49,811,768 from the Consolidated Appropriations Act, 2005 (P.L. 108-447), transfer of funds pursuant to a letter dated December 9, 2004, from the Chairmen of the Senate and House Appropriation Committees to the Secretary of Energy, and comparability adjustments. Reference the "FY 2005 Execution" table for additional details on these adjustments.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Weapons Activities						
Directed Stockpile Work	1,421,031	1,459,343	1,487,470	1,516,160	1,545,423	7,429,427
Science Campaign	261,925	263,853	263,853	263,853	263,853	1,317,337
Engineering Campaign	229,756	172,487	181,685	165,487	165,487	914,902
Inertial Confinement Fusion and High Yield Campaign	460,418	461,607	461,607	461,607	461,607	2,306,846
Advanced Simulation and Computing Campaign	660,830	666,009	666,009	666,009	666,009	3,324,866
Pit Manufacturing and Certification Campaign	248,760	250,716	250,716	250,716	250,716	1,251,624
Readiness Campaign	218,755	220,001	220,001	220,001	220,001	1,098,759
Readiness in Technical Base and Facilities	1,631,386	1,745,522	1,817,114	1,915,827	2,000,104	9,109,953
Secure Transportation Asset	212,100	222,705	233,840	245,532	257,809	1,171,986
Nuclear Weapons Incident Response	118,796	124,736	130,973	137,522	144,398	656,425
Facilities and Infrastructure Recapitalization Program	283,509	289,463	295,542	301,748	308,085	1,478,347
Environmental Projects and Operations	174,389	160,034	131,500	112,629	116,967	695,519
Safeguards & Security	740,478	776,902	815,097	855,152	897,160	4,084,789
Subtotal, Weapons Activities	6,662,133	6,813,378	6,955,407	7,112,243	7,297,619	34,840,780
Security Charge for Reimbursable Work	- 32,000	- 33,000	- 34,000	- 35,000	- 36,000	-170,000
Total FYNSP, Weapons Activities	6,630,133	6,780,378	6,921,407	7,077,243	7,261,619	34,670,780

FY 2004 Execution

(dollars in thousands)

	FY 2004 Enacted Appropriation	Use of Prior Year Balance	Rescission	Reprogramming/ Transfers	Comp Adjustments	FY 2004 Comp
Directed Stockpile Work	1,340,286	0	- 7,835	19,523	-61,449	1,290,525
Science Campaign	250,548	0	- 1,444	-13,822	23,574	258,856
Engineering Campaign	344,387	0	- 2,011	-3,804	-73,366	265,206
Inertial Confinement Fusion and High Yield Campaign	517,269	0	- 3,018	-1,887	-597	511,767
Advanced Simulation and Computing Campaign	725,626	0	- 4,250	-4,525	-1,536	715,315
Pit Manufacturing and Certification Campaign	298,528	0	- 1,738	-33,583	-663	262,544
Readiness Campaign	247,097	0	- 1,437	-15,911	64,741	294,490
Readiness in Technical Base and Facilities	1,664,235	0	- 9,679	-12,963	8,366	1,649,959
Secure Transportation Asset	182,400	-20,000	-948	5,000	0	166,452
Nuclear Weapons Incident Response	0	0	0	0	96,197	96,197
Facilities and Infrastructure Recapitalization Program	240,123	0	- 1,368	0	0	238,755
Environmental Projects and Operations	0	0	0	0	181,652	181,652
Safeguards & Security	585,750	0	- 3,280	46,391	0	628,861
Subtotal, Weapons Activities	6,396,249	- 20,000	- 37,008	-15,581	236,919	6,560,579
Use of prior year balances	0	- 74,753	0	-9,682	0	-84,435
Security Charge for Reimbursable Work	-28,985	0	0	0	0	-28,985
Total, Weapons Activities	6,367,264	-94,753	-37,008	-25,263	236,919	6,447,159

FY 2005 Execution

(dollars in thousands)

	FY 2005 Enacted Approp	Rescission	Adjustments	Comp Adjustments	FY 2005 Comp
Directed Stockpile Work	1,316,936	-10,410	39,680	-69,052	1,277,154
Science Campaign	279,462	-2,209	0	-1,260	275,993
Engineering Campaign	260,830	-2,063	0	2,618	261,385
Inertial Confinement Fusion and High Yield Campaign.	541,034	-4,278	0	-852	535,904
Advanced Simulation and Computing Campaign	703,760	-5,564	0	-1,449	696,747
Pit Manufacturing and Certification Campaign	265,671	-2,101	0	-550	263,020
Readiness Campaign	272,627	-2,155	0	-9,026	261,446
Readiness in Technical Base and Facilities	1,670,420	-13,149	0	129,182	1,786,453
Secure Transportation Asset	201,300	-1,591	0	0	199,709
Nuclear Weapons Incident Response	99,209	-782	0	9,949	108,376
Facilities and Infrastructure Recapitalization Program	273,544	-2,161	42,339	0	313,722
Environmental Projects and Operations	0	0	0	192,200	192,200
Safeguards & Security	757,678	-5,749	0	0	751,929
Subtotal, Weapons Activities	6,642,471	-52,212	82,019	251,760	6,924,038
Use of Prior Year Balances	-86,000	0	72,912	0	-13,088
Security Charge for Reimbursable Work	-30,000	0	0	0	-30,000
Transfer of DOD Appropriations	-300,000	0	0	0	-300,000
Undistributed Adjustment		2,400	0	0	2,400
Total, Weapons Activities	6,226,471	-49,812	154,931	251,760	6,583,350

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 U.S. nuclear weapons stockpile.

Benefits

The Weapons Activities program supports the NNSA and DOE mission 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, 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 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.

Environmental 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, thirteen programs each make unique contributions to General Goal 1 as follows:

The Directed Stockpile Work program (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 (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; enhance readiness to conduct underground nuclear testing if directed by the president; and develop essential scientific capabilities and infrastructure.

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

The Pit Manufacturing and Certification program (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 (Program Goal 01.33.00.00) contributes to this goal by developing or reestablishing new manufacturing processes and technologies for qualifying weapon components for reuse.

The Readiness in Technical Base and Facilities (Operations) program (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); and environmental, safety, and health costs.

The Readiness in Technical Base and Facilities (Construction) program (Program Goal 01.35.00.00) contributes to this goal by planning, prioritizing, and constructing state-of-the-art facilities, infrastructure, and scientific tools (that are not directly attributable to DSW or a campaign) within approved baseline cost and schedule.

The Secure Transportation Asset program (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 Department of Energy (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 September 11, 2001.

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 accelerating risk reduction and cleanup of the environmental legacy at the National Nuclear Security Administration (NNSA) Sites in accordance with applicable environmental laws and regulations and in consultation with affected stakeholders and tribal governments.

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 radiation and nuclear burn as well as dynamic experiments with plutonium and other materials. Working through the weapon production plants and the laboratories, 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 Department of Defense (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 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, production plants, and test site, according to applicable statutes, laws, agreements and standards. NNSA is developing detailed facility operation plans to ensure that specific requirements for readiness are maintained. NNSA will implement the recommendation of the Nuclear Posture Review to transition to an enhanced test readiness posture by improving infrastructure, hiring and training personnel, and revising and exercising relevant plans and safety documentation. The NNSA's test readiness activities are consistent with the direction in the FY 2004 Defense Authorization Act and the FY 2004 Energy and Water Development Appropriations Act regarding 18 and 24 month readiness. 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 complex is a government-owned, contractor-operated enterprise (with the exception of STA). 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 Secure Transportation Asset to meet increased operating and security standards, and will maintain nuclear emergency operations assets. 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 activities, sponsored principally by the DoD.

There are a number of collaborations with universities and colleges, mainly associated with the strategic computing activities, the science campaign and inertial confinement fusion research program. Also, a limited number of technology partnership efforts with industry may be continued.

Validation and Verification

To validate and verify program performance, NNSA will conduct various internal and external reviews and audits. 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. 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 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 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 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 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 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 2006 process, Science Campaign, Readiness Campaign, and Safeguards and Security participated in Phase I. Phase II was performed for 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.

In addition, the General Accounting 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 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 Weapons Activities programs have incorporated feedback from OMB into the FY 2006 Budget Request and have taken or will take the necessary steps to continue to improve performance.

For FY 2004, OMB evaluated the ASC Campaign using PART. Overall, OMB rates 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 is not developed in the three NNSA laboratories. In response to these recommendations, NNSA management is guiding the planned growth of the program to meet weapons stockpile requirements without developing unneeded redundancy.

OMB conducted a PART review on FIRP for the FY 2004 Budget. The PART assessment noted that the program was well managed. Because the Program was new, with only limited measurable results to date, OMB assigned its highest allowable rating of "Moderately Effective." FIRP provided OMB with an FY 2005 update to its FY 2004 PART, and completed an FY 2006 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.

For FY 2005, OMB evaluated the RTBF (Operations) Program using PART. Overall, OMB rates the program 75 percent, its second highest category 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 Facilities Infrastructure Recapitalization Program (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 leverage over site contractors; actively monitoring performance against goals and targets through the PPBE process; and integrating a broader-scoped program with the FIRP.

The OMB used PART to review the ICF Ignition and High Yield Campaign for the FY 2005 budget. Overall, OMB rates the ICF Campaign 77 percent, its second highest rating 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, NNSA is continuing to refine these performance measures during the FY 2006 PPBE process and continuing frequent monitoring by independent evaluators, including those retained by the DoD.

For FY 2006, the OMB evaluated the DSW program using the PART. Overall, OMB rates 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 is 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; recompete the Los Alamos National Laboratory contract; and monitor the new DSW efficiency measure to determine if it provides insight into additional cost-effective opportunities.

For FY 2006, the OMB evaluated the STA program using the PART. Overall, OMB rates the STA program 81 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 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, independent evaluations of program effectiveness have not been completed recently to validate prior assessments. In response to the OMB findings, the NNSA is increasing the number of supporting accounts to increase management flexibility in responding to changing security conditions and mission priorities and improve obligation and costing of funds. The NNSA is also establishing an independent assessment branch in the organization to ensure more frequent independent evaluations.

For FY 2006, the OMB re-assessed the Safeguards and Security Program. OMB rated the program 77 percent or "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 spent the past 2 years improving the meaningfulness and measurability of its performance measures. OMB was satisfied with both the programs new measures and the progress the program has made in achieving results against these new measures the past two years.

The FY 2006 OMB PART did result 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 9/11 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 9/11 security upgrades which meet the new design basis threat; reducing classified removable electronic media (CREM) at the Los Alamos National Laboratory in a move toward classified diskless computing; and implementing solutions to reduce the time it takes to process Q-clearances for both contractor and federal employees.

Final OMB scores for FY 2006 correlated more closely with this year's program self-assessments (average variance +5.4 percent; low +1 percent, high +9.8 percent), which is a significant improvement over last year and is a good indicator that the internal PPBE PART process is working well.

Significant Program Shifts

Consistent with the provisions of the Consolidated Appropriations Act, 2005, (P.L. 108-447) funding included in this request will not be used as advance funds for LDRD based upon work for others.

The Department/NNSA is proposing the following budget structure changes in the FY 2006 Congressional Budget Request:

Effective May 1, 2004, the Department consolidated Emergency Operations Centers and threat assessment by transferring these functions to NNSA. FY 2006 funding for the Emergency Operations Centers and associated functions is requested in Nuclear Weapons Incident Response within the Weapons Activities Appropriation account and the Office of the Administrator Appropriation account from the Other Defense Activities Appropriation account.

In addition, the NNSA has reached agreement with the Office of Environmental Management (EM) on the transfer of environmental scope, funding, and associated Federal personnel beginning in FY 2006. The environmental transfer activities include legacy waste treatment, storage, and disposal and environmental remediation for sites where NNSA will have continuing operations, as well as new generated waste at the Lawrence Livermore National Laboratory and the Y-12 National Security Complex. Responsibility for newly generated waste at other NNSA sites was transferred by prior agreements. Additionally, the realignment includes the waste disposal facilities at the Nevada Test Site. The transferred mission from EM is included in the Weapons Activities appropriation. The newly generated waste in included in Readiness in Technical Base and Facilities and the remaining activities are included in a new budget control line titled "Environmental Projects and Operations." This transfer requires no additional funding or staffing. Successful implementation and execution of the environmental transfer activities will streamline organizational reporting relationships and increase accountability and responsibility for NNSA's environmental activities consistent with the tenets of the NNSA act.

Additionally, NNSA is proposing some internal realignments affecting the Weapons Activities appropriation as detailed below. Comparability adjustments have been made, to the FY 2004 and FY 2005 columns to reflect these changes as appropriate.

Funding of $6 million for the storage of surplus HEU has been transferred from Fissile Materials Disposition in Defense Nuclear Nonproliferation to Readiness in Technical Base and Facilities in Weapons Activities.

In order to increase consistency in budgeting across the nuclear weapons complex, NNSA is proposing a change in the cost estimating model for the Y-12 National Security Complex. This change moves overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities- Operations of Facilities. The changes net to zero within the Weapons Activities account and are reflected in the FY 2006 budget request.

During the execution of the FY 2004 budget, the Pit Manufacturing and Certification campaign restructured W88 pit certification activities required to achieve W88 pit certification in FY 2007. The restructuring reduced near-term funding requirements for this campaign and allowed for a reprogramming of funds to Directed Stockpile Work to support the W76 LEP and associated hydrodynamic test requirements in FY 2004. This transfer was largely reflected in the FY 2005 appropriation as well. This funding shift is reflected in the FY 2006 budget request and outyear requests.

NNSA has included funding to continue the University Research Program in Robotics (URPR) initiated by Congress in previous years. Rather than assessing all campaigns as in the past, the total funding of $4.465 million is being requested within Engineering Campaign. A strong academic alliance ensures the viability of the engineering basis of stockpile stewardship and sustains the intellectual viability of the NNSA laboratory complex. The overall university partnership program for engineering science is managed to ensure meeting these goals while providing a range of new, enabling technologies with relevance to the stockpile stewardship mission.

Within Directed Stockpile Work, Research and Development Support and Production Support have been removed as an allocation in other DSW categories in order to stabilize the funding profiles of the other categories and present a clearer look at both direct workload and programmatic support activities.

The Inertial Confinement Fusion Ignition and High Yield Campaign was re-aligned to directly support the goal of ignition.

Funding by General and Program Goal

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
General Goal 1, Nuclear Weapons Stewardship							
Program Goal 01.27.00.00, Directed Stockpile Work	1,290,525	1,277,154	1,421,031	1,459,343	1,487,470	1,516,160	1,545,423
Program Goal 01.28.00.00, Science Campaign	258,856	275,993	261,925	263,853	263,853	263,853	263,853
Program Goal 01.29.00.00, Engineering Campaign	265,206	261,385	229,756	172,487	181,685	165,487	165,487
Program Goal 01.30.00.00, Inertial Confinement Fusion and High Yield Campaign	511,767	535,904	460,418	461,607	461,607	461,607	461,607
Program Goal 01.31.00.00, Advanced Simulation and Computing Campaign	715,315	696,747	660,830	666,009	666,009	666,009	666,009
Program Goal 01.32.00.00, Pit Manufacturing and Certification Campaign	262,544	263,020	248,760	250,716	250,716	250,716	250,716
Program Goal 01.33.00.00, Readiness Campaign	294,490	261,446	218,755	220,001	220,001	220,001	220,001
Program Goal 01.34.00.00, Readiness in Technical Base and Facilities (O&M)	1,389,309	1,511,295	1,388,339	1,417,350	1,457,962	1,530,999	1,605,892
Program Goal 01.35.00.00, Readiness in Technical Base and Facilities Construction	260,650	275,158	243,047	328,172	359,152	384,828	394,212
Program Goal 01.36.00.00, Secure Transportation Asset	166,452	199,709	212,100	222,705	233,840	245,532	257,809
Program Goal 01.37.00.00, Nuclear Weapons Incident Response	96,197	108,376	118,796	124,736	130,973	137,522	144,398
Program Goal 01.38.00.00, Facilities and Infrastructure Recapitalization Program	238,755	313,722	283,509	289,463	295,542	301,748	308,085
Program Goal 01.39.00.00, Safeguards & Security	628,861	751,929	740,478	776,902	815,097	855,152	897,160
General Goal 6, Environmental Management							
Program Goal 06.65.00.00, Environmental Projects and Operations	181,652	192,200	174,389	160,034	131,500	112,629	116,967
Subtotal, Weapons Activities	6,560,579	6,924,038	6,662,133	6,813,378	6,955,407	7,112,243	7,297,619
Use of Prior Year Balances	- 84,435	-13,088	0	0	0	0	0
Security Charge Reimbursable Work	- 28,985	- 30,000	- 32,000	- 33,000	- 34,000	- 35,000	-36,000
Transfer of DOD Appropriations	0	-300,000	0	0	0	0	0
Undistributed Adjustment	0	2,400	0	0	0	0	0
Total, Weapons Activities	6,447,159	6,583,350	6,630,133	6,780,378	6,921,407	7,077,243	7,261,619

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 the Weapons Activities is $1,795,283 for FY 2005 and $$2,550,146 for FY 2006, to be paid from program funding.

Directed Stockpile Work

Funding Schedule by Activity

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	$ Change	% Change
Directed Stockpile Work [a]					
Life Extension Programs					
B61 Life Extension Program	43,456	58,321	50,810	-7,511	- 12.9%
W76 Life Extension Program	138,706	180,806	162,268	-18,538	-10.3%
W80 Life Extension Program	128,347	123,947	135,240	+11,293	+ 9.1%
W87 Life Extension Program	31,036	0	0	+ 0	+ 0.0%
Subtotal, Life Extension Programs	**341,545**	**363,074**	**348,318**	**-14,756**	**- 4.1%**
Stockpile Systems					
B61 Stockpile Systems	46,034	53,557	66,050	+12,493	+ 23.3%
W62 Stockpile Systems	11,568	5,145	8,967	+3,822	+ 74.3%
W76 Stockpile Systems	84,148	69,305	63,538	-5,767	- 8.3%
W78 Stockpile Systems	30,207	25,363	32,632	+7,269	+ 28.7%
W80 Stockpile Systems	21,743	16,448	26,315	+9,867	+ 60.0%
B83 Stockpile Systems	33,551	27,436	26,391	-1,045	- 3.8%
W84 Stockpile Systems	2,246	3,225	4,402	+1,177	+ 36.5%
W87 Stockpile Systems	48,760	44,154	50,678	+6,524	+ 14.8%
W88 Stockpile Systems	34,012	33,838	32,831	-1,007	- 3.0%
Subtotal, Stockpile Systems	**312,269**	**278,471**	**311,804**	**+33,333**	**+ 12.0%**
Retired Warheads Stockpile Systems	**24,568**	**35,073**	**35,245**	**+ 172**	**+ 0.5%**
Stockpile Services					
Production Support [b]	257,339	264,413	267,246	+ 2,833	+ 1.1%
Research & Development Support [c]	62,044	62,139	66,753	+ 4,614	+ 7.4%
Research & Development Certification and Safety	173,510	155,754	211,727	+ 55,973	+ 35.9%
Management, Technology, and Production	105,836	109,301	166,587	+ 57,286	+ 52.4%
Advanced Concepts	6,000	0	0	+ 0	+ 0.0%
Robust Nuclear Earth Penetrator	7,414	0	4,000	+ 4,000	+ 100.0%
Reliable Replacement Warhead	0	8,929	9,351	+ 422	+ 4.7%
Subtotal, Stockpile Services	**612,143**	**600,536**	**725,664**	**+125,128**	**+ 20.8%**
Total, Directed Stockpile Work	1,290,525	1,277,154	1,421,031	+143,877	+ 11.3%

[a] Starting in FY 2006, BWXT Y-12 is changing its costs estimating model by moving overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities-Operations of Facilities. The funding changes net to zero and are reflected in the FY 2006 Budget Submission. Comparability adjustments are reflected in the amounts of -$60,974,000 in FY 2004 and -$69,052,000 in FY 2005.

[b] Production Support has been removed as an allocation in other DSW categories in order to stabilize the funding profiles of the other categories and present a clearer look at both direct workload and programmatic support activities. Comparability adjustments are reflected in the amounts of +$257,339,000 in FY 2004 and +$264,413,000 in FY 2005.

[c] Research and Development Support has been removed as an allocation in other DSW categories in order to stabilize the funding profiles of the other categories and present a clearer look at both direct workload and programmatic support activities. Comparability adjustments are reflected in the amounts of +$62,044,000 in FY 2004 and +$62,139,000 in FY 2005.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Life Extension Programs						
B61 Life Extension Program ...	50,810	44,762	46,784	3,508	635	146,499
W76 Life Extension Program ..	162,268	137,680	112,084	140,990	135,747	688,769
W80 Life Extension Program ..	135,240	134,446	134,856	127,616	121,212	653,370
Subtotal, Life Extension Programs	**348,318**	**316,888**	**293,724**	**272,114**	**257,594**	**1,488,638**
Stockpile Systems						
B61 Stockpile Systems	66,050	74,729	113,291	113,486	147,013	514,569
W62 Stockpile Systems	8,967	6,097	4,695	2,590	0	22,349
W76 Stockpile Systems	63,538	52,982	62,879	54,082	57,606	291,087
W78 Stockpile Systems	32,632	49,186	36,108	38,678	34,272	190,876
W80 Stockpile Systems	26,315	31,906	31,449	36,656	38,300	164,626
B83 Stockpile Systems	26,391	38,860	35,515	37,672	36,529	174,967
W84 Stockpile Systems	4,402	1,021	1,020	1,051	1,023	8,517
W87 Stockpile Systems	50,678	45,150	34,536	34,229	36,267	200,860
W88 Stockpile Systems	32,831	36,968	35,149	37,538	36,053	178,539
Subtotal, Stockpile Systems	**311,804**	**336,899**	**354,642**	**355,982**	**387,063**	**1,746,390**
Retired Warheads Stockpile Systems	**35,245**	**30,156**	**29,776**	**30,188**	**29,304**	**154,669**
Stockpile Services						
Production Support	267,246	263,149	280,763	299,022	305,256	1,415,436
Research & Development Support.....................................	66,753	82,818	69,350	70,313	69,001	358,235
Research & Development Certification and Safety	211,727	224,230	255,106	262,649	265,645	1,219,357
Management, Technology, and Production................................	166,587	176,428	189,696	196,339	202,596	931,646
Robust Nuclear Earth Penetrator.................................	4,000	14,000	0	0	0	18,000
Reliable Replacement Warhead..................................	9,351	14,775	14,413	29,553	28,964	97,056
Subtotal, Stockpile Services	**725,664**	**775,400**	**809,328**	**857,876**	**871,462**	**4,039,730**
Total, Directed Stockpile Work	**1,421,031**	**1,459,343**	**1,487,470**	**1,516,160**	**1,545,423**	**7,429,427**

Description

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

This goal is achieved by: (1) developing solutions to extend weapon life, correcting potential technical issues; (2) refurbishing warheads/bombs to install the life extension solutions and other authorized modifications to enhance the safety, security, and reliability; (3) conducting evaluations to certify warhead/bomb reliability and to detect/predict potential weapon issues, mainly from aging; (4) conducting scheduled warhead/bomb maintenance; (5) dismantling warheads/bombs retired from the stockpile; and (6) researching options which fulfill Department of Defense (DoD) requirements. The DSW effort is fully coordinated with the DoD.

DSW plays a critical role in revitalizing the nuclear weapons infrastructure for science, engineering, and production. Several responsive infrastructure projects began in FY 2005 and will continue into FY 2006. The projects will improve both the responsiveness for the infrastructure and its technology base.

Benefits to Program Goal 01.27.00.00 Directed Stockpile Work

Within the Directed Stockpile Work, 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), with the W87 LEP completed in FY 2004. In Stockpile Systems, other activities are working 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 Retired Warheads Stockpile Systems, 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 one of 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, NNSA submitted the revised stockpile plan to Congress showing a significant reduction in the nation's total 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.

Phase 6.X Process. This process defines a common set of phases and procedures for all activities supporting joint DoD-Department of Energy (DOE) nuclear weapons development and refurbishment, as agreed by the DoD, DOE, and the Nuclear Weapons Council 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.

<u>Phase 6.2 Feasibility Study and Option Down Select:</u> 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.

<u>Phase 6.2A Design Definition and Cost Studies:</u> In 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.

<u>Phase 6.3 Development Engineering:</u> 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.

<u>Phase 6.4 Production Engineering</u>: 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.

<u>Phase 6.5 First Production</u>: 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.

<u>Phase 6.6 Full-Scale Production</u>: In 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 & 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 through individual weapon Program Control Documents (PCDs) and the Master Nuclear Schedule (MNS). Refurbishment activities in FY 2006 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 nuclear weapons 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

Consistent with Congressional direction**,** NNSA has developed a budget and reporting structure for Directed Stockpile Work that is by "weapon system". While FY 2005 is the first year in which official accounting data will be collected in this structure, a pilot program was conducted in FY 2004 in which "off-line" data was collected by weapons system. During the pilot program, fixed capability support costs, Production Support and Research and Development Support, were allocated to each weapons system. However, allocating costs in this manner resulted in difficulties in program execution and tracking actual costs associated with each weapon system. Therefore, beginning with this budget submission, these allocations have been removed and budgeted as separate activities. This will stabilize the funding profiles, and simplify budget categorization of programmatic workloads across the Nuclear Weapons Complex.

In addition, the Weapons Activities portion of the budget will be supplemented with a classified annex, which will contain the Selected Acquisition Reports (SARs) for the three LEPs consistent in format with those submitted by the DoD.

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 Directed Stockpile Work (DSW) has incorporated feedback from OMB into the FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

For FY 2006, OMB evaluated the DSW program using the PART. Overall, OMB rates 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 is 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; recompete the Los Alamos National Laboratory contract; and monitor the new DSW efficiency measure to determine if it provides insight into additional cost-effective opportunities.

Major FY 2004 Achievements

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

- Accomplished program target of receiving B61-7/11 Life Extension Program (LEP) Phase 6.4 authorization and completing scheduled FY 2004 Phase 6.4 activities. Completed B61-11 Non-Destructive Evaluation (NDE) and Risk Mitigation retrofit rebuilds at Pantex Plant.

- For the W76 LEP, accomplished scheduled Phase 6.3 activities, provided hardware that met design definition to complete planned Joint Test Assembly mechanical compatibility test, completed Baseline Design Review, and began Phase 6.4 activities.

- Accomplished scheduled W80 Mod-3 LEP Phase 6.3 programmatic target activities, completed Baseline Design Review, completed preliminary Weapons Development Report which is on the critical path to complete the LEP.

- Completed W87 LEP activities.

- Completed 90 percent of the FY 2004 scheduled Stockpile Maintenance activities and 87 percent of the FY 2004 Stockpile Evaluation activities. These activities include the following:

  - Maintenance/Logistics Deliverables met by accomplishing the following – 1,570 reservoirs produced, 1,547 reservoirs filled, 318 neutron generators produced, 167 gas generators shipped, 731 Alt 900 series kits shipped to DoD.

  - Supported 549 requisitions (13,214 parts) for the base and military spares program.

  - Surveillance Support accomplished the following – completed 92 surveillance disassemblies and inspections, completed 28 flight tests with DoD, completed 59 weapon test bed evaluations, and non-destructively evaluated 112 Canned Subassemblies.

  - Continued Phase 6.3 activities for spin rocket motors for the B61 family.

Major Program Shifts

In FY 2004, a reprogramming was executed to increase funding for DSW – Research and Development at LANL to maintain the Nuclear Weapons Council approved first production unit baseline of FY 2007 for the W76 LEP and support associated hydrodynamic test requirements. This involves additional design work and two additional ground tests; implementation of nuclear weapon certification using Quantification of Margin and Uncertainty; required infrastructure, personnel and equipment, as well as material containment activities for hydrodynamic testing; participating of Preliminary Design Review and Acceptance Group with DoD; purchase of material for conduct of the LEP; and conduct of small scale testing. This funding shift for the W76 LEP was largely reflected in the Consolidated Appropriations Act, 2005 (P.L. 108-447) and is included as part of this FY 2006 budget request.

Consistent with Congressional direction on budget control levels in the Consolidated Appropriations Act, 2005 (P.L. 108-447), the DSW Program request reflects control levels for DSW at:

(1) Life Extension Programs;
(2) Stockpile Systems;
(3) Retired Warheads Stockpile Systems; and
(4) Stockpile Services.

In FY 2005, the Responsive Infrastructure initiative was started. A responsive infrastructure is the cornerstone of the new nuclear triad and is required to meet the new stockpile quantities. To be considered a credible deterrent, the responsive infrastructure must include development and manufacturing capabilities with state-of-the-art equipment combined with cutting-edge applications of technology, as well as the ability to provide modified or enhanced capabilities and products quickly to meet emerging threats. DSW contributes substantially to these goals. The funding will primarily come from DSW/Stockpile Services/Research and Development Certification and Safety; and Management, Technology, and Production.

Annual Performance Results and Targets

FY 2001 Results	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)	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 and refurbishment 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. (MET GOAL)	Meet all annual weapons maintenance, refurbishment, and dismantlement schedules developed jointly by the DOE and DoD. (MIXED RESULTS)
Meet annual schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapon stockpile. (MET GOAL)		

Annual Performance Results and Targets
(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	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%	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 required Assessments and Reports completed to support stockpile certification and surety reporting to the President (Annual Output)	R: 100%	R: 100% T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually, complete 100% of the of required assessments and reports to support stockpile certification to the President.
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%)	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% T: 24%	T: 29%	T: 34%	T: 39%	T: 44%	T: 49%	T: 54%	By 2017, 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%	T: 30%	T: 36%	T: 42%	T: 48%	T: 54%	T: 60%	By 2015, 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%	T: 30%	T: 40%	T: 70%	T: 90%	T: 100%	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	By 2004, complete NWC-approved W87 LEP.
Cumulative percentage of progress for the Robust Nuclear Earth Penetrator (RNEP), if appropriately authorized	N/A	R : 2%	N/A	T: 50%	T: 100%	N/A	N/A	N/A	By the beginning of FY 2008, complete the agreed upon RNEP phase 6.2/6.2A activities.
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 MEASURE)	*N/A*	*N/A*	*T: Baseline*	*T: 0. 5%*	*T: 1.0%*	*T: 1.5%*	*T: 2.0%*	*N/A*	*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 2004	FY 2005	FY 2006
Life Extension Program Total	**341,545**	**363,074**	**348,318**

The Life Extension Program has been developed to extend the stockpile lifetime of a warhead or warhead components at least 20 years with a goal of 30 years. This activity is performed in conjunction with the applicable service from the Department of Defense following the procedural guidelines of the Phase 6.x process. The activities below describe what research, development and production work is required to meet the authorized First Production Unit (FPU) date, with the necessary weapon Military Characteristics throughout the Stockpile-to-Target Sequence environments.

▪ **B61 Life Extension Program**..................	**43,456**	**58,321**	**50,810**

The B61 Life Extension Program will extend the life of the B61 for an additional 20 years with the FPU in FY 2006. The B61 Life Extension Program includes refurbishment of the canned subassembly (CSA) and replacement of associated seals, foam supports, cables and connectors, the group X kit, and limited life components on the B61 Mods 7 and 11.

In FY 2006, programmatic activities will include conducting Inter-laboratory Peer Review (IPR); completing the Addendum to the Final Weapons Design Report and the Design Review and Acceptance Group (DRAAG) Review; completing phases 6.4 and phase 6.5; receiving phase 6.6 authorization; completing the Major Assembly Release (MAR); and ramp up of the production processes to a steady state rate and delivery of the First Production Unit (FPU) in June 2006. Production quantities required by the Production and Planning Directive (P&PD) 2005-0 will be delivered for the fiscal year. Components for disassembly operations necessary to mine reuse components will be conducted and components will be manufactured for assembly and delivery in early FY 2007.

▪ **W76 Life Extension Program**................	**138,706**	**180,806**	**162,268**

The W76 Life Extension Program will extend the life of the W76 for an additional 30 years with the FPU in FY 2007. Activities will include design, qualification, and certification activities to ensure the design of the refurbished warheads meets all required military characteristics; work associated with the manufacturability of the components including the nuclear explosive package; the Arming, Fuzing, and Firing (AF&F) system; the gas transfer system; and the associated cables, elastomers, valves, pads, foam supports, telemetries, and miscellaneous parts.

In FY 2006, activities include completion of a production readiness review, issuance of Sub-System Engineering Releases to the production plants and completion of certification/qualification activities to certify the refurbished design with margins and uncertainties; fabrication activities, procedure development, and training, process prove-in activities on the AF&F and telemetry and aft supports, AF&F subsystems, and other major assemblies. The W76 LEP activities will include continuation of Seamless Safety for the 21st Century (SS-21) integrated activities and procurement of tools developed through this process. The SS-21 process integrates the weapon, facility, tooling (testers & equipment), operating procedures, and personnel to form a safe, efficient, and effective operating environment for weapons assembly and disassembly processes at the Pantex Plant. These activities will be sustained throughout FY 2006, and will include additional procurements for

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

tooling developed as part of the SS-21 process. Production of piece parts will continue this year including the ramp up to support FPU and full production. Readiness preparation activities and process prove-in efforts will be completed in FY 2006. Radiation hardness activities, required by the DoD weapon Military Characteristics document, will be performed as part of certification activities throughout FY 2006.

▪ **W80 Life Extension Program**................	**128,347**	**123,947**	**135,240**

The W80 Life Extension Program extends the life of the W80 for an additional 20 years with the FPU in FY 2009, consistent with the Department of Defense schedules. In this LEP, the nuclear package is not being refurbished but other components are being replaced/refurbished to extend warhead life and improve security and use control. 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 2006, efforts will include a system thermo-mechanical test, modeling and assessment, development of a joint test assembly (JTA-5) flight test unit; support for chemistry and material science, and component design and production preparations; process prove-in activities beginning with the warhead electrical system subassembly and cover, gas transfer system, cables, warhead interface module, and environmental controls.

▪ **W87 Life Extension Program**................	**31,036**	**0**	**0**

The W87 life extension program was completed in late FY 2004.

Stockpile Systems Total................................	**312,269**	**278,471**	**311,804**

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**	**46,034**	**53,557**	**66,050**

Enduring stockpile workload efforts on all modifications of the B61 will include ongoing assessment and certification activities; limited life component exchange activities; surveillance activities; and required alterations, modifications, repairs, and safety studies. In FY 2006, activities include 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; conduct integrated experiments per current approved baseline plan; conduct 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; production activities for the spin rocket motor; 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.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **W62 Stockpile Systems**...........................	**11,568**	**5,145**	**8,967**

Enduring stockpile workload efforts on the W62 will include ongoing assessment and certification activities, limited life component exchange activities, surveillance activities, and required repairs. In FY 2006, 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 tests, analysis, and evaluation of performance and safety; continuing a normal cycle of surveillance tests plus additional targeted surveillance of aging components; and conducting stockpile laboratory and flight tests and disassembly and inspection of test units and test beds. Surveillance must be maintained through FY 2007 in preparation for the retirement of the W62.

▪ **W76 Stockpile Systems**...........................	**84,148**	**69,305**	**63,538**

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 2006, specific 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 joint test assemblies; conducting stockpile laboratory and flight tests; and disassembling and inspecting test units.

▪ **W78 Stockpile Systems**...........................	**30,207**	**25,363**	**32,632**

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 2006, activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI’s; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline plan; completing the MC4381 Neutron Generator FPU, 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 completion of Phase 6.2/6.2A Surety Study in coordination with DoD.

▪ **W80 Stockpile Systems**...........................	**21,743**	**16,448**	**26,315**

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, safety studies, and safety studies. In FY 2006, specific activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI’s; submitting data for surveillance cycle reports and conducting integrated experiments per current approved baseline

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

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.

	FY 2004	FY 2005	FY 2006
▪ **B83 Stockpile Systems**	**33,551**	**27,436**	**26,391**

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 2006, specific activities include supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; 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.

	FY 2004	FY 2005	FY 2006
▪ **W84 Stockpile Systems**	**2,246**	**3,225**	**4,402**

Enduring stockpile workload efforts on all modifications of the W84 include ongoing assessment and certification activities. In FY 2006, specific activities include: supporting the annual assessment process; providing laboratory and management support to the POG; and supporting resolution of SFI's; conducting material, component and system level testing and evaluating performance and safety characteristics; disassembly and inspection of some existing Joint Test Assembly (JTA) units. Although there is no delivery system for the W84, the DoD requires NNSA to maintain W84 in the inactive stockpile.

	FY 2004	FY 2005	FY 2006
▪ **W87 Stockpile Systems**	**48,760**	**44,154**	**50,678**

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 2006, specific activities include: supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; conducting material, component, and system level testing; and evaluating performance and safety characteristics; producing environmental sensing devices, firing sets, and lightening arrestor connectors in support of surveillance rebuilds for the protected period; restarting production of other cables, valves, and mechanical piece parts; developing a new W87 stockpile flight test vehicle; conducting disassemblies and inspections of eight stockpile laboratory test units, and three stockpile flight test units; production of three joint test assemblies, and production of test beds; providing range support and data collection of W87 stockpile flight tests; and continuing surveillance of W87 detonators and pits and completion of Phase 6.2/6.2A Surety Study in coordination with DoD.

	FY 2004	FY 2005	FY 2006
▪ **W88 Stockpile Systems**	**34,012**	**33,838**	**32,831**

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 2006, specific activities include:

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

supporting the annual assessment process; providing laboratory and management support to the POG and DoD Safety Studies; and supporting resolution of SFI's; submitting data for surveillance cycle reports; conducting integrated experiments per current approved baseline plan; and ongoing engineering development activities for the 4T reservoir; continuing forging procurements and disassembling and inspection of stockpile laboratory test units and stockpile flight test units and production of joint test assemblies and test beds.

	FY 2004	FY 2005	FY 2006
Retired Warheads Stockpile Systems..........	**24,568**	**35,073**	**35,245**

Retired Warhead Stockpile Systems workload focuses on weapon returns, dismantlement, characterization of components, disposal of excess components, and surveillance of components from the retired systems. Retired Warheads Stockpile Systems includes: continuing the safety surveillance of retired stockpile warheads; conducting hazard assessment studies to establish engineering and administrative controls for safe weapon disassembly operations; issuing safety analysis reports; conducting laboratory and production plant safety studies in implementation of SS-21 for retired systems; providing oversight for testers; and supporting the Tri-lab office. Also included are workload activities on the B53, W56, B61-3/4, and component characterization disposition for W68 AF&F system, W79 components, W62, W76 AF&F's, and workload processes unique to the storage and disposition of weapons that have been dismantled as part of the Surveillance Program or are designated in excess.

	FY 2004	FY 2005	FY 2006
Stockpile Services Total................................	**612,143**	**600,536**	**725,664**

Stockpile Services covers research, development and production work that supports multi units, which are not attributable to one warhead type. In addition, this major category includes R&D and Production Support which have been removed from other DSW categories to stabilize the funding profiles and present a clearer look at both direct workload and programmatic support activities.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **Production Support**	**257,339**	**264,413**	**267,246**

Production Support includes Engineering Support; Manufacturing Support; Quality Supervision and Control; Tool, Gage and Test Equipment support; Purchasing and Material Support; and Information Systems Support activities previously allocated to weapon types.

Engineering Support includes the process and industrial engineering activities of establishing process flows and improvements, formulating operating procedures, determining labor and material standards, assigning and scheduling space and equipment, and related industrial engineering functions; manufacturing engineering activities of determining current and potential manufacturing capabilities, critical design parameters, and manufacturing process capabilities; use of standard parts, materials, and processes; characterizations of manufacturing processes and environment; and institution of process controls, process metrics, and quality indices; and product engineering involving performance of liaison functions (scientific and engineering personnel) between production plants and design laboratories concerning design criteria and the interpretation and dissemination of laboratory information to production organizations.

Manufacturing Support includes production supervision and control of general operations, supervision and clerical support of weapons programs-direct personnel; planning, scheduling, and control of material and components for production as well as for inventory control purposes; and internal production-related transportation functions.

Quality Supervision and Control includes supervision and office support for general in-line inspection from visual to radiography; engineering support involved in development of procedures, criteria, and operating instruction for quality control program; development of quality control techniques, performance of special studies and analyses, collection, analysis, and reporting of data; certification of process control by analytical laboratories performing chemical and physical analyses; development of measurement standards and calibration techniques; calibration of equipment, tooling, gages, and testers; and evaluation of results of calibration and standardization work (excluding calibration of equipment that is a part of a routine equipment maintenance program); and all other quality control services.

Tool, gage and test equipment services include preparation of specifications and design of special tools, gages, jigs, fixtures, and test equipment for production and inspection activities.

Purchasing and material support includes production and development-related purchasing functions involving the preparation of invitations for bid or proposal, tabulation and evaluation of bids and proposals, pricing, preparation and placement of purchase orders and subcontracts, and finished component purchases; production and development-related transportation costs; other services such as receiving, storing, packaging, and shipping of programmatic work load materials. The above work is used to ensure quality products are produced to meet the design laboratory and Department of Defense requirements.

Information systems support includes functions involving the design, installation and maintenance of production-related computer systems (hardware and software) separate and distinct from general-use automated systems.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

In FY 2006, workload activities are focused on supporting the LEPs, dismantlement activities for the W62, preparation work in support of future B83 dismantlement activity, procurement activities, new tooling testing teams, and new Authorization Basis (AB) interface activities.

▪ **Research & Development Support**	**62,044**	**62,139**	**66,753**

Research and Development Support has been removed as an allocation in other DSW categories in order to stabilize the funding profiles of the other categories and present a clearer look at both direct workload and programmatic support activities.

Research and Development Support includes ongoing activities directly supporting research, development, design, and maintenance functions where the work is performed by the same functional organization, the work supports two or more weapon types, and the work is essentially the same for each weapon-type and association of project costs to a weapon type would be arbitrary and are not directly identified or allocated to specific weapon types. Specific activities included in Development Support are: technology projects that research, develop and support stockpile multi-use components, instrumentation, and ancillary equipment. In FY 2006, the workload activities will include: support of Gas Transfer Systems Design, Neutron Generator Design, Stockpile Evaluation activities, Military Liaison, Aircraft Compatibility, and Permissive Action Link (PAL) Equipment.

▪ **Research & Development Certification and Safety**	**173,510**	**155,754**	**211,727**

The R&D Certification and Safety activities provide the core competencies and capabilities for R&D efforts not directly attributable to a single specific warhead type. Efforts span all weapon types and include conducting modeling and assessment, safety, surety, and quality, warhead effects and system analysis studies, and model-based engineering and manufacturing; preparing and performing hydrodynamic tests for specific stockpile questions; providing engineering and information infrastructure support, production liaison and oversight, multi-system surveillance, material science support, and interagency support; developing subsystems and other components for use in multiple weapon types; and archiving legacy and current knowledge pertaining to warheads. In FY 2006, activities include development of gas transfer systems, technology for stockpile multi-use components, instrumentation, and ancillary equipment for future application in the stockpile; performing systems studies, technical safety exchanges, and program, complex, and campaign integration activities; integrating management, engineering business practices, information systems, and R&D program management; developing use control systems and joint test assemblies; supporting Pre-Phase 6.3 Studies; and conducting hydrodynamic and other scientific tests to support the stockpile. Responsive Infrastructure activities will be performed to identify, develop, and demonstrate improvements that can be incorporated into normal business practices as part of the Stockpile Stewardship Program (SSP) that supports research and development activities.

▪ **Management, Technology, and Production**	**105,836**	**109,301**	**166,587**

The Management, Technology, and Production category includes certain management and workload activities that cannot be meaningfully associated with a particular weapon type and may

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

ultimately serve multiple weapon types. Stockpile Management efforts in FY 2006 include updating the Stockpile Dismantlement Data Base to fully support the Engineering Data Warehouse with Nuclear Weapons Complex access; supporting the GTS Redevelopment Reclamation FPU, fielding of ESC core surveillance diagnostics, the Classified Application Project in accordance with Baseline Schedule, and the close-out of SFI's per approved yearly closure plans; maintaining technical knowledge, engineering practices, and information systems; conducting component engineering activities, reservoir forging development, program management and integration, special stockpile studies, and independent assessments; integrating projects; conducting required training for stockpile systems; performing safety and use control assessments; providing payments resulting from court orders that were based upon manufacture of nuclear warheads components; conducting activities that develop, maintain, surveil stockpile multi-use components, instrumentation, and ancillary equipment; and supporting certain activities that cannot be associated with specific weapon types. Responsive Infrastructure activities will be performed to identify, develop, and demonstrate improvements that can be incorporated into normal business practices as part of the Stockpile Stewardship Program (SSP) that supports manufacturing and production activities.

	FY 2004	FY 2005	FY 2006
▪ **Advanced Concepts Initiative**	**6,000**	**0**	**0**

The Advanced Concepts Initiative are activities coordinated with the DoD, for Pre-Phase 3/6.3 laboratory workload activities that potentially will enhance the military capabilities of the stockpile. This activity was zeroed out in the Consolidated Appropriations Act, 2005 (P.L. 108-447) and has been replaced by Stockpile Services Reliable Replacement Warhead.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), eliminates funding for advanced concepts research on new weapons design, but provided the same amount of funding for the Reliable Replacement Warhead program to improve the reliability, longevity, and certifiability of existing weapons and their components.

	FY 2004	FY 2005	FY 2006
▪ **Reliable Replacement Warhead**	**0**	**8,929**	**9,351**

The Consolidated Appropriations Act, 2005 (P.L. 108-447), replaced the Advanced Concepts Initiative with Reliable Replacement Warhead. The Reliable Replacement Warhead program is to demonstrate the feasibility of developing reliable replacement components that are producible and certifiable for the existing stockpile. The initial focus will be to provide cost and schedule efficient replacement pits that can be certified without Underground Tests.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), eliminates funding for advanced concepts research on new weapons design, but provided the same amount of funding for the Reliable Replacement Warhead program to improve the reliability, longevity, and certifiability of existing weapons and their components.

	FY 2004	FY 2005	FY 2006
▪ **Robust Nuclear Earth Penetrator**	**7,414**	**0**	**4,000**

The Robust Nuclear Earth Penetrator (RNEP) category includes funding for the Phase 6.2/2A Air Force-led study. The decision to complete this study was reaffirmed with DoD in January 2005.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Activities include participating in integrated NNSA-DoD integrated product teams for development of RNEP requirements and programmatic documents; system design and integration; planning, cost and risks analyses; and phenomenology studies. The study is scheduled for completion in FY 2007. In FY 2006, activities include conduct of a B83 impact test, analyzing test data, and supporting integration meetings with the DoD.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), eliminates funding included in the request in favor of higher priority current mission requirements.

Total, Directed Stockpile Work	**1,290,525**	**1,277,154**	**1,421,031**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Life Extension Programs	
▪ **B61 Life Extension Program**	
This net funding decrease is the result of completed pre-production Research and Development activities partially offset by production of refurbished units in support of the program schedule	**-7,511**
▪ **W76 Life Extension Program**	
This net funding decrease reflects completion of the Life of Program Buy material procurements and reducing re-certification and disassembly work to meet revised disassembly requirements. This is partially offset by reallocation of Research and Development activities to the W76	**-18,538**
▪ **W80 Life Extension Program**	
This increase supports ramp up of process prove in activities for the Warhead Electrical System (WES) Subassembly, Gas Transfer System, Cables, Warhead Interface Module, Environmental Controls, and Warhead Electrical System Cover, and production planning activities to meet FY 2009 FPU	**+11,293**
Total, Life Extension Programs	**-14,756**
Stockpile Systems	
▪ **B61 Stockpile Systems**	
This increase supports conducting development, design, and peer reviews for the spin rocket motor and supports spin rocket motor production	**+12,493**
▪ **W62 Stockpile Systems**	
This increase supports resumption of surveillance disassembly and inspection activities not funded in FY 2005	**+3,822**
▪ **W76 Stockpile Systems**	
This decrease reflects realignment of funding requirements for neutron generator requirements	**-5,767**
▪ **W78 Stockpile Systems**	
This funding increase reflects a ramp up in production of the MC4381 Neutron Generator (NG) and meeting the NG FPU deliverable	**+7,269**
▪ **W80 Stockpile Systems**	
This increase supports partial recovery of surveillance disassembly and inspection backlog schedule from FY 2005	**+9,867**

	FY 2006 vs. FY 2005 ($000)
▪ **B83 Stockpile Systems**	
Funding decrease is due fewer surveillance rebuild requirements and completion of caster bracket work	**-1,045**
▪ **W84 Stockpile Systems**	
Funding increase supports preparation for and restart of safety surveillance activities	**+1,177**
▪ **W87 Stockpile Systems**	
This increase reflects the need to complete JTA and other surveillance component production to support surveillance activities, some of which were deferred from FY 2005.	**+6,524**
▪ **W88 Stockpile Systems**	
This decrease reflects completion of Seamless Safety for the 21st Century activities and reduced requirements for surveillance components, which are offset by new limited life component work scope and JTA deliveries	**-1,007**
Total, Stockpile Systems	**+33,333**
Retired Warheads Stockpile Systems	
The increase continues dismantlement efforts started in FY 2005	**+172**
Stockpile Services	
▪ **Production Support**	
This increase supports previously under-funded activities in future capabilities, process engineering, and manufacturing engineering for LEPs including the B61 and W76, the enduring stockpile, retired systems specifically the W62 and B83, and procurement activities	**+2,833**
▪ **Research & Development Support**	
The increase is associated with Permissive Action Link equipment, and Gas Transfer Systems design and aircraft compatibility	**+4,614**
▪ **Research & Development Certification and Safety**	
This increase reflects component testing at LANL and LLNL, supporting W76-1 and W80-3 life extension program hydrodynamics tests, initiation of sub-critical experiments for LANL at Nevada Test Site, and increase in scope of work for LLNL's Accordion/Accordion Prime sub-critical experiments at the Nevada Test Site	**+55,973**

	FY 2006 vs. FY 2005 ($000)
▪ **Stockpile Management, Technology, and Production**	
This increase reflects additional requirements to support use control system studies..	**+57,286**
▪ **Robust Nuclear Earth Penetrator Research & Development**	
This increase reflects restart of the RNEP program to include performance of impact test, and analyses as part of the Phase 6.2/6.2A study.	**+4,000**
▪ **Reliable Replacement Warhead (RRW)**	
This funding increase continues a new RRW program put in place by the Consolidated Appropriations Act, 2005 (P.L. 108-447)	**+422**
Total, Stockpile Services	**+125,128**
Total Funding Change, Directed Stockpile Work	**+143,877**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	4,288	4,417	4,549	+ 132	+ 3.0%
Capital Equipment	38,320	39,470	40,654	+ 1,184	+ 3.0%
Total, Capital Operating Expenses	42,608	43,887	45,203	+ 1,316	+ 3.0%

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

Science Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Science Campaign [a] [b]					
Primary Assessment Technologies	44,634	46,450	45,179	- 1,271	- 2.7%
Test Readiness	24,744	26,784	25,000	- 1,784	- 6.7%
Dynamic Materials Properties	80,527	84,978	80,894	- 4,084	- 4.8%
Advanced Radiography	55,170	54,819	49,520	- 5,299	- 9.7%
Secondary Assessment Technologies	53,781	62,962	61,332	- 1,630	- 2.6%
Total, Science Campaign.................................	258,856	275,993	261,925	- 14,068	- 5.1%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Science Campaign						
Primary Assessment Technologies...........	45,179	47,536	48,870	48,711	45,573	235,869
Test Readiness	25,000	24,640	24,000	24,000	24,000	121,640
Dynamic Materials Properties................	80,894	85,060	86,500	87,400	87,400	427,254
Advanced Radiography............	49,520	42,717	39,483	38,742	41,880	212,342
Secondary Assessment Technologies...........	61,332	63,900	65,000	65,000	65,000	320,232
Total, Science Campaign	261,925	263,853	263,853	263,853	263,853	1,317,337

[a] Starting in FY 2006, BWXT Y-12 is changing its cost-estimating model by moving overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities-Operations of Facilities. The funding changes net to zero and is reflected in the FY 2006 Budget Submission. Comparability adjustments are reflected in the amounts of -$619,000 in FY 2004 and -$680,000 in FY 2005. Additionally, in FY 2006, the Test Readiness subprogram in the Science Campaign is separated out from the Primary Assessment Technologies subprogram where it was located in FY 2005.

[b] NNSA has included funding in the Engineering Campaign to continue the University Research Program in Robotics (URPR) initiated by Congress in previous years. Comparability adjustments are reflected in the amounts of –$551,000 in FY 2004 and -$580,000 in FY 2005 in the Science Campaign.

Description

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

The Science Campaign works closely with the Advanced Simulation and Computing (ASC) and Inertial Confinement Fusion (ICF) Campaigns to develop and validate predictive capabilities for the assessment of the nuclear package of a weapon without further underground testing. This work provides the understanding and validated models of underlying physical properties and processes that must be correctly incorporated into the ASC Campaign codes in order to achieve a predictive certification capability for nuclear weapons. The Science Campaign also executes small scale and integrated experiments that will be required by the ASC validation and verification program to assess and reduce uncertainties in weapons system assessments and provide confidence that the designers can rely on information provided by weapons simulation codes.

Specific high level objectives include: developing Quantification of Margins and Uncertainties (QMU) as a certification methodology; executing the national hydrotest plan; commissioning of the Dual Axis Radiographic Hydrotest Facility (DARHT) 2nd axis; understanding the fundamental properties of new and aged plutonium and supporting the assessment of minimum pit lifetimes; developing high-energy density experimental capabilities and conducting experiments for weapons applications; and maintaining scientific vitality of the NNSA laboratories through the support of relevant fundamental research at universities and the national laboratories.

Importantly, the Science Campaign is also 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. As such, the campaign also develops and maintains the scientific infrastructure of the three national nuclear weapons laboratories.

In addition, the Science campaign includes the subprogram at the weapons laboratories and the Nevada Test Site to maintain readiness to conduct underground nuclear tests in the event that the President should authorize such testing. This program builds on the experimental programs conducted currently at the laboratories and the test site. The NNSA is presently required by a Presidential Decision Directive to maintain 24 to 36-month readiness. The NNSA's test readiness activities are consistent with the direction in the FY 2004 Defense Authorization Act and the FY 2004 Energy and Water Development Appropriations Act regarding 18 and 24 month readiness.

To ensure integration of budget and performance, the management of the Science Campaign makes use of performance targets and the Quantifications of Margins and Uncertainties (QMU) process to distribute funds appropriately and effectively. This has resulted in the shifting of focus of experimental activities in several areas to provide better data return per funding dollar. For example, the NNSA has shifted from some full-up hydrotesting (at $1-2 million per test) to focused physics experiments (at $5-100 thousand per test) to better provide data for weapon certification issues. The NNSA has reduced the number of subcritical experiments (at $5-30 million per shot) in favor of JASPER gas gun experiments (at $100-200 thousand per shot). Also, the long-term requirements for Dynex experiments have been down-scoped and the special materials processing efforts in support of radiography are being eliminated.

Benefits to Program Goal 01.28.00.00 Science Campaign

Within the Science Campaign program, 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 Advanced Simulation and Computing 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 surrogate 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 2004 Achievements

- Conducted a JASON review of progress made in developing Quantification of Margins and Uncertainties (QMU) as a certification methodology and applying it to the understanding of weapons performance uncertainties.

- Developed new physical models for secondary performance in support of significant stockpile decisions that were made in FY 2004.

- Jointly, with the Inertial Confinement Fusion Ignition and High Yield Campaign, completed the first stockpile stewardship experiment on NIF.

- Executed the PIANO subcritical experiment at the Nevada Test Site (NTS) and completed an analysis of the experimental data.

- Successfully operated the Joint Actinide Shock Physics Experimental Research (JASPER) Facility and completed nine plutonium experiments on this facility at the Nevada Test Site. Established the baseline cost for JASPER experiments at the NTS.

- Demonstrated the use of the Z Facility for the measurement of material strength at extreme pressures and temperatures.

- Supported 21 stockpile stewardship academic alliances, nationwide; trained over 20 post-doctoral fellows and 60 graduate students in technical areas of relevance to stockpile stewardship; and supported university centers of excellence in: materials science at the Carnegie Institute and University of Nevada; low energy nuclear science at Rutgers University, and shock physics at Washington State University.

- Completed shock measurements on the equation of state of hydrogen and hydrogen/deuterium mixtures on the Z Facility.

- Conducted component microstructure lithography-based manufacturing by use of the LIGA (acronym for German names for lithography, electroforming, and molding—process for making small pieces) process.

- Investigated the properties of a thermally damaged high explosive in support of weapon safety studies.

- Validated an interim three-dimensional model for weapon explosive safety studies.

- Delivered new data on the properties of a particular plutonium alloy.

- Completed the Atlas move to the NTS, including system check-out.

- Provided fundamental experimental data on a variety of materials properties including equation of state, constitutive properties, and the relationship of materials processing to properties and performance in support of the development of predictive models of material behavior.

- Completed the development of the QMU logic for the W76, incorporated logic in advanced simulation, and conducted peer review.

- Executed hydrodynamic experiments on the Los Alamos National Laboratory Dual Axis Radiographic Hydrotest (DARHT) Facility and the Lawrence Livermore National Laboratory Contained Firing Facility.

- Completed 100 percent of the external technical review of required work on the DARHT Facility and planned for completion of the recovery and commissioning of the DARHT Second Axis. Developed a proposed redesign of the DARHT induction cells and successfully tested two refurbished cells.

- Completed the Master Study for the Device Assembly Facility and implemented the Technical Safety Requirements to improve Test Readiness.

The program completed a Program Assessment Rating Tool (PART) self-assessment for the second consecutive year. Although not selected for an Office of Management and Budget (OMB) PART evaluation, the Program Manager conducted a PART self-assessment and applied the results (strengths and shortcomings) to management of the program and preparation for potential selection by OMB in one of the next two years.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Meet FY 2001 milestones in the science campaigns 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 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)
There were no related targets.	There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of progress along the Primary Predictive Capability Roadmap for development and implementation of the new Quantification of Margins and Uncertainties (QMU) certification and assessment methodology to achieve the desired accuracy of performance prediction (Long-term Outcome)	N/A	R: 10%	T: 25%	T: 40%	T: 55%	T: 70%	T: 85%	T: 100%	By 2010, complete development of QMU methodology for application to the goal of achieving predictive capability.
Cumulative percentage of progress towards conducting the first 2-axis hydrodynamics test/hydro shot on the Dual-Axis Radiographic Hydrotest Facility (DARHT) to support assessment of nuclear performance required by the National Hydrodynamics Plan to support certain stockpile certification requirements (Long-term Outcome)	N/A	R: 18%	T: 25%	T: 60%	T: 80%	T: 100%	N/A	N/A	By 2008, conduct the first 2-axis hydro shot on DARHT to support certain stockpile certification requirements in the National Hydrodynamics Plan.
Readiness, measured in months, to conduct an underground nuclear test as established by National Security policy (Long-term Outcome)	R: 36	R: 30	T: 24	T: 18	T: 18	T: 18	T: 18	T: 18	By end of FY 2006, achieve 18month underground nuclear test readiness. (FY 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%	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.
Average cost per test, expressed in terms of percent of baseline, of obtaining plutonium experimental data on the Joint Actinide Shock Physics Experimental Research (JASPER) facility to support primary certification models (EFFICIENCY MEASURE)	*N/A*	*R: baseline* *T: baseline*	*T: 95%*	*T: 90%*	*T: 85%*	*T: 80%*	*T: 80%*	*T: 80%*	*By 2008, reduce the average cost of obtaining plutonium experimental data on JASPER to 80% of the FY 2004 baseline cost.*

Note: Some targets may be revised based on changed Inertial Confinement Fusion and High Yield (ICF) Campaign support to be reflected by revised NIF Activation and Early Use Plan; major changes will be submitted to Congress with the ICF data by June 30, 2005.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Primary Assessment Technologies	**44,634**	**46,450**	**45,179**

The Primary Assessment Technologies subprogram provides the experimental capabilities and analytic tools and methodologies required to certify the nuclear safety and nuclear performance of any aged or rebuilt primary to required levels of accuracy without nuclear testing.

This subprogram supports the development and implementation of the QMU methodology. A principal focus is to understand the sources of uncertainty in models used to predict primary performance and reducing these uncertainties through improved physical data and understanding. Objectives include the development of a better understanding of boost physics and the quantitative role of radiography in primary assessment technologies. This activity also examines the effects of improved materials models on primary certification. This work is closely integrated with Advanced Simulation and Computing code development and validation efforts. An important component of this activity is the analysis of historical nuclear test data and development of an accessible archive of information relevant to the certification of primaries. In FY 2006, this activity will analyze specific underground test events in support of QMU and the results will be placed in a permanent archive (the Nuclear Weapons Information database). Finally, this subprogram is a prerequisite for completing studies to determine whether future primary certification activities will require an advanced radiography capability.

The experimental effort in this subprogram is in hydrotesting, subcritical experiments, materials science, and dynamic system behavior. Experiments at the JASPER facility at the NTS and subcritical experiments will be executed to obtain plutonium dynamic properties that will quantify the uncertainties in material models used in performance codes. In FY 2006, Bechtel Nevada will prepare for subcritical experiments in support of the Lawrence Livermore National Laboratory (LLNL) program. Los Alamos National Laboratory (LANL) and LLNL will conduct weapon physics hydrotests consistent with the priorities of the joint national hydrotest plan. Tests will include integrated weapons experiments that utilize many weapon components and provide data that is the result of a number of physical phenomena relevant to nuclear design and performance modeling. Small-scale and laser-driven experiments also will be executed that will provide data sensitive to a specific physics design phenomenon.

Test Readiness	**24,744**	**26,784**	**25,000**

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. Funds are requested to continue improving the state of readiness to reach an 18-month test-readiness posture in FY 2006.

FY 2006 objectives include: completion of 90 percent of the documentation required for the safety analysis necessary to prepare for an underground test; mentor key diagnostics personnel in the specification, design and reconstitution of test diagnostics, produce a prototype Pinhole Imaging Neutron Experiment (PINEX) camera using replacement PINEX technology.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Dynamic Materials Properties	**80,527**	**84,978**	**80,894**

This subprogram provides the experimental data required to develop and validate materials models required for Primary and Secondary Assessment, Directed Stockpile Work (DSW), and Advanced Simulation and Computing (ASC). The goal is to develop science-based models that will result in predictive capability. Predictive capability will allow designers to confidently assess stockpile performance, safety, and reliability and to understand the impact of a variety of issues including amongst others changes to the materials utilized or new manufacturing processes. This subprogram also supports a vigorous university research program to ensure high quality research and well-trained students are available in scientific areas that are fundamental to the long-term health of stockpile stewardship.

The principal objective is to provide predictive descriptions and experimental data on plutonium and other stockpile materials and surrogates for thermodynamic properties such as equation-of-state (EOS) and dynamic mechanical constitutive properties, including strength and plasticity, failure, spall and ejecta under the extreme conditions of interest for weapons. In addition, this activity will investigate the properties of energetic materials, as well as the electronic and optical properties of materials needed for the stockpile. A second objective is the characterization of the effect on material performance of process changes. This requires the development of a scientific understanding of the inter-relationship between processing, properties, and performance of key stockpile materials.

Site-specific efforts in FY 2006 will include the following: Sandia National Laboratories (SNL) will prepare for the utilization of the refurbished Z facility for material properties studies. SNL will develop models of materials required for neutron generators and validate those models.

LLNL will continue to develop and execute the required techniques to perform both shock driven and shocklessly driven measurements of the EOS of actinides and other metals using the gas guns at Technical Area (TA)-55 and the JASPER facility at NTS, lasers, or other facilities. LLNL also will conduct high pressure material property experiments at synchrotron light sources. The results of these experiments will feed the development of more accurate, predictive models of materials properties and behavior under relevant conditions.

The development of such models and subsequent code insertion will be supported through the closely coordinated ASC Materials and Physics Models activity. 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 JANUS laser facility at LLNL. LLNL will continue to conduct constitutive properties studies of the EOS for high explosives and their reaction products, employing diamond anvil cells, Z Machine, and gas guns.

LANL will deliver interim results from Damaged Surface Hydrodynamics experiments on Atlas; complete measurements of the neutron capture and scattering reactions on lithium using the Weapons Neutron Research Facility and Lujan facilities at the Los Alamos Neutron Science Center (LANSCE); and deliver high explosive performance data for B61 assessment. In addition they will deliver data on the properties of particular alloys of interest.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Stewardship Science Academic Alliances fund academic centers in materials, low-energy nuclear and high energy density physics and further support over 30 competitively awarded individual investigator grants in these areas.

Advanced Radiography	**55,170**	**54,819**	**49,520**

The goal of Advanced Radiography is to develop a multi-axis multi-time radiographic hydrotest capability and to develop radiographic techniques for focused physics studies relevant to primary performance, including the support of radiographic developments for subcritical experiments.

The current focus of this subprogram is to support the key near-term objective of commissioning the 2nd axis of the DARHT at LANL by mid 2008. FY 2006 activities will focus on refurbishing and reinstallation of the induction cells as well as accelerator beam stability and conversion target experiments. This is a joint effort among LANL, LLNL and Lawrence Berkley National Laboratory (LBNL). An operating-funded project data sheet for the DARHT Cell Refurbishment effort is also submitted with this budget.

The LLNL Contained Firing Facility (CFF)/Flash X-ray Accelerator (FXR) remains a critical facility for providing hydrotest capacity to support the national hydrotest plan. The Advanced Radiography subprogram will continue to improve the performance and reliability of that facility and to upgrade diagnostics used in direct support of the ongoing hydrotest program.

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.

Secondary Assessment Technologies	**53,781**	**62,962**	**61,332**

The Secondary Assessment Technologies activity develops the knowledge, skills, and tools required to certify the yield performance of our nuclear systems. These systems undergo changes as they age naturally, or through scheduled refurbishments. Without the use of the underground test (UGT), the only way to assess the integrated nuclear performance is through the use of computer simulations. This activity takes advantage of past UGT data, conducts and utilizes a variety of aboveground experiments to develop new data and physical models needed to increase and assure the accuracy of the simulations. This subprogram is developing and utilizing QMU methodology to support assessment and certification in the future.

The subprogram performs and analyzes low-energy density (hydrodynamic) and high-energy-density above ground experiments, 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 high-energy-density 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 activity goals.

FY 2006 efforts will complete the analysis and validation of modern radiation case performance and radiation flow models using integrated simulations. Another area of emphasis is the development of advanced target fabrication and diagnostic techniques required to support ongoing and planned experiments at OMEGA, Z Machine, and NIF facilities employing advanced materials in a variety of experimental configurations. The execution of stockpile-relevant high energy density physics

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

aboveground experiments will be performed consistent with the complex-wide priorities, facility availability, and the implementation of QMU. Success requires close interfaces with the ASC Campaign in developing and validating predictive codes and models, DSW efforts in setting physics priorities, addressing near- and long-term stockpile questions, coordination with other Science Campaign activities and Engineering and Inertial Confinement Fusion (ICF) Campaigns to coordinate synergistic research activities. Efforts will continue in defining knowledge gaps, developing models, physical properties, and model validation to support improved calculations of weapon outputs.

Total, Science Campaign	**258,856**	**275,993**	**261,925**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Primary Assessment Technologies	
This change represents nominal adjustments to overall campaign levels.	**-1,271**
Test Readiness	
This budget reflects completion of work consistent with the FY 2004 Defense Authorization Act and the FY 2004 Energy and Water Development Appropriations Act.	**-1,784**
Dynamic Materials Properties	
Reflects a slowdown in the development of advanced diagnostics to support JASPER plutonium experiments and the material properties characterization activities at Y-12 and the Savannah River Site.	**-4,084**
Advanced Radiography	
While the DARHT 2nd axis recovery and commissioning represents an unexpected additional requirement, these funds have been offset by a decision to curtail activities for the development of special radiographic experimental materials and radiographic capability development for subcritical experiments resulting in an overall decrease in the advanced radiography effort.	**-5,299**
Secondary Assessment Technologies	
This funding decrease slows growth in diagnostic development and target fabrication is consistent with decreased facility availability and base program support for weapon physics experiments within the ICF Campaign.	**-1,630**
Total Funding Change, Science Campaign	**-14,068**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(Dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	0	0	0	0	0
Capital Equipment	6,269	6,457	6,651	+ 194	+ 3.0%
Total, Capital Operating Expenses	6,269	6,457	6,651	+ 194	+ 3.0%

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

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

Significant Changes

- This is the first time this Operating Expense-funded project data sheet is being submitted. The project is being managed under DOE M 413.3.
- The FY 2005 Congressional Budget for the Science Campaign included language explaining that the focus under the Advanced Radiography subprogram would be on the commissioning of the DARHT facility, including the development of solutions to high voltage breakdown problems on the second axis accelerator cells that were discovered during commissioning experiments.
- The research and development (R&D) required to meet the objectives of the DARHT refurbishment include the development of a refurbished cell design, preliminary beam dynamics experiments using 48 un-refurbished cells, and the qualification of a final design through testing of 14 cells on the Scaled Accelerator test stand. This data sheet captures the costs for these efforts that started in FY 2004.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	Cell Redesign Initiated	Cell Redesign Completed	Cell Refurbishment Start	Commissioning Complete		
FY 2006 Budget Request *(Preliminary Baseline)….*	2Q 2004	3Q 2005	3Q 2005	2Q 2008	59,050	87,450

2. Financial Schedule

Operating Expense Funded
(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2005	13,842	13,842	13,842
2006	27,000	27,000	27,000
2007	14,208	14,208	14,208
2008	4,000	4,000	4,000

3. Project Description, Justification and Scope

Project Description

The DARHT 2nd (DARHT II) Axis Recovery 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 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 then established acceptance criteria in December 2002 to meet the Critical Decision (CD)-4 (Project Completion) requirement. 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, LANL observed high voltage breakdown in several of the accelerator cells while attempting to raise the operating voltage from an average of 137 kV per cell to the design voltage of 175 kV for each of the six-injector cells and 193kV for each of the 68 accelerator cells to attain the 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 74 cells and 6 spares so that the machine 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 component required to complete this refurbishment.

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 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.

Once a cell redesign has been completed and certified by an external review, NNSA will commence a formal capital improvement project (upon approval of Critical Decision 1/2a/3a) to refurbish and reinstall the 80 accelerator and injector cells.

In order to assure successful commissioning, the project will perform additional R&D work to model the accelerator and downstream transport systems including tests on the ETA-II accelerator at LLNL in support of the scaled-accelerator validation tests. In parallel with the refurbishment effort, the project will conduct beam stability and scaled accelerator testing at DARHT II, initially with un-refurbished cells and later with refurbished cells as they become available.

Once the cell refurbishment has been completed, the project will conduct a DARHT accelerator Management Self Assessment (MSA), perform an Accelerator Readiness Review, then perform full scale accelerator commissioning to place the DARHT 2nd axis into service to support the Hydrotest Program.

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

Project Milestones:

FY 2005	CD-1, Approve Baseline Range	3Q
	CD-2a/3a, Equipment procurement, partial start refurbishment	3Q
FY 2006	CD-2/3, Approve Performance Baseline, Start Refurbishment	1Q
FY 2007	CD-4a, beam accelerated to shuttle dump	4Q
FY 2008	CD-4b, Multi-Pulse Capability	2Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Cell Refurbishment /Commissioning		
Cell Refurbishment	10,400	N/A
Engineering/Physics Support (Modelling, Testing, Experimentation)	21,750	N/A
Commissioning (Beam Stability/Scaled Accelerator/Full Scale Commissioning)	8,450	N/A
Accelerator Hall Access Door	1,200	
Project Management (11% of TEC)	6,600	N/A
Total, Cell Refurbishment/Commissioning (82% of TEC)	48,400	N/A
Contingency (18% of TEC)	10,650	N/A
Total (TEC)	59,050	N/A

5. Method of Performance

NNSA is managing the DARHT II refurbishment and commissioning project as a formal project under DOE M 413.3. LANL will be responsible for the management and the execution of the project in collaboration with LLNL, and LBNL. NNSA has established its own external review group, which will be tasked with reviewing the project prior to making critical decisions to proceed. 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 will perform cell acceptance and component testing to confirm the re-design features of the cells. LANL technical staff 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 will perform the long pulse beam stability tests, the scaled accelerator validation tests and the accelerator commissioning, supported by LLNL and LBNL staff as appropriate. The requirement for the accelerator commissioning as set forth in the CD-0 document is at 16.6 MeV and the technical goal is at 18.1 MeV.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Total Estimated Cost			13,842	27,000	18,208	59,050
Other Project Costs						
Conceptual design cost	0	0	0	0	0	0
R&D related to Cell Refurbishment	0	21,400	7,000	0	0	28,400
Total Other Project Costs	0	21,400	7,000	0	0	28,400
Total Project Cost (TPC)	0	21,400	20,842	27,000	18,208	87,450

Engineering Campaign

Funding Schedule by Activity

(dollars in thousands)

Engineering Campaign [a b]	FY 2004	FY 2005	FY 2006	$ Change	% Change
Enhanced Surety	32,137	32,791	29,845	- 2 946	- 9.0%
Weapons Systems Engineering Assessment Technology	26,590	26,997	24,040	- 2 957	- 11.0%
Nuclear Survivability and Effects	22,418	9,365	9,386	+ 21	+ 0.2%
Enhanced Surveillance	93,111	101,862	96,207	- 5 655	- 5.6%
Microsystems and Engineering Sciences (MESA) Other Project Costs (OPC)	4,463	4,554	4,714	+ 160	+ 3.5%
Microsystems and Engineering Sciences Application (MESA) Construction	86,487	85,816	65,564	- 20 252	- 23.6%
Total, Engineering Campaign	265,206	261,385	229,756	- 31 629	- 12.1%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Engineering Campaign						
Enhanced Surety	29,845	30,081	30,081	30,081	30,081	150,169
Weapons Systems Engineering Assessment Technology	24,040	24,230	24,230	24,230	24,230	120,960
Nuclear Survivability	9,386	9,460	9,460	9,460	9,460	47,226
Enhanced Surveillance	96,207	96,965	96,965	96,965	96,965	484,067
MESA OPCs	4,714	4,751	4,751	4,751	4,751	23,718
MESA Construction	65,564	7,000	16,198	0	0	88,762
Total, Engineering Campaign	229,756	172,487	181,685	165,487	165,487	914,902

[a] Starting in FY 2006, BWXT Y-12 is changing its cost-estimating model by moving overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities-Operations of Facilities. The funding changes net to zero and is reflected in the FY 2006 Budget Submission. Comparability adjustments are reflected in FY 2004 and FY 2005.

[b] NNSA has included funding in the amount of $4,465,000 in the Engineering Campaign in FY 2006 to continue the University Research Program in Robotics (URPR) initiated by Congress in previous years. Comparability adjustments from the other Campaigns are reflected in the Engineering Campaign in the amounts of $3,902,000 in FY 2004 and $3,952,000 in FY 2005. These Campaign amounts plus a contribution from the Engineering Campaign fund URPR at $4,300,000 in FY 2004 and $4,314,000 in FY 2005.

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 Engineering Campaign 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 current and future US nuclear weapon stockpile, and a sustained basis for stockpile certification. The Campaign is the driver for the discovery, innovation, maturation, and application of the advanced engineering required for the nuclear weapons stockpile, and it supports the key National Nuclear Security Administration Strategic Goal to maintain and enhance the safety, security, and reliability of nation's nuclear weapons stockpile to counter the threat of the 21st century.

Benefits to Program Goal 01.29.00.00 Engineering Campaign

Within the Engineering Campaign program, 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. Enhanced Surety demonstrates enhanced use-denial and advanced initiation, safe and secure options for the entire stockpile. Weapons Systems Engineering Assessment Technology establishes a science-based engineering certification methodology and underlying engineering research and conducts experiments to provide the data necessary to develop and validate engineering computational models. Nuclear Survivability develops and validates experimental and analytical tools for qualifying warheads to nuclear survivability requirements for all weapon environments, develops radiation-hardening approaches and hardened components, modernizes tools for weapon outputs, and develops and validates tools to translate military effects requirements to warhead design specifications (design-to-effects). Enhanced Surveillance provides component and material lifetime assessments to support weapon refurbishment decisions, delivers improved surveillance diagnostics and find defects or degradation in weapons, and develops predictive capabilities for early identification of stockpile aging concerns. The MESA Complex is being developed to incorporate modern, survivable, electrical, optical and mechanical control systems into the stockpile where required.

Major FY 2004 Achievements

- Completed an additional 20 percent (total of 42 percent) of MESA construction with the project continuing on schedule and within budget.

- Completed an additional 10 percent (total of 50 percent) of progress towards developing all surety improvements for Life Extension Programs.

- Provided the weapon aging information for the Annual Assessment Report process, completed 19 component and material aging assessments to support the W76-1 LEP, B61 LEP, W80-3 LEP, and other weapon programs; delivered ten new laboratory or flight diagnostics for the surveillance program to identify degradation in pits, canned sub-assemblies, high explosives, gas transfer systems, and non-nuclear components; and developed five improved predictive models of aging degradation and effects on weapon safety, reliability or performance.

- Completed an additional 17 percent (total of 27 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 10 percent (total of 20 percent) toward meeting the goals identified in the Nuclear Survivability Annex of the Engineering Program Plan and effectiveness tools and technologies.

- Completed measurements and experiments by Enhanced Surveillance to characterize accelerated pit aging alloys approaching the equivalent age of the oldest pits in the current stockpile.

The program completed a Program Assessment Rating Tool (PART) self-assessment for the second consecutive year. Although not selected for an Office of Management and Budget (OMB) PART evaluation, the Program Manager conducted a PART self-assessment and applied the results (strengths and shortcomings) to management of the program and preparation for potential selection by OMB in one of the next two years.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	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 MEASURE)	*R: 22%*	*R: 45%* *T: 35%*	*T: 50%*	*T: 65%*	*T: 75%*	*T: 90%*	*T: 100%*	*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 FY 2010 or later, as documented in the Engineering Campaign Program Plan (Long-term Output)	R: 40%	R: 50% T: 50%	T: 60%	T: 70%	T: 80%	T: 90%	T: 100%	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%	T: 24%	T: 32%	T: 41%	T: 49%	T: 58%	T: 66%	By 2014, deliver lifetime assessment, predictive aging models, and surveillance diagnostics to support key stockpile stewardship decisions through the FY 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%	T: 55%	T: 68%	T: 78%	T: 93%	T: 100%	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%	T: 24%	T: 27%	T: 30%	T: 33%	T: 35%	T: 37%	By 2015, complete 50% of the engineering technology and qualification tool development needed to meet Nuclear Survivability requirements for weapon activities (Interim Target).

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Enhanced Surety	**32,137**	**32,791**	**29,845**

The Enhanced Surety subprogram demonstrates enhanced use-denial and advanced initiation options for the entire stockpile directly supporting the first National Nuclear Security Administration (NNSA) goal to ensure the safety, security, and control of the enduring nuclear weapons stockpile. This activity provides validated architectures, subsystems, components, and technology for inclusion in the stockpile refurbishment program to assure that modern nuclear safety standards are fully met and a new level of use-denial performance is achieved. A multi-technology approach is pursued to develop options for selection by weapon system designers during possible life extension programs (LEP), 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. Multi-technology development opens the design space and will result in synergistic improvements in other weapon components.

Technology development to improve the safety of the detonator interface to the nuclear explosive package will continue in FY 2006 with the coupling of an insensitive high explosive booster with a new compact initiator stronglink. A parallel effort to develop miniature, high energy density components to improve the surety of stockpile weapons will also continue in FY 2006 taking advantage of unique materials and engineering science expertise at the laboratories and synergies with Department of Defense (DoD) supported efforts.

In FY 2006, a joint program between laboratories for the development of a laser-fired optical initiation system will continue with the coupling of key components and demonstration of the compatibility of the technology with emerging weapon architectures. This advanced optical initiation technology offers significant improvement in safety by eliminating the possibility of any naturally occurring stimuli (such as lightning) from causing the weapon to initiate, while providing important use control features as well.

Approaches to integrated safety and surety will continue to be developed to provide enhanced area denial and better address the design basis threat requirements. Advanced security technologies that are appropriate for nuclear weapons will be demonstrated and incorporated into the architecture. Advanced use-control technologies will also be developed and demonstrated.

Weapons Systems Engineering Assessment Technology	**26,590**	**26,997**	**24,040**

The Weapons Systems Engineering Assessment Technology subprogram has two major technical elements: (1) establishing a science-based engineering certification methodology and defining required underlying engineering research that ultimately improves responsiveness to future stockpile initiatives; and (2) conducting experiments and providing data necessary to develop and validate engineering computational models in collaboration with Advanced Simulation and Computing. These computational models are used to predict weapon system response to three Stockpile to Target Sequence (STS) 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 campaign'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. Activities are carried out at Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), and Sandia National Laboratories (SNL).

(dollars in thousands)

In FY 2006, work will continue on non-intrusive instrumentation and telemetry systems to monitor Nuclear Explosive Package (NEP) components and high explosive (HE) response in weapon systems such as the W76-1 during in-flight load conditions. A system-level validation test will be performed to assess the models for predicting response of a conventional high explosive (CHE) weapon system in an accident scenario involving a near-by explosion.

Weapon qualification and certification efforts include: (1) experiments to develop and assess models to predict shock response of the W76-1 Arming, Firing and Fuzing (AF&F) system; (2) validation experiments for assessing braze model for the small neutron generator; and (3) Test Capabilities Revitalization (TCR) Phase 2 final engineering design activities to support the initiation of construction in FY 2008.

Nuclear Survivability and Effects................	**22,418**	**9,365**	**9,386**

The Nuclear Survivability and Effects subprogram develops and validates modern tools needed to design and qualify the operability of the stockpile in nuclear environments. These environments can be either from natural (space), man-made (hostile, fratricide, surveillance) or intrinsic sources. These activities are focused on addressing changes made to the stockpile through scheduled refurbishments, surveillance discoveries, or natural aging. Specific stockpile deliverables on survivability will be funded under the DSW weapon category requiring the deliverable. In the absence of underground testing, and the closure of specialized research reactors, this activity relies increasingly on complex models and calculations supported by limited experimental evidence obtained on above ground radiation simulators. This activity also supports modern tool development for the Microelectronics Development Laboratory at Sandia, and (in cooperation with DoD) the performance of modern weapon output calculations that are needed to define some of the most stressing prompt nuclear environments. These calculations are critical to the DoD threat assessments as well as effectiveness assessments.

Specific FY 2006 planned activities include development and validation of models of cavity system-generated electromagnetic pulse (SGEMP) in the vacuum and high-pressure regimes. Other planned activities include; establishing qualification alternatives to the Sandia fast-burst neutron pulsed reactor (SPR,) investigating radiation-hardened design strategies, and improving laboratory radiation sources and diagnostics to support code validation and hardware qualification experiments. The validation of threat and effectiveness assessments with available test data will continue.

Enhanced Surveillance	**93,111**	**101,862**	**96,207**

The Enhanced Surveillance subprogram provides component and material lifetime assessments and develops predictive capabilities for early identification and assessment of stockpile aging concerns. Because nuclear weapons are being retained in the stockpile for lifetimes beyond our experience and their design lifetime, the activity is pursuing a fundamental scientific understanding of stockpile aging and its impacts to give NNSA a firm basis for determining when systems must be refurbished. The

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

approach is to identify aging issues with sufficient lead-time to ensure that NNSA can have facilities and refurbishment capability and capacity in place when required. The strategy provides more robust stockpile surveillance capabilities for early problem identification, since any future problems would have a greater relative impact on the effectiveness of a smaller nuclear deterrent. The subprogram coordinates with Directed Stockpile Work (DSW) to deploy new diagnostic testing technology to enable surveillance to be more predictive in finding defects in weapons sampled from the stockpile. The subprogram also investigates the aging mechanisms in weapons and develops aging models to predict lifetimes of components and materials. Finally, the subprogram contributes current weapon aging information for completing the Annual Assessment Reports to certify to the President that the stockpile is safe and reliable.

In FY 2006, efforts in this subprogram will provide updated stockpile aging assessments to support the Annual Assessment Report process; complete experiments to measure critical parameters for pit aging and provide lifetime assessment for predominant pit types based on accelerated aging alloys; predict component and material lifetimes and provide aging assessments to support LEP decisions (e.g., Phase 6.3 of W80-3 LEP); deploy the W76 System Tester for surveillance at the Weapon Evaluations Testing Laboratory at Pantex; continue the prototyping of a non-nuclear component surveillance program; install new surveillance techniques for gas transfer systems; Canned Sub-Assemblies, high explosives, and other components and materials; deliver flight test technology to support W76-1 certification and W87 surveillance; and 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.

This subprogram supports the University Research Program in Robotics (URPR), which is central to a focused university partnership program for engineering science, at the level of effort consistent with Congress in the Consolidated Appropriations Act, 2005 (P.L. 108-447). A strong academic alliance ensures the viability of the engineering basis of stockpile stewardship and sustains the intellectual viability of the NNSA laboratory complex. The overall university partnership program for engineering science is managed to ensure meeting these goals while providing a range of new, enabling technologies with relevance to the stockpile stewardship mission.

Microsystems and Engineering Sciences Application (MESA) Other Project Costs ..	**4,463**	**4,554**	**4,714**

Microsystems and Engineering Sciences Application (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. Space inside the existing warheads is very limited. Sensors, microcomputers, micromachines, and integrated microsystems are a vital part of the modernization strategy to ensure that the U.S. nuclear weapons remain as safe, secure, and reliable as possible particularly as individual weapons remain in the stockpile for longer times. Operating funds are required to support other project costs (OPCs) that are related to the MESA line-item construction project (01-D-108) but are not capitalized. FY 2006 OPCs will include, but are not limited to: environmental, safety and health (ES&H) activities, the safety assessment and operational support costs during construction.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Microsystems and Engineering Sciences Application (MESA) Construction (01-D-108)	**86,487**	**85,816**	**65,564**

The MESA Complex at SNL in Albuquerque 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. A baseline change to reflect the Congressionally appropriated funding increase in FY 2003 was approved on May 8, 2003, at the same time as Critical Decision 3, Approval to Start Construction. The additional appropriations of $24.7 million in FY 2004 and $37.8 million in FY 2005 will be incorporated into the next appropriate baseline change accelerating project completion by approximately two years. Additional information is provided in the Construction Project Data Sheet.

Total, Engineering Campaign......................	**265,206**	**261,385**	**229,756**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Enhanced Surety	
The decrease is consistent with limiting the scope of enhanced surety technology development for stockpile activities beyond the W76-1 and W80-3 LEPs including delaying work on multi-point surety and intrinsic use control.	**-2,946**
Weapons Systems Engineering Assessment Technology	
Decrease is consistent with a reduction in the level of effort for experimental testing and model validation to support ASC and DSW milestones.	**-2,957**
Nuclear Survivability	
Budget is consistent with required nuclear survivability effort.	**+21**
Enhanced Surveillance	
The decrease in funding reflects the elimination or delay of some enhanced surveillance activities including accelerated aging experiments on other pit types, selected component aging assessments for DSW, some surveillance diagnostics, and new technology for system testers and flight tests. The reduction is partially offset by the inclusion of the engineering science university partnership program.	**-5,655**
Engineering Campaigns: Microsystems and Engineering Sciences Application (MESA) Other Project Costs	
Increase is consistent with MESA Project baseline established in May 2003, and supports ES&H, safety assessments and other operational costs.	**+160**
Engineering Campaigns: 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. No increase in the total project cost (TPC) is involved.	**-20,252**
Total Funding Change, Engineering Campaign	**-31,629**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	1,536	1,582	1,630	+ 48	+ 3.0%
Capital Equipment	8,389	8,641	8,900	+ 259	+ 3.0%
Total, Capital Operating Expenses	9,925	10,223	10,530	+ 307	+ 3.0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappro-priated Balance
Engineering Campaign: Microsystems and Engineering Sciences Application (MESA) Construction	469,128	200,207	86,497	85,816	65,564	31,044
Total, Construction			86,497	85,816	65,564	

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

01-D-108, Microsystems and Engineering Sciences Applications (MESA) Complex, Sandia National Laboratories, Albuquerque, New Mexico

Significant Changes

- The FY 2005 appropriation of $86.5 million was an increase of $37.846 million above the request. The appropriated amount was reduced by $683,912 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447), which reduced the TEC and TPC by $683,912.

- The funding request in FY 2006 and the out-year funding profile have been adjusted to reflect the $24.7 million increase appropriated in FY 2004 and $37.846 million in FY 2005 less 0.8 percent rescission included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). The funding request in FY 2006 will result in a two-year schedule savings for the Weapons Integration Facility construction completion.

1. Construction Schedule History

	Fiscal Quarter					
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000)	Total Project Cost ($000)
FY 2002 Budget Request *(Preliminary Estimate)*	N/A	N/A	2Q 2002	TBD	51,000 [a]	51,000
FY 2001 Congressional Budget Supplemental	N/A	N/A	2Q 2002	TBD	68,000 [b]	68,000
FY 2003 Budget Request *(Preliminary Estimate)*	2Q 2001	1Q 2003	3Q 2003 [c]	4Q 2009	453,000	504,000
FY 2004 Budget Request *(Performance Baseline)* [d]	2Q 2001	1Q 2003	3Q 2003 [c]	3Q 2011	462,500	518,500
FY 2005 Budget Request *(Performance Baseline)* [d]	2Q 2001	1Q 2003	3Q 2003 [c]	3Q 2010	462,469[e]	518,469[e]
FY 2006 Budget Request *(Performance Baseline)*	2Q 2001	1Q 2003	3Q 2003 [c]	3Q 2010	461,272 [f g]	517,272 [f g]

[a] Preliminary estimate for the MDL retooling only.

[b] Preliminary estimate for the infrastructure upgrades appropriated in 01-D-103, and transferred to this line item by the FY 2001 Supplemental ($17,000,000), and the preliminary estimate for the MDL Rad-Hard IC Retooling ($51,000,000).

[c] Construction of the new facilities included in the scope of this project started in the 3Q FY 2003. Construction of site utilities and systems upgrades began in the 2Q FY 2002.

[d] The Performance Baseline was established on October 8, 2002.

[e] 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

[f] 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.

[g] 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.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
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	65,564	65,564	84,000
2007	7,000	7,000	61,985
2008	16,198	16,198	36,000

3. Project Description, Justification and Scope

Project Description

The Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories (Sandia) in Albuquerque, is a proposed 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.

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;

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

[b] Original appropriation of $67,000,000 was 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 Appropriations Act, 2005 (P.L. 108-447).

- 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 R&D, rapid prototyping, pre-production fabrication and analysis, and a war reserve microsystem production capability "of last resort" for DOE/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
- Incorporate cost-effective recycle and reclaim systems that significantly reduce annual water use and result in other secondary benefits including reduced utility costs and bulk chemical storage.

Justification

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 by 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, Sandia 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 Sandia facilities are not adequate in size or function to support the development, prototyping, and use of advanced design and fabrication technologies. Such technologies are critical 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. 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 CSRL, will allow MESA to conduct R&D, rapid prototyping, pre-production fabrication and analysis, and house a war reserve microsystem production capability for DOE/NNSA and the Nuclear Weapons Complex (NWC).

Project Scope

<u>Infrastructure Upgrades</u>

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.

<u>Microelectronics Development Laboratory (MDL) Rad-hard Integrated Circuit (IC) Retooling</u>

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 and provides the critical microsystem tools to allow R&D to progress during construction of the full MESA project. The MDL currently does not have the complete tool set needed to produce qualified war reserve (WR) radiation-hardened integrated circuits or microsystem products. The existing tool set is developmental in nature, is missing some key tools, and includes critical one-of-a-kind tools with no backup. Many of MDL's fabrication tools are more than 10 years old and have exceeded, or are approaching, the end of their useful lives. Downtime is increasing, supplier support for tool maintenance is decreasing, and spare parts are increasingly unavailable. More importantly, commercial vendors for radiation hardened integrated circuits soon will cease to exist, leaving Sandia 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.

The retooling effort primarily provides for equipment procurement, design and fit-up costs. The average tool delivery time ranges from six to twelve months after order, followed by installation design, installation, inspection and start up time. Tools are ordered in sequence to maximize efficiency and minimize downtime and disruptions to on-going MDL activities.

<u>MESA Complex</u>

- The MESA Project includes some work which is already complete, including:
- Site utilities (as described above under Infrastructure Upgrades), which was completed in December 2002.
- Retooling of equipment and support infrastructure in the existing MDL (as described above under Infrastructure Upgrades and MDL Rad-Hard IC Retooling), which was completed in June 2003 for Systems Upgrades and August 2004 for Rad-Hard Retooling.
- Critical microsystem retooling for the MDL, which was completed in August 2004.

The remaining project efforts, which began in FY 2003 consistent with the approved Performance Baseline, include:

- A new cleanroom facility, light laboratories, and work spaces for personnel replacing the existing, but antiquated, Compound Semiconductor Research Laboratory (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.

The MESA facilities comprise approximately 391,000 gross square feet (gsf) 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, Sandia 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 Sandia scientists and engineers. Workspaces will encourage and provide the environment necessary for process development and two-way information transfer.

Project Milestones:

FY 2003:	Award construction procurement for the MicroFab	3Q
	Award construction procurement for the MicroLab	4Q
FY 2004:	Award construction procurement for the WIF	3Q
FY 2007:	MicroFab Critical Decision 4, Start of Operations	3Q
	MicroLab Critical Decision 4, Start of Operations	3Q
FY 2010:	WIF Critical Decision 4, Start of Operations	3Q [a]

[a] The shift in the funding profile and the increased FY2004 appropriation, results in an anticipated two-year schedule savings for the Weapons Integration Facility construction completion. While the official baseline of the project has not yet 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.

4. Details of Cost Estimate [a]

(dollars in thousands)

	Current Estimate	Previous Estimate
Total, Design Phase (3.2% of TEC) [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 (4.6% of TEC)	21,400	21,400
Project Management (2.8% of TEC)	12,700	12,700
Total Construction Costs (85.3% of TEC)	394,600	394,600
Contingencies		
Construction Phase (11.5% of TEC)	51,774	52,944
Total, Line Item Costs (TEC) [d]	461,272	462,469

[a] The current estimate is based on BCP 03-17, which incorporates changes resulting from the FY 2003 appropriation increase above the request. The additional funding appropriated in FY 2004 and FY 2005 and the schedule impacts will be incorporated into the next appropriate baseline change.

[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 FY2004 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.

5. Method of Performance

Construction contracts will be awarded using Sandia's best value procurement process and will be awarded as firm fixed price contracts. Equipment will be procured using either design procurement and installation contracts or turnkey design/procure/install contracts as appropriate.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Cost						
Facility Cost						
Design [a]	14,925	0	0	0	0	14,925
Construction	81,362	79,439	103,561	84,000	97,985	446,347
Total, Line Item TEC	96,287	79,439	103,561	84,000	97,985	461,272
Total Facility Costs (Federal and Non-Federal)	96,287	79,439	103,561	84,000	97,985	461,272
Other Project Costs						
Conceptual design costs	2,127	0	0	0	0	2,127
Decontamination & Decommissioning costs	0	0	0	0	4,600	4,600
NEPA documentation costs	121	0	0	0	0	121
Other ES&H costs	2,070	400	400	400	200	3,470
Other project-related costs	13,140	4,073	4,200	4,351	19,918	45,682
Total, Other Project Cost	17,458	4,473	4,600	4,751	24,718	56,000
Total Project Costs (TPC)	113,745	83,912	108,161	88,751	122,703	517,272

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

7. Related Annual Funding Requirements

	(FY 2009 dollars in thousands)	
	Current Estimate	Previous Estimate
Annual facility operating costs [a]	2,900	2,900
Annual facility maintenance/repair costs [b]	1,700	1,700
Programmatic operating expenses directly related to the facility [c]	215,000	215,000
Capital equipment note related to construction but related to the programmatic effort in the facility [d]	18,300	18,300
Utility Costs [e]	2,400	2,400
Total related annual funding (operating from FY 2009 through FY 2038) [f]	240,300	240,300

[a] Average annual facility operating costs for material and labor, including systems engineering, infrastructure operations, custodial, and maintenance and sub-sites management. An average total of 15.5 staff years per year will be required.

[b] Average annual facility maintenance and repair costs for materials and labor. An average of 8.0 craft years per year will be required. Costs include maintenance and ordinary repair, including tasks like removals and replacements, repair and refinishing that result from normal wear and tear and maintenance of the grounds.

[c] Programmatic operating expenses directly related to the MESA complex. This estimate reflects the annual operating expenses associated with programmatic work that will be done within the MESA complex. As such, this estimate reflects funding that primarily already exists from other established DOE programs (i.e., Engineering Campaigns, Readiness in Technical Base and Facilities, Advanced Simulation and Computing, etc.). This estimate is based on costs for personnel associated with the integrated occupancy of MESA (integration of weapons design personnel, present CSRL personnel, present Microsystems Development Laboratory personnel and computational and engineering sciences personnel). In addition to costs for personnel time, this estimate also reflects costs for benefits, travel, purchases, corporate loads etc.

[d] Capital equipment not related to construction, but related to the programmatic effort in the facility. This reflects the average annual investment that is required in retooling and in replacement of fabrication and computing capital equipment to maintain toolsets one generation behind industry in microsystems technologies and at state-of-the-art in computational capability.

[e] Utility costs reflect the average annual costs for electricity, gas, water and sewer discharges.

[f] The MESA Complex will be fully operational in FY 2010 using a phased approach. Separate Critical Decision-4s (Start of Operation) are planned for each building as follows: MicroFab in FY 2007, the MicroLab in FY 2007and the WIF in FY 2010; however, the shift in the funding profile and increased FY 2004 appropriation, results in an anticipated two-year schedule savings for the Weapons Integration Facility construction completion. While the official baseline of the project has not been changed, the project anticipates an early completion in FY 2008. FY 2009 was used as a base year in previous data sheets because it represented a midpoint for start of operations. To maintain consistency, annual funding requirements remain in FY2009 dollars despite the accelerated phased CD-4 dates.

Inertial Confinement Fusion Ignition and High Yield Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Inertial Confinement Fusion Ignition and High Yield Campaign [a]					
Ignition	68,766	68,889	75,615	+ 6,726	+ 9.8%
Support of Other Stockpile Programs	32,838	38,498	9,872	- 28,626	- 74.4%
NIF Diagnostics, Cryogenics, and Experimental Support	31,801	48,635	43,008	- 5,627	- 11.6%
Pulsed Power Inertial Confinement Fusion	8,740	10,940	10,111	- 829	- 7.6%
University Grants/Other ICF Support	11,868	7,715	9,946	+ 2,231	+ 28.9%
Facility Operations and Target Production	57,413	62,264	54,623	- 7,641	- 12.3%
Inertial Fusion Technology	28,780	33,573	0	- 33,573	- 100.0%
NIF Demonstration Program	96,300	94,943	112,330	+ 17,387	+ 18.3%
High-Energy Petawatt Laser Development	26,146	41,475	3,000	- 38,475	- 92.8%
NIF Construction	149,115	128,972	141,913	+ 12,941	+ 10.0%
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**511,767**	**535,904**	**460,418**	**- 75,486**	**- 14.1%**

[a] NNSA has included funding in the Engineering Campaign to continue the University Research Program in Robotics initiated by Congress in previous years. Comparability adjustments are reflected in the amount of -$597,000 in FY 2004 and -$852,000 in FY 2005.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Inertial Confinement Fusion Ignition and High Yield Campaign						
Ignition	75,615	79,118	98,363	100,840	103,596	457,532
Support of Other Stockpile Programs	9,872	0	20,394	31,129	27,605	89,000
NIF Diagnostics, Cryogenics, and Experimental Support	43,008	45,367	67,426	68,597	73,902	298,300
Pulsed Power Inertial Confinement Fusion	10,111	10,760	10,940	11,300	11,571	54,682
University Grants/Other ICF Support	9,946	11,302	12,774	13,636	14,371	62,029
Facility Operations and Target Production	54,623	70,645	97,659	227,050	230,562	680,539
NIF Demonstration Program	112,330	132,415	136,912	0	0	381,657
High-Energy Petawatt Laser Development	3,000	2,000	7,000	9,055	0	21,055
96-D-111, National Ignition Facility	141,913	110,000	10,139	0	0	262,052
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	460,418	461,607	461,607	461,607	461,607	2,306,846

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.

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 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 stockpile. Major interfaces and technical objectives are shared with three Science Campaign subprograms (Primary Assessment Technologies, Dynamic Materials Properties, and Secondary Assessment Technologies), one Engineering Campaign subprogram (Nuclear Survivability and Effects), the Advanced Simulation and Computing (ASC) Campaign, Readiness in Technical Base and Facilities (RTBF), and Directed Stockpile Work (DSW).

The demonstration of laboratory ignition is the highest priority goal of the ICF Campaign and a major goal for DOE/NNSA. 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 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 machine, and other facilities. Further information regarding the ignition program at NIF and its importance to the SSP may be found in a Defense Science Board (DSB) Task Force report on the Employment of the National Ignition Facility dated October 2004.

The NNSA Office of Inertial Confinement Fusion and the National Ignition Facility Project manages the national-level ICF Ignition and High Yield Campaign. Historically, 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), the Naval Research Laboratory (NRL), and General Atomics, Inc. The 2001 High Energy Density Physics (HEDP) Study Report states that the National Ignition Facility (NIF), OMEGA, and Z facilities at LLNL, LLE, and SNL, respectively, are the major ICF facilities required to support the Stockpile Stewardship Program. The ICF Campaign thus must focus on ignition as first priority and maintain a balanced program consisting of near term activities at the OMEGA and Z facilities and preparation for an ignition demonstration at NIF. As a result, ICF Program activities at the Naval Research Laboratory will not be funded, and support for experiments other than ignition will be greatly reduced.

In response to the reduced FY 2005 appropriation, the current FY 2006-FY 2010 budget plan, and the importance of ignition, NNSA is currently revising the NIF Activation and Early Use Plan. This plan will be developed with the intention of minimizing any delay to the 2010 ignition goal. NIF ignition will be executed as a “projectized program.” The NNSA will submit to the Congress a revised NIF Activation and Early Use Plan, including changes to the NIF Project, by June 30, 2005.

Benefit to Program Goal 01.30.00.00 Inertial Confinement Fusion Ignition and High Yield Campaign

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 Subprogram, Support of Other Stockpile Programs, encompasses experiments in high energy density physics on the ICF facilities to support weapon assessment, as well as the development of advanced diagnostic and target fabrication techniques for these experiments. This ICF Campaign Subprogram supports five other Stockpile Stewardship campaigns by validating simulation codes and developing new stockpile assessment capabilities. NIF Diagnostics, Cryogenics, and Experimental Support 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. Other subprogram efforts include Pulsed Power Inertial Confinement Fusion, University Grants/Other ICF Support, Facility Operations and Target Production, Inertial Fusion Technology, the NIF Demonstration Program, NIF Other Project Costs (OPC) and High-Energy Petawatt Laser Development. 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.

Program Assessment Rating Tool (PART)

The Department 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 PART provides a means through which programs can assess their activities differently than through traditional reviews. The ICF Campaign has incorporated feedback from OMB into the FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

The OMB used the PART to review this program for the FY 2005 budget. Overall, OMB rates 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, the NNSA arranged for a Defense Science Board review of the NIF Acquisition and Early Use Plan in FY 2004. NNSA will continue to refine these performance measures during the FY 2006 NNSA Planning, Programming, Budgeting, and Evaluation process and continuing frequent monitoring by independent evaluators, including the DoD.

Major FY 2004 Achievements

- Acquired the first stockpile stewardship-relevant data on the NIF.
- Approved construction of the OMEGA EP high-energy petawatt laser.
- Conducted experiments at OMEGA to validate predictions of radiation flow in weapons systems.
- Demonstrated first fusion neutron production from inertial fusion targets at the Z facility, consistent with theoretical expectations.
- Approved Critical Decision-0 for the NIF Cryogenic Target System Project.
- Achieved over four million man-hours of construction at NIF without a lost time accident.

- Conducted the first laser-plasma interaction experiments on the NIF in support of ignition.
- Demonstrated cryogenic fuel layering meeting NIF ignition target specifications.
- Demonstrated high-resolution backlighting on the Z-Beamlet laser, enabling planned weapon physics experiments.
- Developed a means to perform direct drive ignition experiments at NIF with the laser in the present indirect drive configuration, providing risk reduction for ignition.
- Arranged and completed an external review by the Defense Science Board of the first version of the NIF Activation and Early Use Plan.

Significant experimental contributions have also been made this year in support of the Dynamic Materials Properties, Secondary Assessment Technology, and Primary Assessment Technology campaigns.

In addition, NNSA oversight of both the NIF Project and the ICF Campaign has been combined into the new Office of Inertial Confinement Fusion and the NIF Project. This change reflects the need to integrate NIF Project and ICF Campaign activities as the NNSA moves into the phase of using NIF to support the SSP.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Implement the Secretary's Six Point Plan to improve project management of the National Ignition Facility (NIF) project and approve a new baseline (FMFIA). (MET GOAL)	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of progress towards creating and measuring extreme temperature and pressure conditions for the FY 2010 stockpile stewardship requirement (Long-term Outcome)	R: 56%	R: 62% T: 63%	T: 68%	T: 73%	T: 79%	T: 82%	T: 91%	T: 100%	By 2010, create and measure extreme conditions so ICF facilities can be used by other campaigns to provide stockpile stewardship data.
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 weapons performance (Long-term Outcome)	R: 55%	R: 62% T: 63%	T: 67%	T: 72%	T: 78%	T: 82%	T: 91%	T: 100%	By 2010, complete first attempt to demonstrate ignition on the NIF.
Cumulative percentage of construction completed on the 192-laser beam NIF (Annual Output)	R: 65%	R: 76% T: 74%	T: 81%	T: 88%	T: 96%	T: 100%	N/A	N/A	By 2008, complete NIF construction.
Cumulative percentage of equipment fabricated to support ignition experiments at NIF (Annual Output)	R: 7%	R: 12% T: 16%	T: 26%	T: 48%	T: 65%	T: 83%	T: 100%	N/A	By 2009, 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	T: 500	T: 500	T: 500	T: 500	T: 800	T: 800	By 2009, increase ICF facility availability to 800 total days per year.
Annual average hours per experiment required by the operational crew to prepare the Z facility for an experiment (EFFICIENCY MEASURE)	*N/A*	*R: 9*	*T: 9*	*T: 9*	*T: 9*	*T: 9*	*T: 7*	*T: 7*	*By 2009, reduce the operational crew preparation time per Z facility experiment to 7 hours. (FY 2004 Baseline 9 hours/experiment)*

Note: Targets will be revised to be consistent with budget and the revised NIF Activation and Early Use Plan, and will be submitted to Congress by June 30, 2005.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Ignition	**68,766**	**68,889**	**75,615**

Supports research and development and experimental activities aimed at risk reduction and development of physics basis for indirect-drive 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 advanced target diagnostic techniques, and computer code and modeling improvements essential to ignition efforts. In FY 2006, specific emphasis will be focused on the goal of achieving indirect-drive ignition, including development and demonstration of ignition target fabrication techniques.

Support of Other Stockpile Programs	**32,838**	**38,498**	**9,872**

Funds HEDP experiments on ICF facilities for the Stockpile Stewardship Program. Develops experimental capabilities and analytic tools for other SSP campaigns and programs to obtain specific data and validate ASC simulations. In FY 2006, specific emphasis will be placed on experiments at the Z-machine to validate computational models for specific stockpile issues. ICF Campaign support for weapon-related HEDP experiments is reduced in order to devote resources to ignition.

NIF Diagnostics, Cryogenics and Experimental Support	**31,801**	**48,635**	**43,008**

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. During FY 2006, 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 delivery of diagnostic systems.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), provides an additional $5 million for the development of advanced target fabrication and diagnostic techniques required to support experiments at Omega, Z machine and NIF employing advanced materials. Major components of this activity will be continued within the FY 2006 budget in the Facility Operations and Target Production subprogram.

Pulsed Power Inertial Confinement Fusion	**8,740**	**10,940**	**10,111**

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

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), includes $1million for the University of Nevada-Reno for magnetized plasma/laser interaction studies at Nevada Terawatt Facility, using the Zebra pulse power machine and the Leopard short pulse laser system. This activity is not continued in the FY 2006 budget.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
University Grants/Other ICF Support........	**11,868**	**7,715**	**9,946**

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. Other activities such as advisory committee support are also included in this category.

Facility Operations and Target Production	**57,413**	**62,264**	**54,623**

Supports operation of ICF facilities, including OMEGA and Z-machine, in a safe, secure manner. Includes funding for ICF target production and delivery, data collection and archiving, routine facility maintenance and engineering support, and support for facility-supplied diagnostics. NIF operations will be included here after project completion.

Inertial Fusion Technology	**28,780**	**33,573**	**0**

Develops technology options for inertial fusion and stockpile stewardship using high average power lasers and z-pinches. Not funded in FY 2006 because of higher priority activities.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), provides an additional $25 million to continue development of high average power lasers and supporting science and technology and $9 million to initiate double shift operations and assessment and initial development and testing of z-pinch inertial fusion energy.

NIF Demonstration Program.......................	**96,300**	**94,943**	**112,330**

This funding element supports the activities associated with integration, planning, assembly, installation, laser commissioning, and activation of NIF. The NIF Demonstration Program will provide the staffing, staff training, and procedural foundation for NIF operations. A revised NIF Activation and Early Use Plan, including changes to the NIF Project, will be submitted to Congress by June 2005.

High-Energy Petawatt Laser Development	**26,146**	**41,475**	**3,000**

This subprogram supports development of high-energy petawatt (HEPW) short-pulse laser technology, including compression gratings, for the major ICF facilities. Design and construction of two short pulse laser beamlines at the OMEGA laser (the OMEGA EP project at LLE) is included in this subprogram. A separate data sheet describing planned OMEGA EP project activities and funding levels is included with this budget submission. The potential for implementing two additional long pulse beamlines is preserved but not yet implemented in the project baseline.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), provides additional funding for expanded research in non-NIF related ICF research including petawatt and high-energy petawatt laser development. Additional funding is also provided for university grants and other support including $3 million for continued development of the petawatt laser at the University of Texas at Austin; $1 million for an optical parametric chirped pulse amplifier upgrade and associated operations of the short pulse

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

laser at the University of Nevada, Reno; $1 million is provided to the University of Nevada, Reno to continue its collaboration with Sandia National Laboratories on highly diagnosed studies of exploding wire arrays and implosion dynamics; and $1 million for research using the Z-Beamlet laser at Sandia National Laboratories under the Z-Petawatt Consortium that includes the University of Texas at Austin, the University of California, San Diego, the University of California, Davis, the University of Nevada, Reno, the University of Michigan, the University of Rochester, Ohio State University and the General Atomics Corporation. Partial funding for the research activities (no funds are provided for construction projects) at the University of Texas and the Z-Petawatt Consortium will be funded in the University Grants/Other ICF Support subprogram.

NIF Construction	**149,115**	**128,972**	**141,913**

96-D-111, National Ignition Facility, LLNL. A revised NIF Activation and Early Use Plan, including changes to the NIF Project, will be submitted to Congress by June 2005.

The increase covers installation of additional utilities and support equipment enabling an optimized assembly strategy that minimizes impact to project completion.

Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**511,767**	**535,904**	**460,418**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Ignition	
Funding increase supports ramp up in program effort required to support the ignition goal. Additional funds will be primarily applied to fabrication of targets, development of ignition target diagnostics, and target design	**+6,726**
Support of Other Stockpile Programs	
Decrease reflects reduced support for radiation transport, hydrodynamics, and materials experiments as well as other high energy density physics activities, in order to support higher priority ignition efforts	**-28,626**
NIF Diagnostics, Cryogenics and Experimental Support	
Decrease reflects a Congressional add-on for target fabrication in the FY 2005 appropriation that is not included in this area in the FY 2006 Request. This add-on will be partially continued in FY 2006 within Facility Operations and Target Production	**-5,627**
Pulsed Power Inertial Confinement Fusion	
Supports slightly reduced experimental and computational activities to establish technical basis for z pinches to produce ignition and high yield	**-829**
University Grants/Other ICF Support	
Increase reflects ongoing support of University users of the NIF, OMEGA, and Z facilities, and additional support for the NIF ignition program such as external reviews	**+2,231**
Facility Operations and Target Production	
Decrease reflects elimination of funding for the Nike laser, as well as reduced operations of the Trident laser and target fabrication facilities	**-7,641**
Inertial Fusion Energy Technology	
No funding requested in FY 2006 due to the need to fund higher priority activities	**-33,573**
NIF Demonstration Program	
Increase supports an accelerated rate of laser component assembly, installation, testing and commissioning required for project completion	**+17,387**
High-Energy Petawatt Laser Development	
Funding reflects a decrease in the Congressionally Directed Activity in the FY 2005 appropriation which is not included in FY 2006	**-38,475**

	FY 2006 vs. FY 2005 ($000)
Construction	
Increase covers installation of additional utilities and support equipment enabling an optimized assembly strategy that minimizes impact to project completion	**+12,941**
Total Funding Change, Inertial Confinement Fusion Ignition and High Yield Campaign	**-75,486**

Overview

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

Introduction
The NIF Activation and Early Use Plan defines the experimental program to be executed on NIF through the demonstration of ignition. NNSA has committed to provide Congress with further information regarding this plan. Due to NIF Demonstration Program reductions in the FY2005 appropriation, changes to the FY2006-FY2010 funding plan for the ICF Campaign, and the importance of achieving ignition on schedule, the NIF Activation and Early Use Plan is being modified. By June 30, 2005, NNSA will provide a revised NIF Activation and Early Use Plan, including changes to the NIF Project, to the Congress. In the interim, NNSA will provide briefings and other information to Congress as needed. In future budget submissions, this section of the budget narrative will include details regarding the NIF Activation and Early Use Plan.

Status- NIF Activation and Early Use Plan
Key points regarding the NIF Activation and Early Use Plan are as follows:

- Ignition is the highest priority activity for NIF.

- The NIF Activation and Early Use Plan incorporates the needs of stockpile stewardship, the NIF Project schedule, and NIF supporting technologies and capabilities into a single self-consistent plan. A revised budget-consistent plan for ignition at NIF will be contained within this document. The revised NIF Activation and Early Use Plan will be developed with the intention of minimizing delays to ignition.

- The development of a national plan for NIF ignition will be led by LLNL and LLE.

- Experiments in other areas of high energy density weapons science will be delayed. All funding for NIF-related activities in the Support of Other Stockpile Programs area has been eliminated.

- NIF ignition will be executed as a "projectized program" with a baseline, an appropriate set of milestones, and progress tracking, including quarterly reporting to Congress.

- The NIF Cryogenic Target System (NCTS) is an essential piece of equipment for the NIF ignition program and is fully funded within this budget. Critical Decision-0 for this project was approved on March 2004. A data sheet for this project will be submitted after a baseline is set.

- The Defense Science Board (DSB) reviewed the NIF Activation and Early Use Plan in 2004 and strongly endorsed the value of ignition to the weapons program. A technical document describing the NIF Activation and Early Use Plan as presented at the review is being provided to Congress.

Summary

The goal of the NIF Activation and Early Use Plan is to incorporate the needs of stockpile stewardship, the NIF Project schedule, and NIF supporting technologies and capabilities into a single self-consistent plan. The Plan is being developed with the intention of minimizing any delay to the 2010 ignition goal. A revised version of the NIF Activation and Early Use Plan, including changes to the NIF Project, will be submitted to Congress by June 30, 2005.

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(Dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	1,288	1,327	1,366	+ 39	+ 2.9%
Capital Equipment	29,211	15,483	15,768	+ 285	+1.8%
Total, Capital Operating Expenses	30,499	16,810	17,134	+ 324	+ 1.9%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappro-priated Balance
96-D-111, National Ignition Facility	2,094,897	1,554,758	149,115	128,972	141,913	120,139
Total, Construction			149,115	128,972	141,913	

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations, and the actual or requested funding for the OMEGA EP, which when completed, will be DOE-owned capital equipment ($20,000,000 in FY 2004, $6,000,000 in FY 2005, and $6,000,000 in FY 2006).

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

Significant Changes

- The appropriation profile was revised to reflect the FY 2004 rescission of $885,048. The rescission amount is restored in FY 2006 so there is no impact to the TEC/TPC of the project.

- The attached data sheet reflects the current baseline as adjusted by the FY 2005 Consolidated Appropriation Act. The FY 2005 Appropriation was reduced $18,757,652 in operating funds for the NIF Demonstration Program. These funds have been restored in FY 2006 – FY 2008. A revised NIF Activation and Early Use Plan, including changes to the NIF Project arising due to the FY2005 appropriation, the FY2006-2010 budget, and the importance of ignition, will be submitted to Congress by June 30, 2005. The data sheet will be updated to reflect those changes.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)	Other Related Costs ($000)	Total Project-Related Costs ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete				
FY 1996 Budget Request (*Preliminary Estimate*)	1Q 1996	1Q 1998	3Q 1997	3Q 2002	842,600	1,073,600	N/A	N/A
FY 1998 Budget Request (*Title I Baseline*)	1Q 1996	1Q 1998	3Q 1997	3Q 2003	1,045,700	1,198,900	N/A	N/A
FY 2000 Budget Request	1Q 1996	2Q 1998	3Q 1997	3Q 2003	1,045,700	1,198,900	N/A	N/A
FY 2001 Budget Request	1Q 1996	2Q 1998	3Q 1997	3Q 2003	1,045,700	1,198,900	833,100	2,032,000
FY 2001 Amended Budget Request	1Q 1996	2Q 1998	3Q 1997	4Q 2008	2,094,897	2,248,097	1,200,000	3,448,097
FY 2006 Budget Request (*Current Baseline Estimate*)	1Q 1996	2Q 1998	3Q 1997	4Q 2008	2,094,897	2,248,097	1,200,000	3,448,097

2. Financial Schedule

TEC Funding

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1996	37,400	37,400	33,991
1997	131,900	131,900	74,294
1998	197,800	197,800	165,389
1999	284,200	284,200	251,476
2000	247,158[a]	247,158	252,766
2001	197,255[b]	197,255	254,725
2002	245,000	245,000	282,153
2003	214,045[c]	214,045	215,060
2004	149,115[d]	149,115	131,118
2005	128,972[e]	128,972	146,636
2006	141,913	141,913	141,726
2007	110,000	110,000	119,680
2008	10,139	10,139	25,883

3. Project Description, Justification, and Scope

The Project provides for the design, procurement, construction, assembly, and acceptance testing of the National Ignition Facility (NIF). The NIF is an experimental inertial confinement fusion facility intended 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 temperatures, pressures, and densities. The NIF is being constructed at the Lawrence Livermore National Laboratory (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).

[a] Original appropriation was $248,100,000. This was reduced by $942,000 for the FY 2000 rescission enacted by P.L. 106-113.

[b] The FY 2001 amended budget request of $209,100,000 was reduced by Congress to $199,100,000. The appropriation of $199,100,000 was reduced by $1,410,000 due to the Safeguards and Security (S&S) amendment, and by $435,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[c] Original appropriation was $214,045,000. This was reduced by $1,360,000 for a rescission and by $4,853,000 for the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title VI. The appropriation was increased by $6,213,000 by a reprogramming.

[d] The FY 2004 appropriated amount of $150,000,000 was reduced by $885,048 by a mandatory rescission of 0.59 percent (P.L.108-199). The rescinded amount is restored in FY 2006.

[e] The FY 2005 appropriated amount of $130,000,000 was reduced by $1,027,845 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

The NNSA Inertial Confinement Fusion (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 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, 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 Laser and Target Area Building provides an optically stable, and clean environment. The Target Area Building 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 Target Area Building. 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:

Major milestones and critical decision points have not changed:

Milestones	Date
Approval of Mission Need (CD1)	Jan 1993
Title I Initiated	Jan 1996
NEPA Record of Decision	Dec 1996
Approval to Initiate Construction (CD3)	Mar 1997
Start Special Equipment Installation	Nov 1998
1st light to Target Chamber Center	Jun 2004
12 bundles Commissioned	Jun 2007
24 bundles Commissioned	Sep 2008
Project Complete (CD4)	Sep 2008

Project milestones for FY 2004 include:

- First Light to Target Chamber Center — 3Q (completed 2Q FY2003)
- Achieve 10 kilo-joules 1 omega light — 4Q (completed 1Q FY2003)
- Switchyard 2 Beampath to Commissioning — 4Q (completed 1Q FY2003)

Project milestones for FY 2005 include:

- Laser Glass Melting complete — 1Q
- FSAR NNSA concurrence — 2Q
- First Bundle commissioned — 3Q

Project milestones for FY 2006 include:

- Beampath Infrastructure System Complete — 2Q (completed 1Q FY 2004)
- 6 Bundles Commissioned — 3Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	249,000	245,000
Design Management Costs (2.0% of TEC)	42,000	41,500
Project Management Costs (2.1% of TEC)	42,950	42,450
Total Design Costs (15.9% of TEC)	333,950	328,950
Construction Phase		
Improvements to Land	1,800	1,800
Buildings	179,000	179,000
Special Equipment	1,271,859	1,260,859
Utilities	500	500
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	143,086	139,566
Construction Management (0.9% of TEC)	18,000	18,000
Project Management (3.0% of TEC)	63,594	61,594
Total Construction Costs (80.1% of TEC)	1,677,839	1,661,319
Contingencies		
Design Phase (0.2% of TEC; 1.5% of remaining TEC BA)	4,727	9,727
Construction Phase (3.7% of TEC; 25.5% of remaining TEC BA)	78,381	94,901
Total Contingencies (4.0% of TEC; 27.0% of remaining TEC BA)	83,108	104,628
Total, Line Item Costs (TEC)	2,094,897	2,094,897

The cost estimate assumes a project organization and cost distribution consistent with the management requirements appropriate for a DOE Major System as outlined in the NIF Project Execution Plan. Actual cost distribution will be in conformance with accounting guidelines in place at the time of project execution.

5. Method of Performance

The NIF Project Office is led by LLNL, and includes participation from Los Alamos National Laboratory (LANL), Sandia National Laboratory (SNL), and University of Rochester Laboratory for Laser Energetics (UR/LLE), and is supported by competitively selected contracts with Architect/Engineering firms, an integration management and installation contractor, equipment and material vendors, and construction firms. It will prepare the design, procure equipment and materials, and perform conventional construction, safety, system analysis, and acceptance tests. DOE/NNSA will maintain oversight and coordination through the National Nuclear Security Administration Office of the NIF Project. All activities are integrated through the guiding principles and five core functions of the DOE Order on Integrated Safety Management Systems (ISMS) (DOE P450.4). DOE conducted the site selection and the National Environmental Protection Act determination in the SSMPEIS. LLNL was selected as the construction site in the Record of Decision made on December 19, 1996.

5.1 NIF Execution

5.1.1 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 the Work Smart Standards (WSS) Process approved by the Manager of the Oakland Operations Office. By the completion of the NIF Project, the LLNL WSS 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.

5.1.2 Title I Design

In fiscal year 1996, Title I Design began with the contract award for the Architect/Engineers (Parsons and AC Martin) and a Construction Management firm (Sverdrup) for the design and the constructability reviews of the (1) NIF Laser and Target Area Building 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 Review and NEPA 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.

5.1.3 Title II Design

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

5.1.4 Title III Design

The Title III engineering participants include LLNL, LANL, SNL, Parsons, AC Martin, and Jacobs/Sverdrup. Title III engineering represents the engineering necessary to support the construction and equipment installation, including inspection and field engineering. The main activities are to perform the engineering necessary to resolve issues that may arise during construction (e.g., fit problems, interferences). Title III engineering will result in the final as-built drawings that represent the NIF configuration.

5.1.5 Construction and Equipment Procurement, Installation, and Acceptance

Based on the March 7, 1997, Critical Decision 3, construction began with site preparation and excavation of the Laser Target Area Building (LTAB) forming the initial critical-path activities. The NIF Construction 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 Laser and Target Area Building and the Optics Assembly Building (where large optics assembly and staging were being put in place). In addition, the site support infrastructure needed to support construction of conventional facility, beampath infrastructure installation, and line replaceable equipment and optics staging were being put in place. At the same time, procurements on the critical path (e.g., target chamber) began following the established *NIF Acquisition Plan*.

The next major critical path activity was the assembly and installation of the Beampath Infrastructure Systems. These are the structural and utility 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 as phased beneficial occupancy of the Laser and Target Area Building is achieved. This is a complex period in which priority conflicts may occur because construction, equipment installation, and acceptance testing will be occurring. The Product Line Managers, Area Integration Managers, and Integration Management and Installation Contractor will manage and integrate the activities to avoid potential interferences affecting the schedule. The construction, equipment installation, and acceptance testing 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.

5.1.6 Operational Testing and Commissioning

After installation, the facility and equipment will be tested prior to the phased turnover to the commissioning organization. The NIF Demonstration Program funds all activities associated with activating and commissioning the 192-beam laser system. As NIF systems are activated, 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 staffing, staff training, and the procedural foundation for NIF operations while operating the NIF during the commissioning phase.

Management Prestart Reviews (MPRs) are performed when a significant new risk will be introduced. MPRs may be used prior to turnover of systems to operations where applicable. The MPR process employs an independent team to evaluate the readiness (e.g., training and qualification of operators, Commissioning Test Procedures results, as-built drawings, etc.) and recommends proceeding with introduction of the new risk. Any transfer of responsibility for ISMS Work Authorization associated with transition of a system is approved by the NIF Project Manager.

The integrated system activation will begin with the commissioning of the first bundle. An MPR will be used by the Project Manager to control each system turnover up to the start of full 192 beam-operation. In specific cases, such as First Light to Target Chamber Center, First Bundle, First Cluster, and Tritium Experiments, the DOE /NNSA Federal Field Manager will concur in the review. A sequence of reviews will be scheduled to ensure a disciplined and controlled turnover of NIF systems to the Project’s commissioning/operations organization. These reviews will culminate in a Readiness Assessment conducted prior to NIF 192-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 192 beam Readiness Assessment results are a key input for Critical Decision 4 (Project Closeout) by the Acquisition Executive.

5.1.7 Project Completion

The NIF Project Completion Criteria represent the system status and performance required at Project completion. The complete set of NIF Performance criteria is contained in the *NIF Functional Requirements and Primary Criteria.* These are the criteria that NIF is required to meet when fully operational. Early experimental capability will be provided for programmatic users at NIF before Project completion as part of the experimental commissioning process. This enables users to begin experiments for Stockpile Stewardship Campaigns and other programmatic missions consistent with approved program plans, before the NIF Project meets the requirements established in the Project Completion Criteria.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	325,477	8,900	3,000	900	400	338,677
Construction	1,204,377	122,218	143,636	140,286	145,163	1,756,220
Total, Line item TEC	1,529,854	131,118	146,636	141,726	145,563	2,094,897
Other Project Costs						
R&D necessary to complete construction [a]	103,940	0	0	0	0	103,940
Conceptual design costs [b]	12,300	0	0	0	0	12,300
NEPA documentation costs [c]	6,859	163	1,160	1,070	2,438	11,690
Other project-related costs [d]	22,350	526	684	600	1,110	25,270
Total, Other Project Costs	145,449	689	1,844	1,670	3,548	153,200
Total Project Costs (TPC)	1,675,303	131,807	148,480	143,396	149,111	2,248,097
Other Related Operations and Maintenance Costs– NIF Demonstration Program [f]	625,540	91,790	97,198	114,585	270,887	1,200,000
TOTAL Project and Related Costs	2,300,843	223,597	245,678	257,981	419,998	3,448,097
Budget Authority (BA) requirements [e]						
TEC (capital funding)	1,554,758	149,115	128,972	141,913	120,139	2,094,897[g]
OPC (O&M funding)	153,200	0	0	0	0	153,200
NIF Demonstration Program (O&M funding)[f]	627,100	96,300	94,943	112,330	269,327	1,200,000[g]
Total, BA requirements	2,335,058	245,415	223,915	254,243	389,466	3,448,097

[a] Costs include optics vendor facilitization and optics quality assurance.

[b] Includes original conceptual design report completed in FY 1994 and the conceptual design activities for the optical assembly and refurbishment capability and site infrastructure.

[c] Includes preparation of the NIF portion of the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, NIF Supplemental Environmental Impact Statement and environmental monitoring and permits; OSHA implementation.

[d] Includes engineering studies (including advanced conceptual design) of project options; assurances, safety analysis, and integration; start-up planning, management, training and staffing; procedure preparation; startup; and Readiness Assessment.

[e] Long-lead procurements and contracts require BA in advance of costs.

[f] Funding requested and appropriated in the Inertial Confinement Fusion program, and beginning in FY 2001 and continuing under the Inertial Confinement Ignition and High Yield campaign, is required to maintain the Project baseline. The FY 2005 Appropriation was reduced $18,757,652. These funds have been restored in FY 2006 – FY 2008. A revised NIF Activitation and Early Use Plan, along with any additional changes to the NIF Project will be submitted to Congress in June 2005.

[g] In FY2006 – FY 2008 adjustments have been made to compensate the FY 2005 Appropriation.

7. Related Annual Funding Requirements

	Current Estimate	Previous Estimate
Annual facility operating costs [a]	41,723	40,666
Annual facility maintenance/repair costs [b]	75,089	73,186
Programmatic operating expenses directly related to the facility [c]	0	0
Capital equipment not related to construction but related to the programmatic effort in the facility	227	221
GPP or other construction related to the programmatic effort in the facility	227	221
Utility costs [d]	14,607	14,237
Other costs [e]	1,861	1,814
Total related annual funding (estimate based on operating life of FY 2009 through FY 2038)	133,734[f]	130,345[g]

[a] Includes all NIF support personnel who are not in facility maintenance as described in note b (198 personnel). This is based on the latest facility use projection of 746 shots in FY 2011.

[b] Includes refurbishment of laser and target systems, building maintenance, and component procurement based on 746 shots in FY 2011 (213 personnel).

[c] For these costs, refer to the National Stockpile Stewardship Program.

[d] Estimate of electricity costs based on currently projected rates.

[e] Facility usage estimate of industrial gases (argon, synthetic air).

[f] In FY 2006 dollars.

[g] In FY 2005 dollars.

OMEGA Extended Performance (EP) Project,
University of Rochester / LLE, Rochester, New York

Significant Changes

- The project will establish two new short-pulse "petawatt" beams at the OMEGA facility which can be completed earlier due to funding added by Congress in FY 2005.
- Based on Congressional direction in the Consolidated Appropriations Act, 2005 (P.L. 108-447) the capability to change the project to include two long-pulse beams has been enabled, but has not yet been implemented in the project baseline.
- This project has completed Critical Decisions (CD)-1, -2, and -3.

1. Laser Construction Schedule

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	Design Work Initiated	Design Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2005 Budget Request *(Estimate)*	1Q 2003	2Q 2004	2Q 2004	4Q 2004	67,000	77,700
FY 2006 Budget Request *(Performance Baseline)*	1Q 2003	2Q 2004	2Q 2004	4Q 2007	67,000	76,500

2. Financial Schedule

Operating Expense Funded
(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
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	3,000	3,000	3,000
2007	2,000	2,000	2,000

[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).

3. Project Description, Justification and Scope

Project Description

The OMEGA EP project is the design, manufacture, assembly, and testing of two short pulse laser beams to complement the existing capability of the OMEGA laser system. The two new beamlines are to be built in a new building that is being funded by the University of Rochester at the Laboratory for Laser Energetics site. Many aspects of the NIF and the OMEGA architectures will be used to produce the high-energy beams. The intended use of the two beams is to backlight events created by the OMEGA laser for greater understanding of implosion events. 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, 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 Laboratory for Laser Energetics (LLE) is a critical facility needed to support ICF goals. The OMEGA Extended Performance (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 eventually 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 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.

Project Milestones:

FY 2004	Establish Performance Baseline / Approve CD-2/3	2Q
FY 2005	Grating Tiling Assembly / Mounts complete	1Q
FY 2006	First beam low-power shot to Transport Spatial Filter	2Q
FY 2006	Second beam low-power shot to Transport Spatial Filter	4Q
FY 2007	First Short Pulse beam to OMEGA Target Chamber	4Q

4. Details of Cost Estimate

	(dollars in thousands) Current Estimate	Previous Estimate
Laser Construction Phase		
Special Equipment:		
Laser Sources	4,366	4,366
Laser Amplifiers	3,530	3,530
Power Conditioning	3,655	3,655
Optomechanical Beamlines	12,016	12,016
Experimental Systems	10,219	10,219
Control Systems	5,538	5,538
Total, Special Equipment (58.7% of TEC)	39,324	39,324
Project Office (23.8% of TEC)	15,958	15,958
Total, Laser Construction Costs (82.5% of TEC)	55,282	55,282
Contingency (17.5% of TEC)	11,718	11,718
Total, OMEGA EP (TEC)	67,000	67,000

5. Method of Performance

LLE will execute the project under the terms of the current cooperative agreement with between the University of Rochester and NNSA. LLE's make-or-buy decisions will be made on the basis of cost, schedule, quality, and technical performance. Vendors will be selected based on their ability to offer the best combination of these metrics with the highest probability of success. The preferred method of procurement will be competitive outsourcing using the University's DOE-approved purchasing system. If a satisfactory item or service is not available off-the-shelf, LLE's decision will be to either manufacture to specification, manufacture to print, or make in-house.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Total Estimated Cost	13,000	20,000	29,000	3,000	2,000	67,000
Other Project Costs						
Conceptual design cost (a)	2,000	0	0	0	0	2,000
R&D related to Petawatt Technology (a)	2,439	3,124	1,937		0	7,500
Total Other Project Costs	4,439	3,124	1,937	0	0	9,500
Total Project Cost (TPC)	17,439	23,124	30,937	3,000	2,000	76,500

7. Related Annual Funding Requirements

(FY 2009 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	5,000	N/A
Total related annual funding	5,000	N/A

[a] The FY 2005 congressional data sheet mistakenly reflected this line as NEPA costs. It should have been R&D related to Petawatt Technology.

Advanced Simulation and Computing Campaign

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Advanced Simulation and Computing Campaign [a]					
Advanced Applications Development	145,850	142,512	137,580	- 4,932	- 3.5%
Verification and Validation	49,992	50,419	50,015	- 404	- 0.8%
Physics and Material Models	70,784	68,653	67,745	- 908	- 1.3%
Problem Solving Environment (PSE)	44,135	42,606	39,464	- 3,142	- 7.4%
Distance Computing (DisCom)	16,518	14,563	15,852	+ 1,289	+ 8.9%
Pathforward	12,878	12,300	7,442	- 4,858	- 39.5%
Data and Visualization Sciences (D&VS)	55,627	57,830	58,959	+ 1,129	+ 2.0%
Physical Infrastructure & Platforms	103,926	115,000	99,220	- 15,780	- 13.7%
Computational Systems	63,254	62,264	59,921	- 2,343	- 3.8%
Simulation Support	55,380	59,083	59,759	+ 676	+ 1.1%
Advanced Architectures	0	3,000	2,977	- 23	+ 0.0%
University Partnerships	50,264	47,980	44,095	- 3,885	- 8.1%
1Program/3Labs b	9,628	17,335	17,801	+ 466	+ 2.7%
Construction Projects	37,079	3,202	0	- 3,202	- 100.0%
Total, Advanced Simulation and Computing Campaign	715,315	696,747	660,830	- 35,917	- 5.2%

[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. Comparability adjustments are reflected in the amounts of -$1,536,000 in FY 2004 and -$1,449,000 in FY 2005.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Advanced Simulation and Computing Campaign						
Advanced Applications Development Development	137,580	138,661	138,661	138,661	138,661	692,224
Verification and Validation	50,015	50,913	51,422	51,936	52,456	256,742
Physics and Material Models	67,745	68,961	69,650	70,347	71,050	347,753
Problem Solving Environment (PSE)	39,464	39,775	39,775	39,775	39,775	198,564
Distance Computing (DisCom)	15,852	15,977	15,977	15,977	15,977	79,760
Pathforward	7,442	10,000	10,000	10,000	10,000	47,442
Data and Visualization Sciences (D&VS)	58,959	55,907	54,326	52,823	51,396	273,411
Physical Infrastructure & Platforms	99,220	100,000	100,000	100,000	100,000	499,220
Computational Systems	59,921	58,892	58,892	58,892	59,154	295,751
Simulation Support	59,759	61,746	62,373	62,903	63,080	309,861
Advanced Architectures	2,977	3,000	3,000	3,000	3,000	14,977
University Partnerships	44,095	44,177	43,933	43,695	43,460	219,360
1Program/3Labs	17,801	18,000	18,000	18,000	18,000	89,801
Construction Projects	0	0	0	0	0	0
Total, Advanced Simulation and Computing Campaign	660,830	666,009	666,009	666,009	666,009	3,324,866

Description

The goal of the Advanced Simulation and Computing (ASC) Campaign is to provide leading edge, high-end computer simulation capabilities to meet weapons assessment and certification requirements, including weapon codes, weapon science, platforms, and computer facilities.

The ASC Campaign's vision for the future is to predict, with confidence, the behavior of nuclear weapons, through comprehensive, science-based simulations. ASC employs an integrated, multi-laboratory business model to deliver products focused on high-end simulation capabilities that when coupled with designer experience and expertise, are used to address near- and long-term requirements of our stakeholders and customers. The successful delivery of these products is instrumental to the annual assessment and certification process, refurbishment analysis and significant finding closures. The use of a multi-laboratory framework creates synergies within this national program that allow ASC program managers to execute an ambitious program in a manner that avoids unnecessary duplication, but minimizes the risk of single-point failures.

The business model includes the leveraging of ASC investments with scientific simulations and computational approaches fostered by other federal agencies and industrial partners. Examples of these types of high-end computing collaborations are: joint efforts with the Department of Energy (DOE) Office of Science; participation in interagency efforts including being a Defense Advanced Research Projects Agency (DARPA) High Productivity Computing Systems (HPCS) mission partner and a contributing participant in the High-End Computing Revitalization Task Force; collaboration through a Department of Defense (DoD)/DOE/ National Nuclear Security Administration (NNSA) Memorandum of Understanding; collaboration with the National Security Agency (NSA); work with industrial partners on selected path-forward activities.

Benefits to Program Goal 01.31.00.00 Advanced Simulation and Computing

Within the ASC program, thirteen subprograms each make unique contributions to Program Goal 01.31.00.00. These include developing weapon codes, weapon science, platforms, computer facilities and the necessary support to make the system operate together.

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 ASC Campaign has incorporated feedback from OMB into the FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

For FY 2004, OMB evaluated the ASC Campaign, using PART. Overall, OMB rates 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 is not developed in the three NNSA laboratories. In response to these recommendations, NNSA management is guiding the program to meet weapons stockpile requirements without developing unneeded redundancy.

Major FY 2004 Achievements

- Integration of higher spatial resolution and more advanced physics models into primary simulation capability.

- The Joint Computational Engineering Laboratory (JCEL) at SNL, a modern facility for research, development and application of advanced computational and engineering sciences that co-locates offices, computer labs and collaborative team and visualization spaces.

- Next generation of Linux cluster software environment to improve performance, stability, and maintainability of high-performance computing clusters for relatively low-cost computing.

- Replacement of the historical Sesame table for Pu equation of state used by the design community.

- Integration of advanced physics and material models that improve fidelity for 2D implosion and explosion simulations of the W88 primary to enable sensitivity studies to better understand system margins and uncertainties.

- Model for the decomposition of foams implemented in the modern codes.

- Laser-plasma interaction simulations run on ASC Q platform at LANL are being used by the NIF Program to design beam-smoothing capabilities for suppressing filamentation, such as diffraction optics, and to quantify their cost-benefit tradeoffs.

- NIF target designers have used the 3D ASC multiphysics codes on ASC platforms to demonstrate the effectiveness of a 1.8 MegaJoule NIF target design.

These ASC FY2004 achievements provide demonstration of the ASC program's focus on delivering products that support stakeholders and customers. These products range from simulation codes, material and physics models, facilities, to computing environments. By delivering these products, ASC has made a direct impact on the work of weapon designers, analysts, code developers, and large-scale experiments in the following ways:

- Increased capabilities of the modern codes have contributed importantly to the closure of a number of Significant Findings Investigations (SFIs).
- Increased steadily the number of baseline comparisons to the nuclear test data, using the modern codes, has contributed to designer confidence and increased use of the new codes.
- Developed and delivered a plan for identification of areas where users desired improvement of specific physics and engineering models.
- Contributed ASC codes and computers to progress on the W-76 Life Extension Program, the W-88 Pit Certification, and the B-61 Refurbishment.
- Generated the first NIF experiments generated data that was immediately used to contribute to the validation of weapon simulation codes.
- Provided validation data at Omega and Z facilities in support of stewardship through both ignition and non-ignition experiments.

These are some examples to demonstrate that ASC is delivering products that are relevant in condition and schedule to the stockpile workload and in-line with customer requirements.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Meet the FY 2001 ASC Program Plan milestones for development of modeling and simulation tools and capabilities required for design and certification of the nuclear weapons stockpile. (MET GOAL)	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	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	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 simulations	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%	T: 38%	T: 51%	T: 67%	T: 87%	T: 96%	T: 100%	By 2010, analyze 100% of 31 weapon system components using ASC codes, as part of annual assessments and certifications (interim target).
The maximum individual platform computing capability delivered, measured in trillions of operations per second (teraflops) (Long-term Output)	R: 20	R: 20* T: 40	T: 100	T: 100	T: 150	T: 150	T: 350	T: 350	By 2009, deliver a maximum individual platform computing capability of 350 teraflops.
Total 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	T: 172	T: 160	T: 310	T: 420	T: 930	T: 930	By 2009, attain a total production platform capacity of 930 teraflops.
Average cost per teraflops of delivering, operating, and managing all Stockpile Stewardship Program (SSP) production systems in a given fiscal year (EFFICIENCY MEASURE)	*R: $11.64M*	*R: $8.30M** *T: $8.15M*	*T: $5.70M*	*T: $3.99M*	*T: $2.79M*	*T: $1.96M*	*T: $1.37M*	*T: $0.96M*	*By 2010, attain an average cost of $0.96 M per teraflops of delivering, operating, and managing all SSP production systems. (FY 2003 baseline $11.64M)*

* Delivery of new equipment delayed to 2Q FY 2005 by manufacturer

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Advanced Applications Development	**145,850**	**142,512**	**137,580**

Develops and maintains all weapons codes used to support stockpile stewardship needs, including weapon assessments, accident analyses, certification issues, engineering analyses, and manufacturing process studies. Supports a suite of large-scale, integrated multi-physics simulation codes and major physics packages needed for the Stockpile Stewardship Program, including the classified codes used by designers and analysts to simulate the nuclear safety, performance, and reliability of stockpile systems. The products include complex, integrated hydro, radiation-hydro, and transport codes for application to Stockpile Stewardship, design and analysis of experiments, general-purpose hydro and radiation-hydro problems, and analyzing radiation and particle transport problems for a variety of applications. These codes will also be utilized to simulate other dynamic events, including high explosive, laser, and pulsed-power driven systems, subcritical and AGEX experiments, Inertial Confinement Fusion (ICF), and the response of energetic materials to thermal and mechanical insults.

Supports engineering mechanics and manufacturing applications codes and supporting frameworks used for stockpile stewardship activities, such as annual certification, life extension programs, and Significant Finding Investigations (SFIs). Engineering applications codes support analyses such as electrical, thermal and structural dynamics modeling of weapon components and systems under normal, abnormal and hostile environments. Manufacturing process codes support casting, welding and forging operations.

Maintains and makes requisite enhancements to the suite of legacy and related support codes historically used for the design of primaries and secondaries. Legacy codes serve as established tools for nuclear weapons simulation, with well-understood capabilities and limitations for stockpile stewardship applications, serving as both reference points for the verification of new codes, models, and algorithms and a link to the era of active nuclear weapon design and testing.

FY 2006 activities include support of Directed Stockpile Work (DSW) baseline activities, delivery of new code capabilities for engineering, specialty, and nuclear performance codes, and improvements in the computational methods used in these in large-scale scientific applications.

Verification and Validation (V&V).............	**49,992**	**50,419**	**50,015**

Provides high confidence in the computational accuracy of ASC and stockpile computing simulations supporting stockpile stewardship priorities in certification, SFIs, and Life Extension Programs (LEPs). V&V provides a reliable, scientifically based measure of confidence and progress in predictive simulation capabilities used for nuclear weapon certification and resolution of high consequence nuclear stockpile problems through systematic measurement, documentation, and demonstration of the predictive capability of the codes and the underlying models in various operational and functional regimes. V&V, as a multi-disciplinary process, provides a technically rigorous foundation of credibility for computational science and engineering calculations by developing and implementing methods and tools to carefully assess the precision of numerical approximations in physics modeling and computational simulations through defined quantification of uncertainty measures.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

As weapons age, and nuclear test data is no longer available to address consequences of redesigned components or performance with aged materials, it becomes increasingly important to develop quantitative measures to gauge the ability to predict and progress of the ASC weapons codes. Part of the V&V activities are focused on developing suites of relevant, solvable test models – Verification Suites- against which weapons codes can be verified to assure that the codes are solving the equations correctly. Another part of V&V works to assess the agreement of existing models with the suite of available data from the Campaigns, ensuring standards across the complex. Additionally, V&V validates UGTs and AGEX data and establishes a repository of data that are utilized by the nuclear weapon complex for weapon certification, and resolving SFIs.

In addition to the essential verification and validation activities, the uncertainty in the output from the codes must be quantified. Given a tremendous input data bases of materials, their properties, their transport, under an evolving background of extreme nuclear conditions, the predictions from each of the weapons codes must be gauged against the cumulative uncertainties in the inputs. V&V is developing and implementing Uncertainty Quantification methodologies (UQ) as part of the foundation to the Quantification of Margins and Uncertainties (QMU) process of weapons certification. V&V also drives software engineering standards, tools, and practices to improve the quality, robustness, reliability, design optimization, and maintainability of the codes vital to evaluating and solving the unique complexities of the stockpile stewardship mission.

Activities in FY 2006 include: Design new verification and validation test suites, validate AGEX and UGT data, complete a quantitative V&V assessment of the physics and simulation capability used for enhanced primary and secondary calculations; validate an initial physics and engineering capability in advanced ASC simulations for the W76 and W80 using experimental data; support the completion of B61 and W80-3 warhead certifications, using quantified design margins and uncertainties; support hydro test activities, as defined in the National Hydrodynamic test Plan.

Physics and Material Models (PMM)...........	**70,784**	**68,653**	**67,745**

This component of the ASC program (previously called Materials and Physics Modeling) works to develop a wide breadth of physics, chemistry and materials models that is instrumental in moving towards predictive capability for weapons simulations. Models and theories are developed to address the material properties and physical phenomena essential to the simulation of weapons under all conditions relevant to their life cycle. Consequently models and the understanding they bring, must be sufficiently robust to address a diverse spectrum of conditions.

This activity provides the theory, modeling, and experimental analysis necessary to develop science-based models for integration into advanced application codes. As we move farther from the test base, it becomes increasingly important to replace the simple models that were calibrated to nuclear test data, with predictive, scientifically based models and theories. Models are validated to experimental data made available through the Science. Engineering and Inertial Confinement Fusion Campaigns. Once validated, the models are integrated into the major code projects under development in the Advanced Applications component of ASC.

Important areas of focus in FY2006 are developing models needed to address open Significant Findings Investigations; microscopic models for the structure and behavior of new and aged Plutonium for weapons performance; replacements for previously unknown science in weapons codes that was

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

calibrated to test data with predictive models validated to experimental data; and models and science central to the timely availability of weapons codes for LEP activities. FY 2006 activities also include developing and implementing improved physics-based models for radiation transport, equation of state, and opacities.

Problem Solving Environment (PSE)..........	**44,135**	**42,606**	**39,464**

Develops a computational infrastructure to allow ASC applications to execute efficiently on ASC computing platforms and to provide access to these platforms from scientists' desktops from anywhere in the complex. This computational software infrastructure includes local-area networks, wide-area networks, advanced storage facilities, and software development tools. PSE activities are focused on the near term deployment of software technology needed to "stand up" emerging platforms, as well as the longer term research & development necessary to deploy the demanding technology required by next generation high performance platforms. More specifically, PSE develops and deploys the software tools (compilers, debuggers, performance analysis tools, etc.) needed to efficiently develop quality, scalable ASC application codes. PSE is responsible for developing and deploying system software (job schedulers, resource management, data management, archival storage, data analysis, etc.) required by end user designers to use simulation codes as tools to carry out the ASC mission. PSE also develops and deploys the software infrastructure (security, operating system, networking, etc.) required that underpins efficiently usable platforms.

In FY 2006, PSE will complete deployment of the production environment of the Red Storm platform and of the initial software environment for the Purple and BG/L systems. PSE is additionally engaged in activities to deploy the open-source Linux- based software environment in support of commodity hardware capacity platforms. These systems provide a new level of price performance for the program. The software work in support of these systems will likely be leveraged to support the next generation of capability platforms.

Distance Computing (DISCOM)	**16,518**	**14,563**	**15,852**

Provides secure, very high-speed, remote access to tri-lab users of ASC supercomputers that creates a computing environment that appears as if it were local to the remote user to the extent possible. Secure computing at a distance is necessary for the three laboratories to access all ASC supercomputing platforms. This distance capability involves the creation of a high-speed, parallel, secure infrastructure architecture (both hardware and software), development and implementation of monitoring and testing capabilities, development of service applications and user support, and partnering with the PSE and Data and Visualization Sciences (DVS) elements, to integrate services and security functions necessary for efficient remote access. In addition, Distance Computing (DisCom) aims to enable high DisCom environment is expected to reach general availability within weapons program, the point at which the platform is a reliable, stable, “production” computing resource. Additionally, delivery of communication technologies to efficiently integrate ASC Purple and BG/L is planned.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Pathforward...	**12,878**	**12,300**	**7,442**

Supports the U.S. computer industry in developing and engineering strategically targeted technologies. The intent of Pathforward investments is to accelerate the hardware and software technologies needed to ensure that balanced capability and capacity systems are available in the marketplace for out-year procurements needed for Stockpile Stewardship activities. Emphasis in FY 2006 will be on high-speed, high bandwidth interconnect technology; cluster file systems; and open source software for compilers, visualization, resource management, memory and performance monitoring tools. Open source software tools are particularly important to the tri-lab strategy of supporting both capacity-scale and capability-scale platforms acquired from a variety of vendors.

Data and Visualization Sciences (D&VS) ...	**55,627**	**57,830**	**58,959**

This program element previously called Visual Interactive Environment for Weapons Simulations provides the nuclear weapon design and analysis community with the software, hardware and technical support necessary to store, manage and analyze the results of multi-teraOPS simulations. Equipment procured and deployed includes data and visualization services, archival storage, high-speed networking, office displays and shared visualization facilities. DVS develops and deploys high-performance data and visualization management technologies that allow the visual exploration and interactive manipulation of massive amounts of complex data by local and remote users in offices and shared facilities. These tools facilitate the comparison of results across simulations and between simulations and experiments. DVS provides scalable visualization tools and efficient utilization of shared visualization facilities allowing for collaborative interactions of scientists, engineers and analysts in the nuclear weapons complex.

D&VS also includes a research and development component to develop new capabilities for quantitative and comparative analysis and data discovery to meet future needs of the program. A segment of these activities is carried out in collaboration with academia and industry, to focus and leverage technology development with an emphasis on scalable technologies.

In FY 2006, the continued deployment of data and visualization capabilities for ASC Red Storm, Purple and Blue G/L is planned. DVS (in cooperation with ICS and other S&CS elements) develops and deploys the archive, data processing, visualization, office delivery, and high-performance networking infrastructure to meet user requirements to use these platforms.

Physical Infrastructure and Platforms (PI&P)	**103,926**	**115,000**	**99,220**

Acquires the computational platforms to support the Stockpile Stewardship Program. In FY 2006, the 40 teraflops ASC Red Storm and the 100 teraflops ASC Purple systems will begin general availability, while the 20 teraflops ASC Q system will continue to operate as a tri-lab resource. Platform acquisition costs include life-cycle funding for vendor maintenance.

ASC computational platforms are the backbone of computing and computing infrastructure at the NNSA Laboratories, providing the cycles necessary for all programs to meet their needs. Currently oversubscribed by a factor of two to three, the prioritized work done on the ASC platforms is chosen to address the most pressing mission critical needs. Mission requirements have lead the ASC program to procure and develop world-class supercomputing. In FY 2006, payments will be completed for the

(dollars in thousands)

100 Teraflop ASC Purple and 40 Teraflop ASC Red Storm platforms, designed and built with IBM and Cray, respectively. These platforms, each on the over 10,000 processors, are designed as cost-effective systems suited to our demanding and uniquely complex nuclear weapons computer codes.

In addition to the weapons simulation supercomputers, the ASC BG/L 360 Teraflop platform will become operational. This system addresses the important issues of how to control long-time costs associated with increasing power demands, growing floor space, increasing costs, and network scalability. As no single computer architecture is suitable to optimize every desired computer calculation, BG/L makes trade-offs in memory and bandwidth to optimize certain scientific calculations at the cost of reducing the ability to run weapons codes. While far more cost-effective per Teraflop than Purple and Red Storm, the unique architecture of BG/L is ideal for optimizing detailed scientific stockpile issues, such as predictions related to Plutonium aging adds a vital depth to the computation capabilities of the NNSA labs in the application of the Stewardship mission.

Computational Systems	**63,254**	**62,264**	**59,921**

Provides the production computational environment and data storage systems and their networking infrastructure at the three NNSA laboratories. This includes the planning and integration of a well-balanced system (platforms, storage, I/O, networks) commensurate with projected user workloads. Computing systems include production ASC capability platforms and some of the newer capacity systems. Storage systems include specific upgrades to stay in balance with the computational environment as well as to integrate new capabilities. Networking infrastructure work includes upgrading bandwidth to handle performance improvements required by the computational platforms and storage systems. This program element is responsible for planning, deploying, and supporting the overall production platform system architecture and the seamless integration of all of its sub-systems. The scope of this program element also includes product support and quality and reliability activities in support of the production platforms, storage systems, and networking facilities.

The computational systems area includes the systems management personnel, maintenance contracts, and other capital operating equipment as part of the computing, storage, and networking environment. Maintenance for all networking and storage systems, as well as maintenance for pre-Q platforms (vendor maintenance for later generation platforms is included in the Physical Infrastructure and Platforms budget line), is also included in this program element. Efforts in FY2006 will emphasize the transition of Red Storm, Purple and BG/L to general user availability within the weapons program.

Simulation Support	**55,380**	**59,083**	**59,759**

Provides support services for the computation infrastructure at the three NNSA laboratories. The supporting infrastructure is sized to make the ASC capacity and capability computing systems usable. Simulation Support includes the facilities that house these ASC systems and the operations of the computational computer centers at the three laboratories. This includes providing the power required to operate and cool all the computing platforms.

The level of computing resource needs of the Stockpile Stewardship Program program requires a balanced level of services for the productive use of the ASC platforms. Simulation support also provides the needed user help desk services, training, and software environment development that support the accessible and reliable operation of high-performance, institutional, and desktop computing

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

resources at the laboratories. These services enable designers and analysts to take advantage of laboratory computing resources 24 hours a day, 7 days a week. The production scientific computing environment also includes supporting smaller compute servers, terabyte storage archives, data assessment theaters for visualizing huge datasets, and an interconnected, integrated networking infrastructure. Additional work emphasis in FY 2006 will improve support infrastructure to accommodate the Red Storm and Purple capability systems.

Advanced Architectures	**0**	**3,000**	**2,977**

Addresses the long-term platform risk issues of cost, power, performance and size by studying alternative architectures that have the potential to make future ASC platforms more cost effective. In FY 2006, emphasis will be placed on studying these alternative and Advanced Architectures through the Defense Advanced Research Projects Agency (DARPA) High Productivity Computing Systems (HPCS) program.

University Partnerships	**50,264**	**47,980**	**44,095**

This element consists of the ASC Academic Strategic Alliances Program, the Computational Sciences Graduate Research Fellowships and the ASC Computational Science Institutes. The ASC Academic Strategic Alliances Program funds five universities for developing new computational frameworks while they pursue scientific advances in several areas that are similar in size, scope and complexity to the stewardship simulation efforts. These Universities are the University of Illinois, the University of Utah, the University of Chicago, the California Institute of Technology, and Stanford University. The Computational Sciences Graduate Research Fellowships is sponsored in collaboration with the Office of Science. It supports the very best computational science graduate students in the nation, and trains these future scientists in areas of interest to ASC and the nuclear weapons complex, as well as others areas of relevance to the Department of Energy. Finally, the request includes funding for the ASC Computational Science Institutes, which serve as the focal point for laboratory-university interactions and foster advanced scientific research at the three NNSA laboratories, responding to the needs of other components of the ASC Program.

Congressionally-Directed Activity: The Conference Report accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447) for the provided $10 million for the Ohio Supercomputer Center high-end computer network; and $2.5 million to complete Phase I of the demonstration project of 3-D chip scale packaging integrated with spray cooling at Pacific Northwest National Laboratory.

1Program/3Labs..	**9,628**	**17,335**	**17,801**

This program element was previously called ASCI Integration, which supports the One Program/Three Laboratory integration strategy for collaborations across the three NNSA laboratories including strategic planning outreach and crosscuts. Specific examples of FY 2006 activities include: program wide technical project reviews, Alliance interaction support, implementation and program plan production and contracts office support, and the Super Computing Conference Research Exhibit.

	FY 2004	FY 2005	FY 2006
	(dollars in thousands)		
ASC Construction	**37,079**	**3,202**	**0**
Construction completed.			
Total, Advanced Simulation & Computing Campaign	**715,315**	**696,747**	**660,830**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Advanced Applications Development	
This decrease reflects management changes to weapon support requirements and schedule based on changes to the Life Extension Programs currently on plan, as well as other programmatic changes to experimental facilities and resulting application requirements	**-4,932**
Verification and Validation (V&V)	
Funding is consistent with program element efforts	**-404**
Physics and Material Models (PMM)	
The decrease reflects a temporary shift of focus from development of models to integration of models.	**-908**
Problem Solving Environment (PSE)	
The decrease reflects a more focused tool environment and a series of development down select decisions made by ASC management	**-3,142**
Distance Computing (DISCOM)	
The increase is attributed to the ongoing need to develop the network among the labs as new platforms arrive and are integrated into the computing fabric of the complex	**+1,289**
Path forward	
The decrease reflects the end to several contracts in FY 2005 and the decision to reduce FY2006 investment in industry collaborations	**-4,858**
Data and Visualization Sciences (D&VS)	
The increase is attributed to the ongoing need to further develop visualization capabilities at the labs as new platforms are brought on-line	**+1,129**
Physical Infrastructure & Platforms	
Decrease reflects the shift in the platform procurement strategy towards one of increasing capacity-class, while decreasing capability-class, procurements through FY 2007.	**-15,780**
Computational Systems	
The decrease reflects a reduced amount of procurements for support infrastructure to ASC Red Storm, Purple and Blue Gene/L machines/platforms.	**-2,343**
Simulation Support	
The increase reflects the increased requirement for supporting a network with several platforms at various stages of delivery and installation	**+676**

	FY 2006 vs. FY 2005 ($000)
Advanced Architectures	
Funding is consistent with program element efforts	**-23**
University Partnerships	
The decrease reflects changes in the focus required by the Life Extension Programs to shift investments from longer-term research into near-term delivery of products	**-3,885**
1 Program/3 Labs	
Modest increase is consistent with program element efforts	**+466**
ASC Construction	
The decrease reflects completion of ASC construction projects in FY 2005, in accordance with the approved Project Execution Plans	**-3,202**
Total Funding Change, Advanced Simulation and Computing Campaign	**-35,917**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	324	334	344	+ 10	+ 3.0%
Capital Equipment	85,604	88,173	90,818	+ 2,645	+ 3.0%
Total, Capital Operating Expenses	85,928	88,507	91,162	+ 2,655	+ 3.0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappro-priated Balance
00-D-103, Terascale Simulation Facility (TSF)	90,927	62,873	24,852	3,202	0	
00-D-101, Distributed Information Systems Laboratory, (DISL)	36,143	23,916	12,227	0	0	
Total, Construction			37,079	3,202	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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

Pit Manufacturing and Certification Campaign

Funding Schedule by Activity [a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Pit Manufacturing and Certification Campaign					
Pit Manufacturing………………	105,731	130,411	120,926	- 9,485	- 7.3%
Pit Certification…………………	88,948	60,478	61,895	+ 1,417	+ 2.3%
Pit Manufacturing Capability………………………	10,687	13,393	23,071	+ 9,678	+ 72.3%
Modern Pit Facility……………	11,546	6,945	7,686	+ 741	+ 10.7%
Pit Campaign Support Activities at NTS………………	45,632	51,793	35,182	- 16,611	- 32.1%
Total, Pit Manufacturing and Certification Campaign…………	262,544	263,020	248,760	- 14,260	- 5.4%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Pit Manufacturing and Certification Campaign						
Pit Manufacturing	120,926	139,870	129,925	120,337	121,779	632,837
Pit Certification...	61,895	58,312	48,312	43,319	36,510	248,348
Pit Manufacturing Capability......................	23,071	34,430	44,685	53,037	54,272	209,495
Modern Pit Facility	7,686	18,104	27,794	34,023	38,155	125,762
Pit Campaign Support Activities at NTS	35,182	0	0	0	0	35,182
Total, Pit Manufacturing and Certification Campaign.............................	248,760	250,716	250,716	250,716	250,716	1,251,624

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 weapon stockpile.

This goal includes planning to establish a long-term responsive pit manufacturing infrastructure (e.g. a Modern Pit Facility).

[a] NNSA has included funding in the Engineering Campaign to continue the University Research Program in Robotics (URPR) initiated by Congress in previous years. Comparability adjustments are reflected in the amounts of –$663,000 in FY 2004 and -$550,000 in FY 2005.

Benefits to Program Goal 01.32.00.00 Pit Manufacturing and Certification

Within the Pit Manufacturing and Certification program, each subprogram makes unique contributions to Program Goal 01.32.00.00. The Pit Manufacturing subprogram objective is to produce pits in limited quantities and to sustain an interim 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 and to establish 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 Modern Pit Facility (MPF). The MPF subprogram objective is to prepare and implement plans for a responsive pit-manufacturing infrastructure with sufficient capability to provide for the long-term safety and reliability of the Nation's nuclear weapon stockpile. The Pit Campaign Support Activities at NTS provide essential field experiment support to pit certification.

To ensure budget and performance integration, the Pit Project worked with the Los Alamos National Laboratory (LANL) and established an integrated pit manufacturing and certification project plan to track and monitor the project. At monthly meetings, the Pit Project reviews project performance associated with earned value data. Based on these reviews, LANL and NNSA management have adjusted project scope and budget as required to meet goals.

Major FY 2004 Achievements

- Manufactured 4 (for a total of 6) W88 pits, as required to support the FY 2007 certification objective.

- Completed 20 percent (as planned within the new baseline) of major milestones, documented in the Pit Manufacturing and Certification Program Plan, on or ahead of schedule toward FY 2007 W88 pit certification.

- Completed 5 percent (as planned within the new baseline) of 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 initial Engineering Development Units (EDUs) beyond FY 2009.

- Completed 20 percent of major milestones, documented in the Pit Manufacturing and Certification Program Plan, required for Critical Decision (CD)-1 approval, on/ahead of schedule toward completion of the Modern Pit Facility (MPF).

- Completed all Nevada Test Site (NTS) milestones, documented in the Pit Manufacturing and Certification Program Plan, on or ahead of schedule toward execution of LANL major subcritical experiment (SCE) activities in support of the Pit Campaign.

The program completed a Program Assessment Rating Tool (PART) self-assessment for the second consecutive year. Although not selected for an Office of Management and Budget (OMB) PART evaluation, the Program Manager conducted a PART self-assessment and applied the results (strengths and shortcomings) to management of the program and preparation for potential selection by OMB in one of the next two years.

Major Program Shift

During the execution of the FY 2004 budget, the Pit Manufacturing and Certification Campaign restructured activities required to achieve W88 pit certification in FY 2007. The restructuring reduced near-term funding requirements and allowed for a reprogramming of funds to Directed Stockpile Work to support the W76 Life Extension Program and associated hydrodynamic test requirements in FY 2004. This funding shift for the W76 LEP was largely reflected in the Consolidated Appropriations Act, 2005 (P.L. 108-447) and is included as part of this FY 2006 budget request. Campaign performance measures reflect these actions.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	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%	T: 30%	T: 60%	T: 100%	N/A	N/A	N/A	By the end of FY 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	Annually, produce 10 certified W88 pits until required number has been manufactured (currently FY 2014).
Cumulative percentage of major milestones, documented in the Pit Manufacturing and Certification Campaign Program Plan, completed toward FY 2007 W88 Pit Certification (Long-term Output)	N/A	R: 20% T: 25%**	T: 50%	T: 70%	T: 100%	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%	T: 20%	T: 35%	T: 55%	T: 75%	T: 100%	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 in FY 2012 (Long-term Output)	N/A	N/A	N/A	N/A	N/A	N/A	T: 10%	T: 20%	By 2012, manufacture initial PIT EDUs for reliable replacement pits.
Cumulative percentage of major milestones, documented in the Pit Manufacturing and Certification Campaign Program Plan, completed toward completion of the Modern Pit Facility (MPF), by Critical Decision (CD)* Phase (Long-term Output)	R: CD-0 100%	R: CD-1: 17% T: CD-1 20%	T: CD-1: 35%	T: CD-1: 50%	T: CD-1: 85%	T: CD-1: 100%	T: CD-2: 50%	T: CD-2: 100%	By the end of 2013, complete final design and project is ready to initiate construction.

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of major Nevada Test Site (NTS) milestones, documented in the Pit Manufacturing and Certification Campaign Program Plan, completed toward execution of LANL major subcritical experiment (SCE) activities in support of Major Assembly Release (MAR) for W88 warhead using LANL-manufactured W88 pits (Long-term Output)	R: 20%	R: 40%	T: 70%	T: 85%	T: 100%	N/A	N/A	N/A	By 2007, complete all major NTS SCE milestones necessary to acquire integrating data to enable FY 2007 MAR for W88 warhead using LANL-manufactured W88 pits.
Annual cost per pit capacity to maintain a pit manufacturing capability. (EFFICIENCY MEASURE)	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*T: $10 M*	*T: $10.1 M*	*T: $10.2M*	*By 2021, reduce the cost to maintain a pit manufacturing capability from $10M per pit capacity in 2008 to $2.5M.*

* Note Critical Decision (CD)-0: Approve Mission Need; CD-1: Approve Alternate Selection and Cost Range; CD-2: Approve Performance Baseline; CD-3: Approve Start of Construction; & CD-4: Approve Start of Operations.
** Target was changed to 20% in program rebaselining caused by FY 2004 reprogramming; program met rebaselined target.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Pit Manufacturing..	**105,731**	**130,411**	**120,926**

The Pit Manufacturing subprogram objective is to produce pits in limited quantities and to sustain an interim pit manufacturing capability at existing Los Alamos National Laboratory (LANL) facilities. In FY 2006, LANL has committed to deliver the number of certifiable W88 pits required to support a FY 2007 W88 pit certification goal. The subprogram supports a multi-year effort by the National Nuclear Security Administration (NNSA) to reorganize activities and process lines at the TA-55 plutonium facility and the purchase and installation of new and/or backup equipment necessary to achieve the capability to manufacture ten W88 pits per year in FY 2007. This subprogram addresses the near-term requirement for newly manufactured pits and maintains an interim pit production capability to support the nuclear weapons stockpile.

Pit Certification..	**88,948**	**60,478**	**61,895**

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. The result of these efforts will be the issue of a Major Assembly Release (MAR) for the W88 warhead with a LANL-manufactured pit in FY 2007.

The major focus of FY 2006 activities is completion of the data analysis and post-shot reports for the Unicorn and Krakatau experiments, completion of the revised W88 simulation baseline, completion of preparations for the conduct of the neutron hardness test at the Sandia National Laboratories (SNL) Annular Core Research Reactor facility, and completion of pit destructive tests required to issue a Qualification Engineering Release. In addition, LANL and LLNL will perform planning and development of integral experiments in support of certification of reliable replacement pits in FY 2006. A major item of equipment (MIE), Assembly Chamber and Ancillary Infrastructure, is being initiated in FY 2005 to support this subprogram. Additional details on this MIE are included in the “Major Items of Equipment” table that follows.

Pit Manufacturing Capability......................	**10,687**	**13,393**	**23,071**

The Pit Manufacturing Capability subprogram objective is to establish the capability to manufacture replacement pits other than the W88 pit. The processes and technologies being developed support NNSA goals that include producing significantly less waste, lowering radiation dose to facility operators, and reducing the unit costs of manufacturing pits.

FY 2006 funding will be used to ensure progress in development of manufacturing processes for future replacement pits. The manufacturing processes for replacement pits will be established by the end of FY 2009, and engineering demonstration units will be manufactured by the end of FY 2012. The technologies being developed can be applied to an interim pit manufacturing capability at LANL

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

TA-55 for all pit types and the eventual establishment of a responsive pit manufacturing infrastructure for the long term.

Modern Pit Facility (MPF)...........................	**11,546**	**6,945**	**7,686**

Based on current pit lifetimes and stockpile requirements, NNSA is planning a responsive pit-manufacturing infrastructure with sufficient capability to provide for the long-term safety and reliability of the Nation's nuclear weapon stockpile. Since 1989, the United States has been without the capability to produce stockpile-certified plutonium pits that are an essential component of modern nuclear weapons. An interim pit manufacturing capability is currently being re-established at LANL, but this capability is not sufficient to support the long-term requirements of the nuclear weapons deterrent. Planning for a MPF with the capability to meet requirements is essential to establish a viable readiness posture. The NNSA will monitor pit lifetime assessments and the age of the stockpile to reaffirm MPF requirements.

Funding in FY 2006 will provide for continuation of design studies and facility requirements documents required to complete a Conceptual Design Report (CDR). MPF activities are organized consistent with the requirements of a major systems acquisition project, including implementation of an earned value management system.

The out year increments within the MPF line are required for future manufacturing capability and do not imply a decision on construction of a Modern Pit Facility.

Pit Campaign Support Activities at NTS....	**45,632**	**51,793**	**35,182**

The request provides funding for Nevada Test Site (NTS) activities required to ensure that the FY 2007 pit certification subprogram goal is met. The major activities in FY 2006 include the preparation and execution of subcritical experiments to confirm nuclear performance of the W88 warhead with a newly-manufactured pit. The request also supports development of advanced diagnostic and measurement techniques for pit certification.

Total, Pit Manufacturing and Certification Campaign................................	**262,544**	**263,020**	**248,760**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Pit Manufacturing	
The funding request will continue to support the manufacturing needs of W88 pit certification. The reduction in funding is consistent with a reduction in manufacturing support required for the revised certification project scope. Installation of additional equipment and removal of old equipment will continue to enable the LANL plutonium facility at TA-55 to achieve, by FY 2007, a sustained manufacturing rate of 10 W88 pits/year. Funding will also allow the continuation of manufacturing and quality infrastructure improvements to sustain consistency of the manufactured product.	**-9,485**
Pit Certification	
The funding increase maintains the certification project scope. FY 2006 efforts will concentrate on preparing for and executing the subcritical experiments vital to the certification effort and completing the destructive testing effort in support of the Qualification Engineering Release. The revised plan will still result in the issuance of a MAR for the W88 warhead in FY 2007 and relies on an increase in performance margin by specifying an improved gas system.	**+1,417**
Pit Manufacturing Capability	
The funding increase extends the development of pit manufacturing processes. This work includes installation and testing in a plutonium environment of an advanced pit casting and shaping module. Technology development activities will 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 reliable replacement pits	**+9,678**
Modern Pit Facility (MPF)	
The funding increase sustains MPF conceptual design, safety and environmental compliance, and facility technology development	**+741**
Pit Campaign Support Activities at NTS	
The funding decrease is consistent with the decrease in the scope of the subcritical experiments required to support the FY 2007 certification milestone. The funding requested ensures that LANL and the NTS will have sufficient resources to conduct experiments required to ensure certification of a W88 warhead with a LANL manufactured pit by the end of FY 2007.	**-16,611**
Total Funding Change, Pit Manufacturing and Certification Campaign	**-14,260**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	2,967	3,056	3,148	+ 92	+ 3.0%
Capital Equipment	13,482	13,886	14,303	+ 417	+ 3.0%
Total, Capital Operating Expenses	16,449	16,942	17,451	+ 509	+3.0%

Major Items of Equipment

(TEC $2 million or greater)

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Approp-riations	FY 2004	FY 2005	FY 2006	Acceptance Date
Assembly Chamber and ancillary infrastructure at LANL	7,573	7,573	0	0	3,000	4,573	2006
Total, Major Items of Equipment	7,573	7,573	0	0	3,000	4,573	

The DynEx Project needs a transportable, assembly chamber and ancillary infrastructure that house mechanical and electrical equipment supporting assembly operations for experiments essential for long-term pit certification activities. The DynEx experiment will be assembled, radiographed, and inserted into a confinement vessel within the assembly chamber. The assembly chamber is required to mitigate the dispersal consequences of an accident where high explosives and special nuclear material are collocated to 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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

Readiness Campaign

Funding Schedule by Activity

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	$ Change	% Change
Readiness Campaign[a b]					
Stockpile Readiness	35,173	39,095	31,400	- 7,695	- 19.7%
HE/Assembly Readiness	19,415	33,879	17,097	- 16,782	- 49.5%
Nonnuclear Readiness	32,894	32,628	28,630	- 3,998	- 12.3%
Tritium Readiness	59,221	58,264	62,694	+ 4,430	+ 7.6%
Tritium Readiness Construction	74,558	20,834	24,894	+ 4,060	+ 19.5%
Advanced Design & Production Technologies	73,229	76,746	54,040	- 22,706	- 29.6%
Total, Readiness Campaign	294,490	261,446	218,755	- 42,691	- 16.3%

FYNSP Schedule

	(dollars in thousands)					
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Readiness Campaign						
Stockpile Readiness	31,400	31,645	31,645	30,729	30,202	155,621
HE/Assembly Readiness	17,097	17,231	17,231	16,732	16,445	84,736
Nonnuclear Readiness	28,630	28,854	28,854	28,018	27,538	141,894
Tritium Readiness	62,694	87,808	87,808	91,637	93,838	423,785
Tritium Readiness Construction	24,894	0	0	0	0	24,894
Advanced Design & Production Technologies	54,040	54,463	54,463	52,885	51,978	267,829
Total, Readiness Campaign	218,755	220,001	220,001	220,001	220,001	1,098,759

[a] Starting in FY 2006, BWXT Y-12 is changing its cost-estimating model by moving overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities-Operations of Facilities. The funding changes net to zero and is reflected in the FY 2006 Budget Submission. Comparability adjustments are reflected in the amounts of -$10,755,000 in FY 2004 and -$8,505,000 in FY 2005.

[b] NNSA has included funding in the Engineering Campaign to continue the University Research Program in Robotics (URPR) initiated by Congress in previous years. Comparability adjustments are reflected in the amounts of –$555,000 in FY 2004 and -$521,000 in FY 2005.

Description

The goal of the Readiness Campaign is to develop or reestablish new manufacturing processes and technologies for qualifying weapon components for reuse.

The Readiness Campaign is an essential component of the Stockpile Stewardship Program with the responsibility to identify, develop and provide new or enhanced processes, technologies and capabilities to meet current nuclear weapon design and production needs and to provide quick response to national security mission requirements of the Nuclear Weapon Complex.

The Readiness Campaign is playing a critical role in revitalizing the nuclear weapons manufacturing infrastructure. The investments from this Campaign will improve both the responsiveness for the infrastructure and its technology base. A truly responsive infrastructure is the cornerstone of the new nuclear defense triad. To be considered a credible deterrent, this infrastructure must include a manufacturing capability with state-of-the-art equipment combined with cutting-edge applications of technology, as well as the ability to provide modified or enhanced capabilities and products quickly to meet emerging threats. The Readiness Campaign contributes substantially to these goals. Clearly, the Readiness Campaign is heavily focused on supporting the Life Extension Programs (First Production Units and initial production runs), while seeking also to address base workload capability requirements. Because the improvements support multiple LEPs and base workload requirements, these activities are not, and should not, be aligned to individual weapon systems.

Following the cessation of new weapons production ten years ago, the nuclear weapons complex production sites downsized. As the smaller complex focuses on refurbishment and maintenance instead of new production, some capabilities and capacity need to be reconstituted to produce weapon components and rebuild weapons as defined by the Life Extension Programs (LEPs). The nuclear weapons complex must develop testing capability for neutron generators produced at the Sandia National Laboratories (SNL), production capability for weapon components containing uranium materials and associated subassemblies at Y-12 National Security Complex, detonator and neutron generator part production at Los Alamos National Laboratory (LANL), production capability for high explosive components at the Pantex Plant and the technologies to qualify weapon components for reuse, and production of arming, firing and fusing components and similar electrical, mechanical and electronic components at the Kansas City Plant. The gaps in the complex's production readiness capability, which have been evaluated and documented, also reflect the reality that the production capabilities and capacity needed for the future are much different than those used to build the existing stockpile. There are several efforts ongoing to define how the Production Plants must modernize to establish flexible, agile, lean and efficient production capabilities and capacity. At the same time the production sites are filling gaps in production readiness, they must also address the modernization of these capabilities in order to establish a flexible, agile and efficient production infrastructure that will enable the complex to meet future requirements.

To ensure integration of budget and performance, the management of the Readiness Campaign completed a Program Assessment Rating Tool (PART) self-assessment for the second consecutive year. Although not selected for an Office of Management and Budget (OMB) PART evaluation, the Program Manager conducted a PART self-assessment and applied the results (strengths and shortcomings) to management of the program and preparation for potential selection by OMB in one of the next two years.

Benefits to Program Goal 01.33.00.00 Readiness Campaign

Within the Readiness Campaign program, 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 Program Goal 01.33.00.00. Stockpile Readiness is replacing or restoring Y-12 production capability and revitalizing aging processes. 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. HEWO ensures that the capability to requalify nuclear assembly components; to manufacture and assemble high explosive components; and to assemble, disassemble, and perform surveillance on nuclear weapons is adequate.

Major FY 2004 Achievements

- Synthesized first war reserve quality lot of high explosives in new high explosives synthesis facility.
- Procured, installed, and placed into operation twelve cost-effective, flexible, and agile manufacturing precision machines to support the B61 and W76 life extension programs and for further use in the base workload.
- Began irradiation of tritium-producing rods in the Tennessee Valley Authority's (TVA) Watts Bar reactor in October 2003 as planned, thus restoring the production of tritium for the first time since 1988. This accomplishment required that the reactor be licensed by the Nuclear Regulatory Commission for tritium production and that the tritium-producing rods be fabricated at commercial facilities.
- Completed 18 percent of 27 major manufacturing process milestones supporting stockpile production and life extension program requirements (5 of 5 scheduled milestones). Specifically, the Readiness Campaign:
    - Deployed integrated pit inspection station to support pit pre-screening for the life extension programs at the Pantex Plant.
    - Fabricated simulated tritium-producing rods to be used for start-up operations at the Tritium Extraction Facility.
    - Completed the high-power detonator facility at LANL, providing new capability and capacity while allowing the current facility to be used for process development in the future.
    - Developed joint test assembly micro-systems processes at the Kansas City Plant.
    - Recapitalized base workload production testing at the Kansas City Plant.
- Completed 16 percent of Tritium Extraction Facility (TEF) project (80 percent complete overall).
- Completed and demonstrated prototype microwave casting system that will reduce plant footprint and reduce energy costs significantly while improving quality and plant safety, and transitioned the system to final production version deployment.
- Delivered high-strength Nickel/Manganese micro springs fabricated by LIGA techniques to support life extension programs—the first LIGA parts for such purposes.

The program completed a Program Assessment Rating Tool (PART) self-assessment for the second consecutive year. Although not selected for an Office of Management and Budget (OMB) PART evaluation, the Program Manager conducted a PART self-assessment and applied the results (strengths and shortcomings) to management of the program and preparation for potential selection by OMB in one of the next two years.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of the major technology development milestones completed by advanced design and production technology (ADAPT), including model-based manufacturing, enterprise integration, and process development, resulting in enabling technologies for Directed Stockpile Work and Readiness in Technical Base and Facilities (Long-term Outcome)	N/A	N/A	T: 32%	T: 49%	T: 66%	T: 83%	T: 100%	N/A	By 2009, complete 100% of 22 advanced major technology milestones (Interim Target).
Cumulative percentage of the major manufacturing process efficiencies completed by high explosives and weapon operations, stockpile readiness, and nonnuclear readiness to support stockpile production and Life Extension Program (LEP) requirements (Long-term Output)	N/A	R: 15% T: 18%	T: 22%	T: 33%	T: 44%	T: 56%	T: 67%	T: 78%	By 2012, complete 100% of 21 major manufacturing process milestones (Interim Target).
Cumulative number of Tritium-Producing Burnable Absorber Rods irradiated in Watts Bar reactor (Long-term Output)	N/A	N/A	T: 240	T: 240	T: 480	T: 1040	T: 1040	T: 1840	By 2010, complete irradiation of 1840 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 MEASURE)	*R: 64%*	*R: 80%* *T: 80%*	*T: 87%*	*T: 96%*	*T: 100%*	*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 2004	FY 2005	FY 2006
Stockpile Readiness	**35,173**	**39,095**	**31,400**

Within this activity, the Y-12 National Security Complex (Y-12) is replacing or restoring production capability and revitalizing aging processes. These efforts will result in the revitalization of Y-12's ability to meets its mission requirements for the B-61, W-76, and W-80 Life Extension Programs (LEP) and Directed Stockpile Work in a more efficient and cost effective manner and provide capability for the future needs of the nuclear weapons complex. At present, critical manufacturing capabilities required for weapons refurbishments planned for FY 2006 and beyond do not exist, and they must be revitalized to ensure Y-12 responsiveness to meet these mission requirements. The Stockpile Readiness activity is the primary vehicle for this revitalization and is tasked with providing virtually all-new processing, machining, and inspection equipment required for the planned life extension programs. As much of Y-12's current capability is based on 20- to 40-year-old technology, the Stockpile Readiness activity is charged with improving basic manufacturing capability and appropriately deploying much needed related technology developed by the ADAPT activity and other technology programs.

In FY 2006, activities to replace, restore, or introduce new technologies for increased capability and productivity to manufacturing equipment at Y-12 associated with critical activities for key sub-assemblies for nuclear weapons will continue. Eight Major Items of Equipment (MIE) will be accepted and placed into production activities in FY 2006. These are a hydroforming unit, vacuum annealing equipment, a low-energy x-ray machine, a large-chamber scanning electron microscope, a coordinate measuring machine, an electron beam welder, an electro-polisher, and an electron beam weld inspection capability. These items replace non-functional or out-dated and non-supported manufacturing and inspection capabilities to support multiple life extension programs. Further details are provided in the MIE table. Also, Y-12 will establish capabilities for science- and model-based manufacturing and requalification of components, and re-establish manufacturing capability to support the life extension programs.

High Explosives and Weapon Operations..	**19,415**	**33,879**	**17,097**

The HEWO activity ensures that 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 is adequate to meet the current and projected needs of the nation's nuclear weapon stockpile. This activity is planned and structured to address the capability, capacity, 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 activity is charged with appropriately deploying much-needed, related technology developed by the ADAPT activity and other technology programs that improve efficiency and flexibility and will therefore increase responsiveness.

In FY 2006, this activity will provide high explosive main charge manufacturing capability.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Nonnuclear Readiness	**32,894**	**32,628**	**28,630**

The Nonnuclear Readiness activity provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers. The Nonnuclear Readiness activity 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 life extension programs, 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 and Responsive Infrastructure plans, are included.

In FY 2006, Nonnuclear Readiness activities will focus on continuing rebuilding/upgrading 2 of the 30 major testers at Sandia National Laboratories/New Mexico required to verify and certify the operation of neutron generators; and reconstitute mechanical, electronic, and electrical part production capability at the Kansas City Plant in support of multiple life extension programs as well as base workload for all nuclear weapons production.

Tritium Readiness	**59,221**	**58,264**	**62,694**

The Tritium Readiness activity re-establishes and operates the Department's capability for producing tritium to maintain the national inventory of tritium to support the nuclear weapons stockpile. Irradiation of tritium-producing rods began 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; however, they will remain as a "stand-by" capability (until at least FY 2010) due to the reduced tritium production requirement resulting from the new, smaller stockpile specified by the Nuclear Posture Review and the Nuclear Weapons Stockpile Plan submitted to Congress in June 2004. The first Watts Bar cycle will be completed in mid-FY 2005. Irradiated rods will then be removed and transported to a temporary storage location awaiting completion of the Tritium Extraction Facility (TEF) at the Savannah River Site. This action will complete the development-and-demonstration portion of the campaign. The Watts Barr system will continue to produce tritium during subsequent reactor irradiation cycles. The second cycle, beginning in mid-FY 2005, will continue through FY 2006.

Major activities in FY 2006 include: completion of the second irradiation cycle; preparations for the third irradiation cycle including incremental reactor fuel costs; handling and transportation of irradiated tritium-producing rods; fabrication of rods for the third irradiation cycle; and other project costs (OPC) associated with equipment and systems testing, crew training, and other activities in preparation of the completion and startup of the Tritium Extraction Facility.

Tritium Readiness Construction	**74,558**	**20,834**	**24,894**

The Project 98-D-125, Tritium Extraction Facility (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:

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

(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 gases 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 RHA and the above-ground tritium processing area and also discharge exhaust air to the environment via a 100-foot stack. Additional information is provided in the construction project data sheet.

	FY 2004	FY 2005	FY 2006
Advanced Design & Production Technologies	**73,229**	**76,746**	**54,040**

The Advanced Design and Production Technologies (ADAPT) activity 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. This achieves responsive infrastructure goals by providing agile manufacturing capabilities that can quickly respond to emerging stockpile requirements. At the laboratories and plants, ADAPT activities are developing fast-turn-around engineering options through virtual prototypes and implementing modern product data management and collaboration tools. Additionally, ADAPT activities are identifying, developing and integrating essential applied technology capabilities to achieve rapid product realization meeting Nuclear Weapon 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 2006, this activity will continue to meet stockpile stewardship goals by providing tools, equipment and processes that modernize the nuclear weapons complex and improve operational efficiency. Examples of deliverables include: development of specialized processes associated with the production of detonators at LANL; demonstration of non-destructive evaluation techniques to support the Life Extension Programs at LLNL; development of process-based quality methods for neutron generators, and development of the processes and requirements for use of Commercial Off-the-Shelf (COTS) electronic components at Sandia; and development of methodology to produce near-net shape objects at Y-12. In addition, this activity will complete projects to provide electron beam welding and weld inspection production processes at Y-12 and development and salt-less direct oxide reduction of uranium at Y-12.

	FY 2004	FY 2005	FY 2006
Total, Readiness Campaign	**294,490**	**261,446**	**218,755**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Stockpile Readiness	
This decrease is attributed to the postponement of lower priority Stockpile Readiness activity work (i.e., technology insertion, LEP risk mitigation projects, and major items of equipment) into FY 2007...	**-7,695**
HE and Weapon Operations	
This decrease is attributed to the postponement of lower priority HEWO activity work (i.e., explosive synthesis deployment, technology insertion and LEP risk mitigation projects). Projects selected for delay are those least likely to impact LEP needs. In FY 2006, this activity will continue to fund the highest priority projects slated to restore the high explosives pressing and machining and product requalification capabilities required to support DSW and LEP baselines..	**-16,782**
Nonnuclear Readiness	
This decrease reflects completion of activities in accordance with approved plans and a movement of activities needed to support the future Life Extension Programs and production improvements to FY 2007 and beyond.	**-3,998**
Tritium Readiness	
This increase reflects the transition from development to operation of the tritium production system. It also reflects operating costs for startup activities for the Tritium Extraction Facility..	**+4,430**
Tritium Readiness Construction	
Reflects planned construction requirements for the final year of funding for project 98-D-125, Tritium Extraction Facility, Savannah River Site	**+4,060**
Advanced Design & Production Technologies	
This decrease reflects the postponement of lower priority work related to models-based enterprise and responsiveness; the Information Technology System, NNSA ADAPT Enterprise Integration; the new microelectronic capability development and deployment at the Kansas City Plant; and developing technology and synthesis capability at Pantex for deployment by the HEWO activity.	**-22,706**
Total Funding Change, Readiness Campaign	**-42,691**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	4,085	4,207	4,333	+ 126	+ 3.0%
Capital Equipment	42,890	44,187	45,512	+ 1,325	+ 3.0%
Total, Capital Operating Expenses	46,975	48,394	49,845	+ 1,451	+ 3.0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2004	FY 2005	FY 2006	Unappropriated Balance
Project 98-D-125, Tritium Extraction Facility	407,899	287,613	74,558	20,834	24,894	0
Total, Construction			74,558	20,834	24,894	

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

Major Items of Equipment

(TEC $2 million of greater)

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2004	FY 2005	FY 2006	Acceptance Date
Disassembly Glovebox Y-12 National Security Complex................	18,900	15,000	14,040	960	0	0	FY 2004

Procure and install a glovebox to support a new production requirement.

Jig Borer #1, Y-12 National Security Complex...	5,500	2,900	1,100	1,800	0	0	FY 2005

Procure and install a high-precision mill to replace an obsolete, less-efficient piece of equipment.

Coordinate Measuring Machine #1, Y-12 National Security Complex................	8,121	7,641	3,041	3,400	1,200	0	FY 2005

Procure and install CMMs (2) to replace obsolete equipment that is no longer supported by the vendor.

Coordinate Measuring Machine #2, Y-12 National Security Complex................	4,205	3,965	200	3,765	0	0	FY 2005

Procure and install CMMs (2) to replace obsolete equipment that is no longer supported by the vendor.

Metal-Working Equipment, Y-12 National Security Complex.................	4,842	3,478	1,178	2,300	0	0	FY 2005

Procure and install new metal-working equipment to meet production requirements.

Electron Beam Welder, Y-12 National Security Complex.................	6,268	5,728	3,100	2,000	628	0	FY 2006

Procure and install an electron beam welder to replace an inoperable piece of equipment.

Hydroforming Unit, Y-12 National Security Complex........	3,275	3,095	0	2,230	865	0	FY 2006

Refurbish a hydroforming unit to meet production requirements.

Vacuum Annealing Equipment, Y-12 National Security Complex.................	3,703	3,493	0	2,158	1,335	0	FY 2006

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2004	FY 2005	FY 2006	Acceptance Date
Purchase and install vacuum annealing equipment to meet production requirements							
Low-Energy X-Ray Machine, Y-12 National Security Complex....	4,783	4,043	0	1,643	2,400	0	FY 2006
Procure and install a low-energy X-ray machine to restore a radiography capability.							
Scanning Electron Microscope, Y-12 National Security Complex..................	11,700	9,200	1,700	1,400	2,000	3,000	FY 2008
Install a larger-chamber Scanning Electron Microscope in order to support a new diagnostic capability.							
Electro Polisher, Y-12 National Security Complex....	1,903	1,753	0	600	1,153	0	FY 2006
Procure and install an electro polisher system. The condition and reliability of the current system has deteriorated as a result of chemical exposure during its 20 years of service.							
Coordinate Measuring Machine #3, Y-12 National Security Complex..................	2,120	2,000	0	0	2,000	0	FY 2006
Procure and install a CMM to replace obsolete equipment that is no longer supported by the vendor.							
Electron Beam Weld Inspection, Y-12 National Security Complex ...	2,644	2,494	0	385	2,109	0	FY 2006
Installs a new, non-destructive analytical and certification capability for the welded components on a major weapons system.							
Enhanced Material Consolidation, Y-12 National Security Complex	7,000	5,000	0	0	5,000	0	FY 2006
Deployment of an enhanced system to reduce part sizes after disassembly operations.							
9-MeV Linac, Y-12 National Security Complex....	4,210	3,500	0	0	2,000	1,500	FY 2007
Procure and install a 9-MeV Linac to replace existing one originally installed in the early 1970’s, which is no longer supported by the vendor, to support production radiography requirements.							

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2004	FY 2005	FY 2006	Acceptance Date
Shelf Life Enhancement, Y-12 National Security Complex....	2,120	2,000	0	0	0	2,000	FY 2007
Enhances shelf-life facilities for improved through-put.							
Microwave Deployment, Y-12 National Security Complex.................	6,197	5,697	0	0	2,547	3,150	FY 2008
Procure and install new machine for production use, based on operational lessons learned from prototype installed in 2004/2005.							
Computer Numerical Controller Lathe and Glovebox, Y-12 National Security Complex....	7,370	6,370	0	475	3,395	2,500	FY 2008
Procure and install CNC lathe and glovebox enclosure for special materials. The existing capability is difficult to maintain and is outdated, raising reliability concerns.							
Total, Major Items of Equipment, Y-12 National Security Complex......................				22,641	26,632	12,150	

98-D-125, Tritium Extraction Facility, Savannah River Site
Aiken, South Carolina

Significant Changes

- This project Total Estimated Cost (TEC) and Total Project Cost (TPC) were reduced by $166,037 by a rescission of 0.8 percent included in the Consolidated Appropriations Act. 2005 (P.L. 108-447). This amount will be taken out of the remaining project contingency.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 1998 Budget Request *(Preliminary Estimate)*.....................	1Q 1998	4Q 2002	1Q 1999	3Q 2005	TBD [a]	TBD
FY 2000 Budget Request	1Q 1998	3Q 2001	1Q 2000	4Q 2004	285,650	390,650
FY 2001 Budget Request *(Revised Baseline Estimate)*.............	1Q 1998	3Q 2001	1Q 2000	4Q 2004	323,000	401,000
FY 2002 Budget Request	1Q 1998	3Q 2001	1Q 2000	4Q 2004	323,000	401,000
FY 2003 Budget Request	1Q 1998	3Q 2001	1Q 2000	4Q 2004	323,000	401,000
FY 2004 Budget Request *(Performance Baseline)*	1Q 1998	3Q 2001	1Q 2000	4Q 2007	408,065	506,439
FY 2005 Budget Request	1Q 1998	3Q 2001	1Q 2000	4Q 2007	408,065	506,439
FY 2006 Budget Request	1Q 1998	3Q 2001	1Q 2000	4Q 2007	407,899	506,273

[a] Consistent with OMB Circular A-11, Part 3, full funding was requested for only preliminary and final design of the Commercial Light Water Reactor Tritium Extraction Facility in FY 1998.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1998	9,650	9,650	6,911
1999	6,000	6,000	5,889
2000	32,875 [a]	32,875	32,003
2001	74,835 [b]	74,835	56,618
2002	81,125	81,125	74,392
2003	83,128[c]	83,128	88,311
2004	74,558[d]	74,558	67,021
2005	20,834[e]	20,834	45,634
2006	24,894	24,894	29,120
2007	0	0	2,000

3. Project Description, Justification, and Scope

Tritium is a radioactive isotope of hydrogen used in all of the Nation's nuclear weapons. Without tritium, nuclear weapons will not work as designed. At present, no tritium is produced by the U.S. for the nuclear weapons stockpile. Radioactive decay depletes the available tritium by approximately 5.5 percent each year. In order for these weapons to operate as designed, tritium must be periodically replaced. Although tritium has not been produced by the U.S. for the stockpile since the shutdown of the last production reactor in 1988, tritium requirements have been met through reuse of tritium recovered from dismantled weapons. To replenish the tritium needs of the nuclear weapons stockpile, a new production capability is required to be on line by 2007. To meet this date, site preparation and construction of the Tritium Extraction Facility (TEF) began in FY 1998. As part of the dual track production strategy, stated in the Record of Decision for the Tritium Supply and Recycling Final Programmatic Environmental Impact Statement, issued on December 5, 1995, the Commercial Light Water Rector (CLWR) Tritium Extraction Facility shall be constructed at the Savannah River Site

[a] The original appropriation was $33,000,000. This was reduced by $125,000 by the FY 2000 rescission enacted by P.L. 106-113.

[b] The original appropriation was $75,000,000. This was reduced by $165,000 by a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

[c] The original appropriation was $70,165,000. This was increased by a reprogramming of $10,000,000 from prior year funding which was requested in FY 2002, but not approved until December 2002, and by an FY 2003 reprogramming of $5,000,000. The appropriation was reduced by $446,000 by a rescission and by $1,591,000 for the Weapons Activities general reduction enacted by P.L. 108-7, FY 2003 Omnibus Appropriations Act, Title, VI.

[d] The appropriated amount of $75,000,000 was reduced by $442,459 by a rescission of 0.59 percent (P.L. 108-199). The rescinded amount is restored in FY 2006.

[e] The appropriated amount of $21,000,000 was reduced by $166,037 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

(SRS). The CLWR TEF shall provide the capability to receive and extract gases containing tritium from CLWR Tritium Producing Burnable Absorber Rods (TPBARs), or other targets of similar design. The TEF will provide shielded remote TPBAR handling for the extraction process, clean-up systems to reduce environmental impact from normal processing and accidental releases, and delivery of extracted gases containing tritium to the Tritium Recycle Facility for further processing.

The facility includes two major buildings: (1) a 15,250 (approx) square foot Remote Handling Building (RHB) and (2) a 26,500 (approx) square foot Tritium Processing Building (TPB). The TPB will be built above ground, while the RHB will be partially below ground. 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 gases 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 RHA and the above ground tritium processing area and also discharge exhaust air to the environment via a 100-foot stack.

The TEF will provide steady-state production capability to the existing SRS tritium facility of as much as 3Kg of tritium per year, if needed. Final purification of gases containing tritium shall be performed in the augmented process equipment located in the existing SRS tritium facility.

The TEF shall have an operational life span of at least 40 years, minimize radiological and chemical releases to the environment; and minimize waste generation. The security requirements shall be such that TEF is designated as an exclusion area.

Project Milestones

As baselined, the operation of the TEF will be dependent on the completion and operation of the Tritium Facility Modernization and Consolidation Project. With this project being completed during 3rd Quarter, FY 2005, the final tritium systems will be available for processing extraction gases to ensure weapons stockpile requirements will be met in CY 2007.

FY 1997:	Initiation of Preliminary Design (Complete)	1Q
FY 1998:	Completion of Preliminary Design (Complete)	3Q
FY 1999:	Critical Decision (CD) 2B Approval to Begin Final Design (Complete)	4Q
	Initiation of Final Design (Complete)	4Q
	CD-3 - Approval to Begin Construction (Complete)	4Q
FY 2000:	Initiation of Site Preparation (Complete)	1Q

FY 2001:	Completion of Final Design (Complete)	3Q
	Completion of Site Preparation (Complete)	1Q
	Initiation of Facility Construction (Complete)	1Q
FY 2005:	Completion of Facility Construction (Final system turnover to startup testing)	2Q
FY 2007:	Initiation of Integrated System Testing with Tritium	3Q
	Project Completion	4Q
	CD-4 - Start of Facility Operation	4Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design Costs (Design Drawings, Specifications and Construction Support)	62,268	62,268
Design Management Costs (0.4% of TEC)	1,649	1,649
Project Management Costs (1.4% of TEC)	5,872	5,872
Total, Design Costs (17.1% of TEC)	69,789	69,789
Construction Phase		
Improvements to Land	6,801	6,801
Buildings	124,083	124,083
Special Equipment	85,178	85,178
Standard Equipment	8,403	8,403
Major Computer Items	7,630	7,630
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	26,173	26,173
Construction Management (3.5% of TEC)	14,307	14,307
Project Management (4.3% of TEC)	17,619	17,619
Total, Construction Costs (71.1% of TEC)	290,194	290,194
Contingencies		
Construction Phase (11.8% of TEC)[a]	47,916	48,082
Total, Contingencies (11.8% of TEC)	47,916	48,082
Total, Line Item Costs (TEC)	407,899[f]	408,065

[a] The FY 2005 appropriated amount of $21,000,000 was reduced by $166,037 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

5. Method of Performance

The Savannah River Site Managing and Operating (M&O) Contractor, Westinghouse Savannah River Company (WSRC), will be responsible for the design, construction, inspection and commissioning of the TEF to be built at the Savannah River Site. All conceptual, preliminary, and detail design work has been completed by site forces. Site preparation and construction of the Civil/Structural portion of the project has been completed. The remainder of the plant construction is in progress by the Savannah River Site M&O contractor, with a portion of the work awarded to fixed price subcontractors. System turnover to startup testing began in 2003, with turnover of the electrical system, and will run through 2006. The remainder of the plant construction will be completed in FY 2005. Final startup testing with radioactive gases will be performed by site forces beginning in FY 2007.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design (a)	164,820	10,100	5,500	2,844	500	183,764
Construction	99,304	56,921	40,134	26,276	1,500	224,135
Total, Line Item TEC	264,124	67,021	45,634	29,120	2,000	407,899
Other Project Costs						
Conceptual design cost	3,541	0	0	0	0	3,541
NEPA documentation costs	1,858	0	0	0	0	1,858
Other project-related costs	14,882	12,500	26,426	30,154	9,013	92,975
Total Other Project Costs	20,281	12,500	26,426	30,154	9,013	98,374
Total Project Cost (TPC)	284,405	79,521	72,060	59,274	11,013	506,273

[a] Design includes cost of engineered equipment.

7. Related Annual Funding Requirements

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Annual facility operating costs [a]	1,700	1,750
Annual facility maintenance/repair costs	2,700	2,800
Programmatic operating expenses directly related to the facility	7,150	7,600
Capital equipment not related to construction but related to the programmatic effort in the facility	750	800
GPP or other construction related to the programmatic effort in the facility	400	450
Utility costs	1,000	1,050
Total related annual funding (operating from FY 2006 through FY 2045)	13,700[h]	14,450

[a] This reflects the required operating funding in FY 2008 dollars for the TEF "Limited Operations" scenario. It does not include any existing RTBF funding in the SRS DP budget.

Readiness in Technical Base and Facilities

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Readiness in Technical Base and Facilities [a]					
Operations of Facilities [b,c] ……………………	1,142,357	1,272,379	1,160,783	- 111,596	- 8.8%
Program Readiness …………………………	111,452	103,542	105,738	+ 2,196	+ 2.1%
Special Projects [c]……………………………	35,373	31,402	6,619	- 24,783	- 78.9%
Material Recycle and Recovery	67,018	65,366	72,730	+ 7,364	+ 11.3%
Containers	16,052	15,858	17,247	+ 1,389	+ 8.8%
Storage [d]……………………………………	17,057	22,748	25,222	+ 2,474	+ 10.9%
Subtotal, Operations & Maintenance	1,389,309	1,511,295	1,388,339	- 122,956	- 8.1%
Construction	260,650	275,158	243,047	- 32,111	- 11.7%
Total, Readiness in Technical Base and Facilities ……………………….	1,649,959	1,786,453	1,631,386	- 155,067	- 8.7%

[a] Starting in FY 2006, BWXT Y-12 is changing its cost estimating model by moving overhead activities related to facility operations and maintenance into direct funded activities in Readiness in Technical Base and Facilities-Operations of Facilities. The funding changes net to zero and is reflected in the FY 2006 Budget Submission. Comparability adjustments are reflected in the amounts of $74,040,000 in FY 2004, $79,571,000 in FY 2005.

[b] Beginning in FY 2006, Environmental Management is transferring the newly generated waste programs at the Lawrence Livermore National Laboratory and Oak Ridge Y-12 Plant to Weapons Activities under RTBF - Operations and Facilities. Comparability adjustments are reflected in the amounts of $42,530,000 in FY 2004 and $45,433,000 in FY 2005. The FY 2006 estimate is $46,997,000.

[c] Starting in FY 2006, Special Projects will include only Landlord costs associated with the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo and pension liabilities. The remaining activities in Special Projects will be transferred to Operations and Facilities in FY 2006. Comparability adjustments are reflected in the amounts of $4,163,000 in FY 2004 and $9,772,000 in FY 2005.

[d] Beginning in FY 2006, the storage of surplus Highly Enriched Uranium (HEU) will be transferred from the Defense Nuclear Nonproliferation Appropriation to Weapons Activities under RTBF – Storage. Comparability adjustments are reflected in the amounts of $6,000,000 in FY 2004 and $6,000,000 in FY 2005. The FY 2006 estimate is $6,000,000.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Readiness in Technical Base and Facilities						
Operations of Facilities......	1,160,783	1,181,877	1,209,354	1,281,456	1,349,910	6,183,380
Program Readiness............	105,738	103,713	106,415	107,846	110,564	534,276
Special Projects.................	6,619	6,848	7,420	7,634	7,817	36,338
Material Recycle and Recovery..........................	72,730	78,435	87,218	89,619	92,274	420,276
Containers.........................	17,247	19,970	20,874	16,936	16,899	91,926
Storage..............................	25,222	26,507	26,681	27,508	28,428	134,346
Construction......................	243,047	328,172	359,152	384,828	394,212	1,709,411
Total, Readiness in Technical Base and Facilities	1,631,386	1,745,522	1,817,114	1,915,827	2,000,104	9,109,953

Operations and Maintenance

Description

The goal of the Readiness in Technical Base and Facilities (Operations and Maintenance) is to operate and maintain 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); and environmental, safety, and health costs.

The Readiness in Technical Base and Facilities (RTBF) Program operates and maintains National Nuclear Security Administration (NNSA) program facilities in a safe, secure, efficient, reliable and compliant condition so that they are operationally ready to execute nuclear weapons stockpile stewardship tasks on-time as identified by the Directed Stockpile Work and Campaign programs. This includes program contractor 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; the capability to recover and recycle plutonium, highly-enriched uranium, and tritium to support a safe and reliable nuclear stockpile; specialized storage containers sufficient to support the requirements of the nuclear weapons stockpile; and the design and construction of facilities which support the nuclear weapons complex. To accomplish this 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.

In addition, the NNSA must become more responsive to current and future national security challenges. This includes revitalizing the nuclear weapons infrastructure. As highlighted by the 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 the strengthening of the technical base.

The RTBF Program works in close partnership with the Facilities and Infrastructure Recapitalization Program (FIRP) to assure the facilities and infrastructure of the nuclear weapons complex are restored and thereafter maintained in appropriate condition to support the mission. RTBF provides funding for maintenance of the complex and making capital investments to sustain the complex into the future. These efforts focus on ensuring that facilities necessary for immediate programmatic workload activities are maintained sufficiently to support that workload. As discussed elsewhere in the budget, FIRP is a capital renewal and sustainability program that was established principally to reduce the large backlog of deferred maintenance, which had developed during the 1990s to an appropriate level consistent with industry best practices. FIRP supports this goal by developing corporate facility management practices required to properly maintain the complex and also provides additional funding dedicated to reducing deferred maintenance, recapitalizing the infrastructure, and reducing the maintenance base by eliminating excess real property. RTBF provides funding for maintenance of the complex and making capital investments to sustain the complex into the future. Between now and the time FIRP is completed, 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. It is anticipated that RTBF funding levels for maintenance, capital renewal, and disposition of excess real property will need to increase from present levels. NNSA is now gathering data to quantify future requirements for maintenance, capital renewal, and disposition of excess real property.

Benefits to Program Goal 01.34.00.00 Readiness in Technical Base and Facilities (Operations)
Within the RTBF program, six subprograms make unique contributions to Program Goal 01.34.00.00. Operations of Facilities 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 Directed Stockpile Work (DSW).   Program Readiness supports selected activities that support more than one facility, Campaign, or DSW activity, and are essential to achieving the objectives of the Stockpile Stewardship Program. Special Projects provides for activities that require special control or visibility, or do not fit easily into other budget categories, such as: landlord cost associated with conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo; and support of pension liabilities. Material Recycle and Recovery is responsible for the recycle 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. The Container sub-program responds to needs of the nuclear weapons complex by providing directive approved containerization research and development, design, certification, re-certification, test and evaluation, production and procurement, fielding and maintenance, and decontamination and disposal, and off-site transportation authorization of nuclear materials and components transportation containers. Storage provides effective storage and management of national security and surplus pits, highly enriched uranium (HEU), and other weapons and nuclear materials in compliance with Department of Energy (DOE)/NNSA requirements.

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 Readiness in Technical Base and Facilities Program has incorporated feedback from OMB into the

FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

For FY 2005 OMB evaluated the RTBF (Operations) Program using the PART. Overall, OMB rates 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 Facilities Infrastructure Recapitalization Program (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 PPBE process; and integrating a broader-scoped program with the FIRP.

Major FY 2004 Achievements

- Exceeded facility availability goals (mission essential facilities were available 96 percent of scheduled days) and supported all DSW and Campaign activities as required.
- Implemented Nuclear Safety Rule (10CFR 830) and Beryllium (Be) Rule (10CFR 850).
- Identified and completed clean up of legacy Be contamination.
- Closed Defense Nuclear Facility Defense Board (DNFSB) Recommendation 97-2 on criticality safety.
- Completed DNFSB 94-1/00-1 packaging commitments at Lawrence Livermore National Laboratory.
- Established funding profiles for stabilizing, repackaging, and disposal of Inactive Actinides.
- Achieved pit repackaging rate of 200 per month (DNFSB 99-1); exceeded 10,000 total and expect to close out this recommendation this fiscal year.
- Attained number of reportable accident rate of 1.9/200,000 hours of work – below the Bureau of Labor Statistics Standard average of 6.4.
- Attained NNSA complex-wide aggregate Facility Condition Index (FCI) of deferred maintenance per replacement plant value of 7.21percent for all mission – essential facilities and infrastructure.

Major Program Shifts

Beginning in FY 2006, the Office of Environmental Management (EM) is transferring the newly generated waste program at the Lawrence Livermore National Laboratory and Oak Ridge Y-12 Plant to the National Nuclear Security Administrative (NNSA). Responsibility for newly generated waste at other NNSA sites (i.e., Kansas City Plant, Los Alamos National Laboratory, Sandia National Laboratory, Pantex Plant, and the NNSA portion of the Savannah River) was transferred by prior agreements. Funding target transfers for FY 2007-2010 from EM to NNSA have been made across the FYNSP for these activities.

Beginning in FY 2006, funding for the storage of surplus HEU materials at the Y-12 National Security Complex, previously funded in Defense Nuclear Nonproliferation-Fissile Materials Disposition, is included in Readiness in Technical Base and Facilities-Storage. The FY 2006 estimate for this activity is $6,000,000; comparability adjustments have been made for FY 2004 and FY 2005.

Starting in FY 2006, Special Projects will include only Landlord costs associated with the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo and pension liabilities. The remaining activities in Special Projects have been moved to Operations of Facilities in FY 2006. Comparability adjustments have been made for FY 2004 and FY 2005.

Functional Category Definitions:
Consistent with Section 3114 of the FY 2004 Conference Report accompanying the National Defense Authorization Act for FY 2004, P.L. 108-136, definitions by functional category and the statement of amounts requested in FY 2006 are included in a table at the end of this section.

Maintenance (including repairs) - includes costs associated with maintenance activities that are required to sustain property, plant, and equipment in a condition suitable for it to be used for its designated purpose. Maintenance activities include: Preventive Maintenance, Predictive Maintenance, Corrective Maintenance, Maintenance Management, and General Maintenance.

Facilities Management and Support - includes costs associated with facilities and their ability to function effectively such as plant and maintenance engineering, facilities utilization analysis, modification and upgrade analysis, facilities planning and condition determinations, and rental of buildings/land. Does not include construction and maintenance costs.

Utilities - includes utility-related engineering associated with labor, operating plants and equipment, contract services for fuel, water treatment chemicals, or support needed to provide electric power, heat, steam, chilled water, portable water, process gases, and sanitary waste disposal to support business and research. This element includes all costs associated with contract services in support of utilities, such as fuel, water treatment chemicals, and control systems (also includes energy management related activities). Utilities include: Central Steam Facility, Central Chilled Water Facility, Water Supply System, Sanitary Waste Disposal System, and Electrical Power.

Environment, Safety and Health (ES&H) - includes environmental costs associated with the development, implementation, and maintenance of effluent controls, environmental monitoring, and surveillance, permitting, auditing and evaluation to assure environmental compliance, and pollution prevention. These activities, performed on a routine basis, are necessary to maintain compliance with federal, state, and local regulations, as well as applicable DOE Orders and Directives. ES&H includes safety and health costs associated with safety and health programs, such as preparation of work authorizations, emergency preparedness, fire protection, industrial hygiene, industrial safety, occupational medical services, nuclear safety, work smart programs, radiation protection, transportation safety, and management oversight.

Other Project Costs (OPC) - includes costs related to a project that are not represented in the Total Estimated Cost (TEC). OPC activities include, but are not limited to, project activities such as Conceptual Design Plans and reports, Project Execution Plans, National Environmental Policy Act (NEPA) documentation, construction project data sheets, maintenance procedures (to support facility startup), initial operator training, commissioning costs, operational readiness reviews and documentation, and operating procedures (to support facility startup).

Demolition, Decontamination, Deactivation and Decommissioning of Excess Facilities - includes the deactivation cost planned for decontamination and disposition of excess DOE weapons production facilities, equipment and land. Included are costs associated with preparing a facility for disposition as required in the Life Cycle Assets Management Directive, and, 2) surveillance and maintenance of those facilities (required to maintain the facility in a safe condition). These costs should be identifiable for both contaminated and non-contaminated facilities. Also included, are costs associated with the development of technology for the reclamation of buildings, equipment and land, so that they may be used for other purposes.

Capital Equipment (CE) - includes equipment that is not purchased as part of a line item project or is not attributed to a specific weapons production program.

General Plant Projects (GPP) - includes construction projects that are neither line item projects or attributed to a specific weapon production program. Includes miscellaneous minor new construction projects of a general nature, the TEC of which may not exceed the statutory limit of $10 million.

Expense Funded Projects (EFP) - includes construction and rearrangement projects paid for with expense funds and are not attributed to a specific weapon production program. Examples of project activities funded with operating dollars include normal maintenance and repair such as painting, cleaning, and small repair jobs not resulting in an addition, replacement of a retirement unit, or a betterment.

These categories do not represent the official budget or accounting structure for the Operations of Facilities activities. As such, the data was developed by cross walking the NNSA sites' Operations of Facilities costs, funded in weapons activities, into categories consistent with the definitions above and consistent with the FY 2005 President's budget submission.

FY 2006 RTBF Operations

(dollars in thousands)

Maintenance	183,560
Facilities Management and Support	535,934
Utilities	95,613
Environment, Safety, and Health	205,961
Other Project Costs	35,382
Demolition, Decontamination, Deactivation and Decommissioning of Excess Facilities	9,043
Capital Equipment (CE)	19,296
General Plant Projects (GPP)	19,711
Expense Funded Projects (EFP)	56,283
Total, Operations of Facilities	1,160,783

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Complete the milestones listed in the corrective action plan for the Departmental challenge of managing physical assets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual percentage of scheduled days that mission-essential facilities are available (Annual Output)	R: 96.5%	R: 96% 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.
Number of Reportable Accidents/200,000 hours of work [vs. Bureau of Labor Statistics (BLS) standard] (Annual Output)	R: 2.2	R: 1.9* T: <6.4	T: <6.4	T: <6.4	T: <6.4	T: <6.4	T: <6.4	T: <6.4	Annually, reportable accidents are below Bureau of Labor Statistics (BLS) national standard.
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 MEASURE)	*N/A*	*R: 7.2%* *T: 10%*	*T: 9%*	*T: 8%*	*T: 7%*	*T: 6%*	*T: 5%*	*T: 5%*	*By 2009, achieve industry standard FCI of 5% or below.*

*The final FY 2004 result of 1.9 was validated in November 2004 after the year-end Performance Accountability Report (PAR) was finalized. The PAR stated that this result was undetermined because only data through the 3rd quarter was available at the time.

Construction

Description

The goal of the Readiness in Technical Base and Facilities (Construction) is to plan, prioritize, and construct state-of-the-art facilities, infrastructure, and scientific tools that are not directly attributable to DSW or a campaign within approved baseline cost and schedule.

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 of the infrastructure and its technology base.

Benefits to Program Goal 01.35.00.00 Readiness in Technical Base and Facilities (Construction)
The RTBF Construction Program is a capital acquisition program 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 increase 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 is independently reviewed and funded by Congress based on the mission need identified in the Construction Project Data Sheet submitted to Congress. The RTBF Construction projects are listed in the Capital Operating Expenses and Construction Summary table.

Major FY 2004 Achievements (Construction)

- Initiated designs/attained Critical Decision (CD) –1 or cancelled for cause: 8 facilities.
- Initiated Construction/ attained CD-3 or cancelled for cause: 7 facilities.
- Completed construction/attained CD-4 with approved cost, scope & schedule: 10 facilities.
- Completed Atlas construction project in third quarter FY 2004.
- Completed Isotopes Sciences Facility project in third quarter FY 2004.
- Completed SMRI Tritium Facility Modernization and Consolidation project in fourth quarter FY 2004 and awarded the Secretary’s Award of Achievement for Project Management.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	There were no related targets.	There were no related targets.

Plan, prioritize, and construct state-of-the-art facilities, infrastructure, and scientific tools (that are not directly attributable to DSW or a campaign) within approved baseline cost and schedule.

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Number of projects initiating designs/ attaining Critical Decision (CD)-1 or cancelled for cause (Annual Output)	R: 2	R: 8 T: 11	T: 3	T: 6	T: 2	TBD	TBD	T: 4	Annually, complete designated number of projects initiating designs/ attaining Critical Decision (CD)-1, or cancel for cause.
Number of projects initiating construction/attaining CD-3, or cancelled for cause (Annual Output)	R: 3	R: 7 T: 8	T: 4	T: 3	T: 5	T: 5	T: 1	TBD	Annually, complete designated number of projects initiating construction/attaining CD-3, or cancel for cause.
Number of construction projects completed/attained CD-4 within approved scope, cost, and schedule baselines (EFFICIENCY MEASURE)	*R: 3*	*R: 9* *T: 9*	*T: 9*	*T: 4*	*T: 5*	*T: 2*	*T: 3*	*T: 1*	*Annually, complete designated number of construction projects completed/attaining CD-4 within approved scope, cost, and schedule baselines.*

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Operations of Facilities................................	**1,142,357**	**1,272,379**	**1,160,783**

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 Directed Stockpile Work (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 Defense Nuclear Facilities Safety Board (DNFSB) recommendations, and implementation of rules (such as the new Safety Basis Rule 10CFR830, Nuclear Safety Management) and maintenance of the authorization basis (AB) documentation for each facility. Infrastructure support activities include facility-related costs which 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; Stockpile Management Restructuring Initiative which includes operating support costs related to production facility downsizing such as component rebuilds, process transfer/downsizing, qualification and process prove-in, and facility shutdown; and facility startup/standby/Decommissioning & Decontamination (D&D) which includes costs associated with maintaining facilities in a standby status for possible further use or decontaminating and decommissioning. The funds also include support for the TA-18 Early Move of Special Nuclear Material to other locations.

Maintains current and future operations with 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..	**103,807**	**101,278**	**98,548**

Operation of the Kansas City Plant provides infrastructure support to non-nuclear component manufacturing and engineering activities for a broad array of DSW weapons programs, and technology development and deployment activities in Engineering and Readiness campaigns.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), provided an additional $5 million for the Kansas City Plant.

Lawrence Livermore National Laboratory	**65,425**	**77,062**	**85,564**

Funds activities at Lawrence Livermore National Laboratory including, but not limited to building and building system maintenance; utilities; maintenance of programmatic equipment; environment, safety and health; implementation plan actions addressing the Defense Nuclear Facilities Safety Board (DNFSB) recommendations; implementation of rules (such as 10CFR830, Nuclear Safety Management); infrastructure support; and Other Project Costs (OPCs) for RTBF line item construction projects. Nuclear Materials Technology Program (NMTP) facilities (Superblock); High Explosive Test Facilities (High Explosive Applications Facility (HEAF) and HE Hydrotest Bunker Site 300; Physics

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Facilities, including light gas guns; Engineering Facilities; and Nevada management and operations activities.

Beginning in FY 2006, NNSA assumes the responsibility and funding to manage newly generated waste responsibilities at LLNL to ensure hazardous, radioactive and mixed wastes are stored, treated, certified, and shipped to off site disposal safely and in compliance with Federal, State, and local regulations and DOE orders. FY 2004 and 2005 reflect comparable funding adjustments of $20.395 million and $22 million respectively. The FY 2006 estimate is $25 million.

	FY 2004	FY 2005	FY 2006
Los Alamos National Laboratory	**314,787**	**306,042**	**304,212**

The Los Alamos National Laboratory RTBF Program maintains facilities and technologies in an appropriate condition such that they are not limiting factors in the accomplishment of the DP mission. This category includes DP's share of the cost of 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. At LANL, DP direct funded facilities include the Engineering, Tritium, Dynamic Experimentation, Los Alamos Neutron Science Center (LANSCE), Waste Management, Nuclear Materials Technology (TA-55 & CMR), Beryllium Technology, and Nuclear Materials Storage and the Los Alamos Critical Experiments Facility (TA-18). Warm standby work scope includes conventional facility management, infrastructure and utilities, and operation & maintenance of special equipment. This activity also includes infrastructure support: Line Item OPCs, GPP Construction, Seismic Studies, Authorization Basis, Beryllium Rule, and Program Management.

	FY 2004	FY 2005	FY 2006
Nevada Test Site	**75,105**	**60,189**	**67,057**

Funds NTS key facility activities including, sub-critical experiments at U1a, dynamic materials property experiments at Joint Actinide Shock Physics Experimental Research (JASPER) Facility, nuclear material handling and emergency operations at the Device Assembly Facility (DAF), and pulsed power experiments at Atlas. Specific facilities supported include the Device Assembly Facility (DAF); U1a Complex; Joint Actinide Shock Physics Experimental Research Facility (JASPER), Control Point Complex, Atlas, High Explosive Facility, Bechtel Nevada Los Alamos Technical Facility, Bechtel Nevada Livermore Technical Facility, and the North Las Vegas Complex.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), states that from within available funds, an additional $5 million is provided to support the operation for the facilities at the Nevada Test Sites, including the Device Assembly Facility, the Joint Actinide Shock Physics Experimental facility, operations associated with the Atlas relocation project, U1a operations, general plant projects and other NTS support facilities.

	FY 2004	FY 2005	FY 2006
Pantex Plant	**93,922**	**126,067**	**96,763**

Includes the cost of all structures, equipment, systems, materials, procedures and facility support personnel necessary to provide program sponsors with a facility that is safe, secure, reliable and "ready for operations." This includes support services related to the conduct of safe facility or activity operations, such as maintenance workers, radiological control technicians, general engineering support

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

staff, environment, safety and health professionals, and other workers conducting facility readiness activities.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), provided an additional $45 million for the Pantex Plant.

Sandia National Laboratories......................	**149,214**	**153,984**	**140,347**

Operates the Defense Program-critical programmatic capabilities and associated facilities in warm standby mode. Provides the staff required to keep the capability operational. The capabilities and associated facilities include: Tech Area III Full Scale Test, Microelectronics Development Laboratory, Compound Semi-conductor Laboratory, Experimental Aerodynamics (Wind Tunnel), Tech Area IV Accelerators, Tech Area V Reactors, Tonopah Test Range, Z Accelerator (Z) single shift operations and Z refurbishment, Nanosciences Laboratories, Electromagnetic Test Facilities, Process and Environmental Test Laboratories, California Environmental Test Facilities, Albuquerque Environmental Test Facilities, Neutron Generator Production Facility, and Primary Standards Laboratory, and Waste Management Activities.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), includes an additional $13 million within the funds provided for modification of the Z-Beamlett laser at the Z Pinch at Sandia National Laboratory.

Savannah River Site (SRS)...........................	**79,357**	**91,358**	**94,378**

Operations of Facilities include facilities management and support activities that maintain the facilities and infrastructure in a state of readiness for mission operations. Activities at the SRS include: performing preventive, predictive, and corrective maintenance of process and infrastructure equipment/facilities; and conducting environmental, safety, and health activities to ensure the well being of SRS workers, the public, and the environment. Also included are contracted costs of providing utilities to the Tritium Facility, as well as OPCs associated with RTBF line item projects. Capital equipment and general plant projects that meet base maintenance and infrastructure needs are planned and executed to maintain safety.

Y-12 National Security Complex.................	**223,809**	**256,006**	**208,262**

Provides operational and maintenance costs for the following “mission essential” buildings: 9201-1, 9201-5, 9201-5N, 9202, 9204-2, 9204-2E, 9204-4, 9206, 9212, 9215, 9720-5, 9995, and 9998. Includes activities required for continuous operations of each building and specific upgrade projects related to non-routine repairs, maintenance or alteration of the facility and facility systems. Also includes specific environment, safety and health activities such as development of new authorization basis documentation, and implementation of the Fire Protection Program Comprehensive Corrective Action Plan, and OPCs for construction line items. Beginning in FY 2006, NNSA assumes the responsibility and funding at Y-12 to collect, store, treat, and dispose of newly generated low-level, mixed low-level, hazardous, and sanitary waste. FY 2004 and 2005 reflect comparable funding adjustments of $21.549 million and $19.789 million respectively. The FY 2006 estimate is $21.997 million.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), states that from within funds provided for operations of facilities, the conferees provide an additional $50 million for the Y-12 Plant in Oak Ridge, Tennessee.

Institutional Site Support	**36,931**	**100,393**	**65,652**

Supports prioritized activities across the nuclear weapons complex: DNFSB activities for materials such as inactive actinides, corporate initiatives that support activities that include occurrence reporting systems and quality assurance working groups, including systems engineering, program risk identification and management, program and enterprise modeling, and independent and internal technical reviews such as, nuclear weapons complex responsiveness to evolving requirements, highly enriched uranium supply/demand, tritium supply/demand, and condition assessment surveys.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), states that from within available funds, for continued facility upgrades, refurbishments, operation and maintenance costs associated with and for the National Center for Combating Terrorism (NCCT) at the Nevada Test Site, an additional $25 million is provided. Within the funds provided for NCCT, the conference agreement includes
$2.5 million to the UNLV Research Foundation to support the ongoing programs of the Institute for Security Studies including research and development, training and collaborative activities related to combating terrorism, emergency response and consequence management. The recommendation also includes, within funds provided, $2.5 million for the UNR Fire Sciences Academy. Finally, the conferees provide an additional $1million to the Nevada Site Office for testing and enablement of water filters to mitigate consequences of radionuclides in drinking water.

Program Readiness	**111,452**	**103,542**	**105,738**

Supports selected activities that rely on more than one facility, Campaign, or Directed Stockpile Work (DSW) activity, and are essential to achieving the objectives of the Stockpile Stewardship Program. Ongoing activities include manufacturing process capabilities required to support the stockpile; critical skill needs; and pulsed power science and technology.

Nevada Test Site 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 compliance for environmental issues that resulted from years of nuclear testing activities in Nevada is 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 2006, along with historical archiving and seismic monitoring activities. The Borehole Management Program will continue to close the remaining NTS legacy boreholes at a closure rate of approximately 80 boreholes per fiscal year. The NTS Equipment Revitalization Program will continue to replace and modernize NTS equipment that is obsolete.

Pulsed Power Sciences, Microsystems, and Other Technical Support activities at Sandia National Laboratories provide the infrastructure readiness required to support activities directly related to the construction or tooling necessary for the successful deployment of microsystems in nuclear weapons;

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

maintain the capabilities to design and improve pulsed power machines in support of Inertial Confinement Fusion, weapon physics and weapon effects; and support defense nuclear materials stewardship to research, develop, test, and evaluate advanced technologies for material management systems to enhance the safety, security, and accountability of nuclear weapons and materials during storage, handling, and transportation.

This activity also supports the hiring of individuals with the critical skills needed to sustain production and engineering capabilities in support of Directed Stockpile Work at three primary production sites without a major source for these skills. In FY 2006, personnel would perform technical apprenticeships, and knowledge preservation and development projects. For example, KCP has identified over 900 critical skill people. In FY 2005, approximately 180 of the plant associates are eligible to retire and an additional 285 become eligible during the FYNSP period.

In addition, this activity supports the Y-12 Chronic Beryllium Disease Prevention Program (CBDPP) and provides for a sampling and monitoring program to assure that workers are adequately protected from the hazards associated with handling of Beryllium.

In FY 2006, support for the conduct of Nuclear Criticality Safety Program (NCSP) is funded at $10.1 million. 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	**35,373**	**31,402**	**6,619**

Special Projects provides for activities that require special control or visibility, or do not fit easily into other categories. These include support of $4.0 million for Landlord costs associated the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo. Also provides for support of $2.6 million for pension liabilities.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005, (P.L 108-447), states that from within the available funds, $3 million for magnetized high energy density matter research at the Nevada Terawatt facility at the University of Nevada-Reno; and $1 million to continue the ongoing administration infrastructure support grant for the UNLV Research Foundation; $750 thousand to the UNLV Research Foundation to establish and certify a radioanalytical services laboratory to support emergency management training activities and actual radiological events; $10 million for settlement of claims for the Pajarito Plateau homesteaders pertaining to acquisition of their lands and property during the Manhattan Project; and $8 million for Los Alamos County Schools Program. Also, from within available funds, $5 million for National Energy Technology Laboratory to use the Plasma Separation Process to develop high energy isomers and isotopes for energy storage and utilization; $2 million for the Airborne Particulate Threat Assessment program; $2 million for the Secure Wireless Technology Program; $1 million for the Total Asset Management (TAMS) program; $2 million for Integrated Collaborative Prototyping for Y-12; and $2 million for development of multi-platform dosimeter Radiation Detection devices. The conference provides $2 million for the National Center for Biodefense at George Mason University in Virginia.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Material Recycle and Recovery	**67,018**	**65,366**	**72,730**

The Material Recycle and Recovery activity 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, including meeting the directive schedule for tritium reservoir refills.

The RTBF Material Recycle and Recovery activity includes the response to DNFSB Recommendations 94-1, 97-1, and 2000-1; 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 the Y-12 National Security Complex (Y-12), LANL, and Savannah River Site (SRS) Tritium Facility.

At Y-12, Materials Recycle and Recovery includes the following major activities: Purification and Conversion to UO3, 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 (CSMO) that manages the receipt, storage, and shipment of enriched uranium scrap, the Precious Metals Business Center, which provides a cost effective service to many users within the DOE complex, and deactivation of building 9206.

At the LANL, the Material Recovery and Recycle activity includes: Nuclear Material Processing, including plutonium stabilization and repackaging and operation of the Special Recovery Line; Nuclear Materials Information Management, including Integrated Nuclear Material Information System and the Laboratory Information Management System. The material stabilization and repackaging effort addresses safety concerns raised by the DNFSB in recommendations 94-1 and 2000-1. It focuses on stabilization of plutonium bearing items in the TA-55 and CMR vaults by various means including aqueous and pyro-chemical processing. The Special Recovery Line provides the nation’s only capability to process tritium contaminated pits. The line is used to disassemble and decontaminate the pits and is vital in support of pit storage at the Pantex Site. The Highly Enriched Uranium (HEU) activity decontaminates plutonium contaminated HEU shells and converts the uranium metal to oxide for shipment to Y-12. This activity also processes HEU parts from other activities at LANL (such as the Special Recovery Line) to prevent the accumulation of materials in the TA-55 vault.

At the SRS Tritium Site, Material Recovery and Recycling includes recovery and purification of tritium, deuterium, and helium-3 gases from reservoir recycle gas and facility effluent cleanup systems. This activity also processes materials received from other sites and performs enrichment of gas mixtures to support the Limited Life Component Exchange mission.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Containers..	**16,052**	**15,858**	**17,247**

The Containers activity includes container research and development, design, certification, recertification, test and evaluation, production and procurement, fielding and maintenance, and decontamination and disposal, and off-site transportation authorization of nuclear materials and components transportation containers. Life Extension Program required shipping containers are funded under the Directed Stockpile Work program. The Containers activity supports current and future operations in the face of a smaller workforce, increasing maintenance requirements, and ever more stringent safety regulations providing new and upgraded containers that meet modern safety performance standards for transport of hazardous materials. Efforts will include efficiencies provided by close coordination of planning and operations with users/customers minimizing the number of new specialized containers by developing new container systems that can accept a broader array of contents with improved safety, security and maintainability. In FY 2006, it includes the development of the DPP-1, (a container to transport War Reserve Pits replacing the FL container), the multi-actinide and high activity modification to the ES-3100 and adding additional contents to the DPP-2 (a multipurpose container to replace the DT-22). The containers that are being replaced no longer meet the new requirements and will not be capable of being recertified. This activity also includes the establishment of a container inventory tracking system and database so that packaging inventories can be tracked and managed with much greater efficiency throughout the weapons complex, providing container support for the movement of TA-18 Early Move of Special Nuclear Material to other locations, and the maintenance and recertification of the H-1616 and SR101.

A major effort in the past couple of years has been the procurement of sealed inserts for the AL-R8 container. This effort was responsive to DNFSB Recommendation 99-1which required the repackaging of surplus pits. This effort is scheduled for completion in FY 2005.

Storage...	**17,057**	**22,748**	**25,222**

The Storage activity provides effective storage and management of national security and surplus pits, highly enriched uranium (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. The storage program also provides programmatic planning for nuclear material requirements, including analysis, forecasting, and reporting functions as well as demand analysis for nuclear materials as designated by the NNSA or other drivers. Beginning in FY 2006, in order to simplify accounting for the storage of surplus HEU materials at the Y-12 National Security Complex, funding was transferred into this category from Defense Nuclear Nonproliferation. FY 2004 and FY 2005 reflect comparable funding adjustments of $6 million; the FY 2006 estimate is $6 million.

The FY 2006 increase is due to the commencement of characterizing and repackaging material that will be moved into Highly Enriched Uranium Manufacturing Facility (HEUMF) when complete. If this work is delayed until the HEUMF is completed material consolidation will not occur in a timely fashion, Y-12 will delay shut down of remote vaults, which will increase security risks, and reduce

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

overall operating dollars. The intent is to have all material characterized and packaged to meet current HEUMF schedule.

Construction	**260,650**	**275,158**	**243,047**

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 of the infrastructure and its technology base. The RTBF Construction projects are listed in the Capital Operating Expenses and Construction Summary Table.

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 Future-Years Nuclear Security Program (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.

Total, Readiness in Technical Base and Facilities	**1,649,959**	**1,786,453**	**1,631,386**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Operations of Facilities	
Kansas City Plant – decrease reflects a Congressional add-on in the FY 2005 appropriation not supported in the FY 2006 request, partially offset by an increase for maintenance activities	**-2,730**
Lawrence Livermore National Laboratory - increase is provided to make progress on overdue maintenance and upgrade of major programmatic equipment; inflation for labor cost increases; for unique Inactive Actinide projects to determine material disposition and funding to execute disposition; and for the configuration management program at defense nuclear facilities	**+8,502**
Los Alamos National Laboratory –decrease is consistent with programmatic needs in FY 2006	**-1,830**
Nevada Test Site – increase in funding will accommodate early move of special nuclear material from TA-18 at LANL to the Device Assembly Facility at NTS	**+6,868**
Pantex Plant –decrease reflects a Congressional add-on in the FY 2005 appropriation	**-29,304**
Sandia National Laboratories – decrease reflects a Congressional add-on in the FY 2005 appropriation	**-13,637**
Savannah River Site - increase is due to the start of National Pollutant Discharge Elimination System Outfall project to conform to new copper discharge limits as dictated by the State of South Carolina; start of Automated Reservoir Management System (ARMS) replacement project to replace the antiquated reservoir tracking system currently in place	**+3,020**
Y-12 National Security Complex – decrease reflects a Congressional add-on in the FY 2005 appropriation not supported in the FY 2006 request, partially offset by an increase for maintenance activities	**-47,744**
Institutional Site Support – decrease reflects Congressional add-ons in the FY 2005 appropriation including funding to support the National Center for Combating Terrorism (NCCT) at the Nevada Test Site; also reflects decreased funding for anticipated workman's compensation claims, corporate taxes, and disposition of special nuclear materials at various sites, systems engineering, program risk identification and management, program and enterprise modeling, and independent and internal technical reviews	**-34,741**
Total, Operations of Facilities	**-111,596**
Program Readiness	**+2,196**

The increase provides for escalation to support ongoing activities such as the Nuclear Criticality Safety Program and pulsed power activities at SNL.

	FY 2006 vs. FY 2005 ($000)
Special Projects	**-24,783**

Beginning in FY 2006, funding only supports landlord costs associated with the conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo and pension liabilities. All other activities are funded in Operations of Facilities. Decrease reflects Congressional add-ons in the FY 2005 appropriation.

Material Recycle and Recovery .... **+7,364**

Increase is due to scope for increased production in enriched uranium wet chemistry, operation of the Oxide Conversion Facility (OCF); full production of the Reduction Process; the establishment of Enriched Uranium production capability; the initiation of Salvage operation and filter tear down; a slight increase in Material Transport and MRR Exhaust Systems, which provide for the handling and storage of in-process materials and funding to fully support DNFSB 00-1 recommendation. Increase is partially offset through the completion OCF start-up.

Containers .... **+1,389**

Net increase is attributed to activities to support TA-18 Early Move of Special Nuclear Material to other locations, development of a new shipping container (DPP-1) to replace the current FL container; start of Bulk Tritium Shipping Package development to replace UC-609, offset by decreases associated with the completion of repackaging activities responsive to DNFSB 99-1.

Storage .... **+2,474**

The increase is due to the commencement of characterizing and repackaging material that will be moved into Highly Enriched Uranium Manufacturing Facility (HEUMF) when complete. If this work is delayed until the HEUMF is completed material consolidation will not occur in a timely fashion, Y-12 will delay shut down of remote vaults, which will increase security risks, and reduce overall operating dollars.

Construction .... **-32,111**

- 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 2001, 2003, 2004, 2005, and 2006. Due to changing mission requirements, the Capability for Advanced Loading Missions project 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.

- NNSA is planning to consolidate high-explosive fabrication. Projects affected by the consolidation include: High Explosive Pressing Facility, PX; DX High Explosives Characterization Project, LANL; Energetic Materials Processing Center, LLNL. No construction funding is requested for these projects in FY 2006.

	FY 2006 vs. FY 2005 ($000)
▪ FY 2006 funding is also requested to initiate design for five new subprojects: TA-55 Radiography Facility, LANL; TA-55 Reinvestment Project, LANL; Radioactive Liquid Waste Treatment Facility Upgrade, LANL; Building 942 Renovation, SNL, CA; and Uranium Processing Facility, Y-12.	
▪ Finally, FY 2006 funding is requested to initiate three new line item construction projects: Replace Fire Station No. 1 and No. 2, NTS; Tritium Facility Modernization, LLNL; and Building B-3 Remediation, Restoration and Upgrade, NTS.	
Total Funding Change, Readiness in Technical Base and Facilities..........................	**-155,067**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects..................................	18,843	19,392	19,973	+581	+ 3.0%
Capital Equipment	41,775	42,080	43,342	+1,262	+ 3.0%
Total, Capital Operating Expenses	60,618	61,472	63,315	+ 1,843	+ 3.0%

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

Z Refurbishment Project
Sandia National Laboratories/ Albuquerque, New Mexico

- This is the first time this operating expense-funded project data sheet is being submitted. Funding has been provided from the normal operating budget within the Energy and Water Development Appropriations Act.

- The project is progressing as planned and received CD-2 approval in September 2004. This project is being managed in accordance with DOE M 413.3.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	Design Work Initiated	Design Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget Request *(Current Estimate)*..............	2Q FY 2002	2Q FY 2006	2Q FY 2006	1Q FY 2007	61,710	90,430

2. Financial Schedule

Operating Expense Funded
(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2002	7,960	7,960	1,222
2003	18,128	18,128	6,219
2004	21,565	21,565	8,546
2005	9,557	9,557	23,220
2006	4,500	4,500	14,255
2007	0	0	8,248

3. Project Description, Justification and Scope

Project Description

The Z Accelerator is housed in Building 983 in Tech Area IV at Sandia National Laboratories in Albuquerque, NM. Refurbishment will occur in the same physical space within the existing building and the existing exterior tank structure. The project is a Readiness in Technical Base & Facilities (RTBF) operationally funded refurbishment of an existing research machine. Hardware and system designs will involve evolutionary modifications to the existing architecture, performed primarily by existing SNL Pulsed Power Sciences Center scientific, engineering, and design staff.

Project Justification

The environments created in the Z accelerator have enabled critical experiments that address many Stockpile Stewardship Program (SSP) and High Energy Density Physics (HEDP) Program needs. The energetic (1.6 MJ), intense (>200 TW) x-ray sources provide x-rays for radiation effects testing, radiation transport and hydrodynamics experiments, and inertial confinement fusion (ICF) experiments. In addition, techniques have been developed to perform equation of state (EOS) experiments by directly utilizing the high magnetic fields associated with the short-pulse, very high current density and large-current flow. The pressures reached through these isentropic compression experiments (ICE), or from high velocity flyer plate configurations, are unique in a laboratory for performing dynamic material property experiments. Z is a multifaceted workhorse facility to the HEDP community.

With success, however, has come many operational challenges for Z, which today is an over-subscribed user facility supporting numerous customers. Demand for the machine now exceeds the existing operational capacity by over a factor of two. Operational efficiency is limited largely because the majority of Z's hardware is 20 years old, was not optimized for z-pinch applications, and was not designed for the rigors of daily use at this output level. After what started as provisional modification to assess scaling of z-pinch current on the Particle Beam Fusion Accelerator (PBFA) II, users now require the Z machine to be a stable, precision platform for a large number and variety of reliable, reproducible experiments.

The ZR project will enable the Z facility to continue providing vital experimental data at high energy density, to test weapons simulation and contribute progress toward fusion ignition well into the next decade. Refurbishing Z with modern, conventional technology and systems optimized for z-pinches and designed for durability will significantly increase shot capability, enhance precision and pulse shaping variability, and increase output current. Benefits will accrue not only to existing experimental programs, but will advance new programs that can't be realized without refurbishment. In addition, refurbishment of the Z Accelerator will sustain and extend pulsed power expertise at Sandia, which could be lost unless meaningful and challenging work is maintained.

Project Scope

The project involves five functional activity areas:

- **Z Equipment Replacement** will include procurement of new capacitors for the existing Marx generators, which power the accelerator. Modern commercial technology allows the project to double the energy storage capability on Z within the same capacitor volume. This enables achieving higher current delivery with minimal modifications to the energy storage modules. In addition, energy storage section charging power supplies and the commercial trigger laser procurements are in this area.

- **Z Accelerator Refurbishment** encompasses redesigning and replacing components and systems within the energy storage and pulse forming/transmission portions of the machine, which are optimized electrically for the z pinch application. The hardware will also be designed to be more robust in order to serve Z's current mission as a user facility. The vacuum stack and magnetically insulated transmission lines (MITL) installed during the 1996 scaling experimental campaign will also be replaced for complete electrical matching of the various machine systems and the increased load current.

- **Project Administration** functions will orchestrate and execute the Z Refurbishment effort, providing overall management of the project and cross-Work Breakdown Structure support activities.

- **Installation and Characterization** functions will preassemble major components, dismantle the existing accelerator, install the new equipment, and characterize the pulsed power drive system prior to restarting experimental activities.

- **Pulsed Power R&D** functions involve development and evaluation of pulsed power components and subsystems, including a full system assessment test program of the energy storage and pulse forming sections.

Project Milestones

FY 2004:	Critical Decision 2 Approval	4Q
FY 2005:	All major pulsed power component procurements initiated	4Q
FY 2006:	Critical Decision 3 Approval - Begin Dismantlement/Installation on Z	2Q
	Begin Characterization/Testing	4Q
FY 2007:	Conduct 1st full-system shot	1Q
	Critical Decision 4 Approval – Z Operational	1Q

4. Details of Cost Estimate

	Current Estimate	Previous Estimate
Construction Phase		
Capacitor Procurement	6,200	N/A
Laser Procurement	1,100	N/A
Charging Power Supplies	390	N/A
Energy Storage	3,645	N/A
Pulse Forming/Transition	19,715	N/A
Vacuum Power Flow	4,255	N/A
Data/Diagnostics Infrastructure	915	N/A
Z Special Equipment	7,400	N/A
Z/ZR Integration Support	2,120	N/A
ZR Project Office	4,275	N/A
ES&H	40	N/A
Confirmation and Interface Management	3,655	N/A
TEC Management Reserve at CD-2	8,000	N/A
Total, Special Equipment	61,710	N/A
Total, Z Refurbishment (TEC)	61,710	N/A

5. Method of Performance

ZR is an aggregation of various efforts that collectively address the project's functional requirements. For procurement of hardware, equipment, and other services, the ZR Project objective is to obtain the highest quality goods and services at the best price, on schedule and with an acceptable level of program risk. Best Value Award Determination will be used to make contractor selections when required. The Best Value process is used to determine the contractor who offers the best tradeoff between price/cost and performance with the highest probability of success.

The majority of procurements are material fabrications, which will be built to either SNL designs or built to SNL specifications will be awarded on a firm fixed price competitive basis. Commercial off-the-shelf (COTS) purchases will be firm fixed price orders. Sandia will seek to leverage its corporate agreements to obtain the best commercial pricing available. A small percentage of activity will be issued on a sole source basis to known pulsed power industry experts, or contracted via Integrated Contracting Order to other DOE Integrated Contractors. The existing SNL Z operations crew will perform the majority of assembly and installation of equipment and hardware.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years [a]	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Total Estimated Cost	7,441	8,546	23,220	14,255	8,248	61,710
Other Project Costs	10,390	4,262	301	6,866	6,901	28,720
Conceptual design cost	0		0	0	0	0
Total Other Project Costs	10,390	4,262	301	6,866	6,901	28,720
Total Project Cost (TPC)	17,831	12,808	23,521	21,121	15,149	90,430

7. Related Annual funding Requirements

(FY 2007 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	35,000	N/A
Total related annual funding	35,000	N/A

This includes all facility operational, target fabrication, and core diagnostics costs for single shift operation (excluding the Z Backlighter). Of this amount, $13,000 is RTBF funding for warm standby capability.

[a] Includes proportional share of the pre-CD1 ZR costs

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappro-priated Balance
06-D-140, Project Engineering & Design, VL	92,213	0	0	0	14,113	78,100
06-D-402, NTS Replace Fire Stations No. 1 and No. 2, NSO........................	22,364	0	0	0	8,284	14,080
06-D-403, Tritium Facility Modernization, LLNL	10,500	0	0	0	2,600	7,900
06-D-404, Building B-3 Remediation, Restoration and Upgrade NSO	16,000	0	0	0	16,000	0
05-D-140, Project Engineering & Design, VL	31,196	0	0	16,469	5,000	9,727
05-D-401, Bldg 12-64 Upgrade, PX......................	35,902	0	0	24,902	11,000	0
05-D-402, Beryllium Capability Project, Y-12....	35,298	0	0	3,598	7,700	24,000
04-D-101, Test Capabilities Revitalization, Phase I, SNL	36,450	0	36,450	0	0	0
04-D-102, Exterior Communications Infrastructure Modernization, SNL..........	20,000	0	20,000	0	0	0
04-D-103, Project Engineering and Design, VL	7,031	0	3,543	1,488	2,000	0
04-D-125, Chemistry and Metallurgy Research (CMR) Facility Replacement, LANL	671,800	0	9,941	39,684	55,000	567,175
04-D-126, Building 12-44 Production Cells Upgrade, PX	12,465	0	9,886	2,579	0	0
04-D-127, Capability for Advanced Loading Missions (CALM), SRS ...	2,734	0	2,734	0	0	0
04-D-128, Criticality Experiments Facility (formerly TA-18 Mission Relocation Project), LANL	81,924	0	3,768	0	13,000	65,156

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappro-priated Balance
03-D-102, National Security Sciences Bldg, LANL	98,457	11,652	49,705	37,100	0	0
03-D-103, Project Engineering and Design, VL	75,130	1,106	15,545	15,154	29,000	14,325
03-D-121, Gas Transfer Capacity Expansion, KC ...	15,198	3,975	11,223	0	0	0
03-D-123, SNM Component Requalification Facility, PX	19,643	6,620	8,457	4,566	0	0
02-D-103, Project Engineering and Design, VL	26,044	10,465	10,370	5,209	0	0
02-D-105, Engineering Technology Complex Upgrade, LLNL	24,349	9,274	9,718	5,357	0	0
02-D-107, Electrical Power Systems Safety, Communications and Bus Upgrade, NV	13,603	10,733	2,870	0	0	0
01-D-103, Project Engineering and Design, VL	57,938	41,522	1,591	5,953	9,000	0
01-D-124, Highly Enriched Uranium Materials Facility, Y-12	280,732[a]	41,850	44,735	113,099	70,350	10,698
01-D-126, Weapons Evaluation Test Laboratory, SNL	22,109	19,288	2,821	0	0	0
99-D-104, Protection of Real Property (Roof Reconstruction, PH II), LLNL	18,363	14,884	3,479	0	0	0
99-D-127, SMRI-Kansas City Plant, KC	117,662	105,274	12,388	0	0	0
96-D-102, Stockpile Stewardship Facility Revitalization, Phase VI, VL	71,145	69,719	1,426	0	0	0
Total, Construction............			260,650	275,158	243,047	

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

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Acceptance Date
Automated Storage and Retrieval System (AS/RS)		3,120	0	0	3,120		FY 2006
Total, Major Items of Equipment		3,120	0	0	3,120		

This project is required to procure and install an additional automated storage and retrieval system (AS/RS). The existing AS/RS is the main storage facility for 70 percent of the Kansas City Plant production inventory part numbers. The key complex of storage equipment is the focal point for the timely receipt and disbursal of parts and assemblies that support production operations. The existing equipment is at capacity and additional automated storage space is required. The automated process is 40 percent more efficient than manual shelving and will store four times as much material per square foot. The Stockpile Management Restructuring Initiative (SMRI) emphasis on consolidation of plant inventories and the continuing downsizing of the physical plant has resulted in inventory levels that exceed the capacity of the existing stores areas. The new AS/RS will accommodate this inventory in a reduced area. It will be installed adjacent to the existing system. The existing system will remain operational to support current operations.

06-D-140, Project Engineering and Design (PED) - RTBF, Various Locations

- Critical Decision 0, Approve Mission Need, was attained 1Q FY 2005 for each design subproject in this data sheet. No funding will be used to initiate design for any of the subprojects until approval of its Critical Decision 1, Approve Alternative Selection and Cost Range.

1. Construction Schedule History

	Fiscal Quarter				
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000) [a]
FY 2006 Budget Request *(A-E and technical design only)*	1Q 2006	3Q 2009	Various	Various	92,213

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2006	14,113	14,113	12,700
2007	48,100	48,100	48,713
2008	30,000	30,000	30,800

3. Project Description, Justification, and Scope

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

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

[a] The Total Estimated Cost (TEC) is for design only for the subprojects currently included in this data sheet.

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 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 2006 Proposed Design Projects

06-01: TA-55 Radiography Facility, 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 2006	4Q 2007	1Q 2008	4Q 2010	2,000	23,000-40,000

Fiscal Year	Appropriations	Obligations	Costs
2006	2,000	2,000	1,800
2007	0	0	200

The purpose of this project is to design and construct a replacement Radiography Facility to be located within the TA-55 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 2006	2Q 2008	1Q 2009	4Q 2015	7,000	105,000-175,000

Fiscal Year	Appropriations	Obligations	Costs
2006	2,000	2,000	1,200
2007	5,000	5,000	5,000
2008	0	0	800

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 Technical Area - 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 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 (HVAC, HEPA, material handling), electrical (power distribution, standby and emergency power), and utility systems (process gasses/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 2006	3Q 2007	4Q 2007	2Q 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),
- Transuranic (TRU) influent storage.

06-04: Building 942 Renovation, SNLL

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 2006	4Q 2006	2Q 2007	3Q 2008	2,113	23,348-25,293

Fiscal Year	Appropriations	Obligations	Costs
2006	2,113	2,113	2,000
2007	0	0	113

This project will create integrated facilities for the precision fabrication of metal, plastic, ceramic, and composite microsystems using LIGA technology. The small size, low volume, high aspect ratio, and broad suite of available materials make LIGA microcomponents complementary to the more common silicon-based microsystems and critical for improving weapon components, providing functionality upgrades, and replacing sunset technologies, all in a limited volume without adversely affecting weapon physics. Anticipated applications include safety and use control components, arming and fuzing, flight test sensors, gas delivery systems, and other weapon applications.

The proposed project will renovate approximately 14,000 square feet of an existing building (Building 942) to create new space, which will contain laboratories composed of class 100 to 10,000 clean room, process support, and facility support. New equipment will be purchased as well as relocation of some existing equipment.

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 2006	3Q 2009	TBD	TBD	70,000	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 definitized in the future.

Fiscal Year	Appropriations	Obligations	Costs
2006	5,000	5,000	5,000
2007	35,000	35,000	35,000
2008	30,000	30,000	30,000

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 quantities are assumed to map one-to-one.

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 National Nuclear Security Administration's (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 noncompliant 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.

4. Details of Cost Estimate [a]

	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	65,453	N/A
Design Management costs (9.9% of TEC)	8,920	N/A
Project Management costs (18.8% of TEC)	17,840	N/A
Total, Design Costs	92,213	N/A

5. Method of Performance

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.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design	0	0	0	12,700	79,513	92,213
Total, Line Item TEC	0	0	0	12,700	79,513	92,213
Other Project Costs						
Conceptual design cost	0	200	15,922	2,041	0	18,163
Other project-related costs	0	100	3,178	7,759	11,800	22,837
Total Other Project Costs	0	300	19,100	9,800	11,800	41,000
Total Project Cost (TPC)	0	300	19,100	22,500	91,313	133,213

[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.

06-D-402, NTS Replace Fire Stations No. 1 and No. 2, Nevada Test Site

Significant Changes

- The Senate Energy And Water Development Appropriation Bill for FY 2004 directed the Department of Energy to provide a study of the potential benefits in terms of both time and cost of utilizing a design-build process for the replacement of these fire stations. It further noted that neither station meets current fire regulations, which has practical and potential impacts on the state of test readiness. This report was submitted to Congress in early 2004 and documented the benefits of a design-build contracting strategy. As a result, NNSA will pursue the design-build strategy for acquiring the design and construction of the two Fire Stations. Design-build is an acceptable construction strategy under DOE Order 413.3.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget Request *(Preliminary Estimate)*	1Q 2005	1Q 2007	3Q 2006	1Q 2008	24,707[a]	25,162

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [a]			
2004	2,343 [b]	0	0
2005	0	2,343	2,000
2006	0	0	343
Construction			
2006	8,284	8,284	8,038
2007	14,080	14,080	14,000
2008	0	0	326

[a] The TEC includes design costs appropriated in 04-D-103, Project Engineering and Design (PED).

[b] Original appropriation was $2,364,000. This was reduced by $21,029 for the mandatory rescission of 0.59 percent enacted by P.L. 108-199.

3. Project Description, Justification, and Scope

Project Description

This project will provide for the design and construction of two new fire stations on the Nevada Test Site (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 (DWS), 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 National Fire Protection Association (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 38,400 square feet (sq. ft.) and Fire Station No. 2 is estimated to be 12,400 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.

Project Milestones

FY 2005:	Establish Performance Baseline	4Q
FY 2006:	Award Design-Build Contract	1Q
FY 2007:	Complete Construction of Fire Station No. 2	1Q
FY 2007:	Start Construction of Fire Station No. 1	2Q
FY 2008:	Complete Construction of Fire Station No. 1	1Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase (a)		
Design/Build Sub-contractor procurement	149	
Preliminary and Final Design costs (Design Drawings and Specifications)	1,000	N/A
Design Management costs (0.9% of TEC)	214	N/A
Project Management costs (2.0% of TEC)	500	N/A
Contingency Design Phase (1.9% of TEC)	480	
Total, Design Costs (7.5% of TEC)	2,343	N/A
Construction Phase		
Improvements to Land and Buildings	15,900	N/A
Inspection, design and project liaison, testing, checkout and acceptance (1.2% of TEC)	299	N/A
Construction Management (4.5% of TEC)	1,123	N/A
Project Management (5.6% of TEC)	1,383	N/A
Total, Construction Costs (75.7% of TEC)	18,705	N/A
Contingencies		
Construction Phase (14.8% of TEC)	3,659	N/A
Total, Contingencies (16.8% of TEC)	3,659	N/A
Total, Line Item Costs (TEC)	24,707	N/A

[a] Design funding was appropriated in 04-D-103, Project Engineering and Design (PED).

5. Method of Performance

Conceptual design will be performed by the on-site performance-based management contractor. The design and construction will be accomplished by fixed-priced contract and subcontracts awarded on the basis of design-build competitive bidding.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	2,000	343	0	2,343
Construction	0	0	0	8,038	14,326	22,364
Total, Line Item TEC	0	0	2,000	8,381	14,326	24,707
Other Project Costs						
Conceptual design cost	0	455	0	0	0	455
Other project-related costs	0	0	0	0	0	0
Total Other Project Costs	0	455	0	0	0	455
Total Project Cost (TPC)	0	455	2,000	8,381	14,326	25,162

7. Related Annual Funding Requirements [a]

(FY 2006 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	TBD
Annual facility maintenance/repair costs	TBD	TBD
Programmatic operating expenses directly related to this facility	TBD	TBD
Utility costs	TBD	TBD
Total related annual funding (operating from FY 2006 through FY 2035)	TBD	TBD

[a] Annual operating costs will be determined during the design phase.

06-D-403, Tritium Facility Modernization, Lawrence Livermore National Laboratory, Livermore, California

- This project is still in the Planning Phase. As a result, 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), which is expected 4Q FY 2005. Project funding requested in FY 2006 ($2,600,000) will be used for long-lead procurements and fabrication of the first fill station. No funding will be used for construction, however, until the Performance Baseline has been validated.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget *(Preliminary Estimate)*	2Q 2004	4Q 2005	4Q 2006	4Q 2009	11,994	13,315

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [a]			
2004	1,494 [b]	1,494	424
2005	0	0	1,070
Construction			
2006	2,600	2,600	1,100
2007	7,900	7,900	4,700
2008	0	0	3,200
2009	0	0	1,500

[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).

3. Project Description, Justification and Scope

The Tritium Facility Modernization (TFM) project is proposed to modernize and reconfigure the existing Tritium Facility in Building 331 (B331) at Lawrence Livermore National Laboratory to meet projected mission needs. The project will provide enhanced hydrogen isotope research capabilities to meet the growing programmatic need to perform 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. It will restore an important element of LLNL R&D capability in nuclear weapons science and enhances 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 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. Up to two process stations, one for deuterium only, the other for deuterium-tritium (DT) mixes, would supply user stations with low-pressure, purified hydrogen gases.

The project will be done 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 Mass Spectrometer and the first fill station. The second phase using FY 2007 funds will complete all remaining work.

Project Milestones

FY 2004:	A-E Work Initiated	2Q
FY 2005:	A-E Work Completed	4Q
FY 2006:	Physical Construction Start	4Q
FY 2009:	Physical Construction Complete	4Q

4. Details of Cost Estimate

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design costs (Design Drawings and Specifications)	1,284	N/A
Design Management costs (0.8% of TEC)	100	N/A
Project Management costs (0.9% of TEC)	110	N/A
Total, Design Costs (12.5% of TEC)	1,494	N/A
Construction Phase		
Buildings	2,200	N/A
Special Facilities	4,560	N/A
Inspection, design and project liaison, testing, checkout and acceptance	710	N/A
Construction Management (3.6% of TEC)	430	N/A
Project Management (3.8% of TEC)	460	N/A
Total, Construction Costs (69.7% of TEC)	8,360	N/A
Contingencies		
Construction Phase (17.8% of TEC)	2,140	N/A
Total, Line Item Costs (TEC) [b]	11,994	N/A

5. Method of Performance

Preliminary and final designs for the conventional facilities portion of the TFM project will be done through the services of an outside Architect Engineer with oversight from LLNL's Plant Engineering's Design Management Branch. Construction of conventional facilities will be done in the "superblock", a limited area. Therefore, construction must be done through "Q" cleared personnel, a "Q" cleared contractor, an outside contractor under escort, "Q" cleared in-house labor or some combination of the above. Construction Management support and inspection services will be done with "Q" cleared in-house personnel.

[a] Design funding was appropriated in 03-D-103, Project Engineering and Design (PED).

[b] This is a preliminary estimate. The Performance Baseline will be established following completion of preliminary design and approval of Critical Decision 2.

Design of the Special Facilities systems and subsystems will be accomplished by a LLNL project engineer reporting directly to the Special Facilities Project Manager. Similar to conventional construction, construction of the special facilities must be accomplished in a limited area, which will require the use of "Q" cleared personnel or personnel under Administrative Escort.

6. Schedule of Project Funding

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	424	1,070	0	0	1,494
Construction	0	0	0	1,100	9,400	10,500
Total, Line Item TEC	0	424	1,070	1,100	9,400	11,994
Other Project Costs						
Conceptual design cost	389	0	0	0	0	389
Other project-related costs [a]	212	0	0	0	720	932
Total Other Project Costs	601	0	0	0	720	1,321
Total Project Cost (TPC)	601	424	1,070	1,100	10,120	13,315

[a] 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.

7. Related Annual Funding Requirements

	(FY 2006 dollars in thousands)	
	Current Estimate	Previous Estimate
Annual facility operating costs [a] …………………………………………………….	21	N/A
Programmatic operating expenses directly related to this facility [b] …….….….....	1,221	N/A
Utility costs [c] …………………………………………………………...……….	5	N/A
Total related annual funding (operating from FY 2006 through FY 2025)	1,247	N/A

[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 Tritium Facility Modernization Project 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.

[c] Costs are based on LLNL expected utility recharge rates for the renovated and added floor area in FY 2009.

06-D-404, Building B-3 Remediation, Restoration, and Upgrade, Nevada Test Site

- This project is a design-build project. The design-build approach has been shown to offer many benefits for a project of this type, including single source for construction activities, and cost control and accountability. Design-build is an acceptable construction strategy under DOE Order 413.3.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget Request *(Preliminary Estimate)*	1Q 2006	3Q 2006	3Q 2006	2Q 2007	16,000	19,351

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design/Construction			
2006	16,000	16,000	5,404
2007	0	0	10,562
2008	0	0	34

3. Project Description, Justification and Scope

Project Description

This project will provide for the remediation, restoration, and upgrade of Building B-3 at the North Las Vegas Facility (NLVF) to allow the return of the Management and Operating (M&O) contractor employees who were displaced due to the discovery of traces of beryllium in December 2002. Building B-3 is a 200' by 200' two-story building constructed in the early 1980's. The NLVF, an integral part of the Nevada Test Site (NTS) operation, is an 80-acre-complex located in downtown North Las Vegas and owned by the National Nuclear Security Administration (NNSA). The NLVF was created to house NNSA/Nevada Site Office (NSO), the national laboratories, and contractor support functions that did not require the use of the remote facilities at the NTS. The NLVF consists of three complexes (A, B, & C) and the Federal Nevada Support Facility. The buildings within the NLVF accommodates personnel that are associated in various ways with Directed Stockpile Work (DSW); the Primary Assessment Technologies, Dynamic Materials Properties, and Secondary Assessment Technologies Campaigns; Test Readiness; and other missions from the Department of Defense and Homeland Security.

Justification

Due to recent Department of Energy (DOE) requirements, which impose more stringent limitations on beryllium concentrations, a number of facilities at the NLVF were evacuated and occupants are now housed in temporary leased spaces. The relocation of more than 450 people to an off-site, leased location has disrupted the efficient and coordinated working conditions that existed between all the M&O contractor working groups as well as with NNSA/NSO. The leased facilities are approximately 10 miles away from the NLVF work site and necessitate daily commuting by both NSO and M&O personnel. The recently leased facilities are located in a typical commercial business environment, which is shared with other tenants. This occupancy condition is not conducive to providing the rigorous security measures that are present within the NLVF compound, which is secured by a fenced and guarded site. This is a concern for both NNSA/NSO and M&O management, especially since the September 11th terrorist attacks. In addition, it is estimated that lost time due to commuting and the cost of fuel is as much as $500,000 per year.

The NSO/M&O Integrated Project Team has determined that the most cost effective manner to re-establish the previous work conditions is to move the relocated personnel back to the NLVF Site. In order for this to occur, space must be made available that is deemed environmentally safe in accordance with NNSA/HQ's recommendations.

Scope

The tasks involved in the remediation, restoration, and upgrade process will include the correction of several major maintenance issues that cannot be completed if the building is occupied, and will realize $2.5 million of deferred maintenance buy-down. A summary description of the tasks involved is as follows:

- Remediation: Remove traces of beryllium to meet current Department of Energy requirements.

- Restoration: Replace heating, ventilation, and air-conditioning (HVAC) systems & ductwork; replace local area network (LAN) cabling/equipment with either CAT 5E or CAT 6 or wireless, as authorized; and replace fire alarm system to meet national codes.

- Upgrade: Optimize interior space by removing interior walls and reconfiguring space, patching and painting walls, and replacing systems furniture. The project will relocate 400-430 contractor personnel, and the office and general spaces will meet Defense Programs space allocation requirements. The facility will be designed and built to standard commercial practices, meet Leadership in Energy and Environmental Design criteria, and comply with Orders and Federal codes, regulations, and National Codes.

Project Milestones

FY 2006:	A-E Work Initiated	1Q
	A-E Work Completed	3Q
	Physical Construction Start	3Q
FY 2007:	Physical Construction Complete	2Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	741	N/A
Design Management costs (0.6% of TEC)	94	N/A
Project Management costs (1.8% of TEC)	289	N/A
Total, Design Costs (7.0% of TEC)	1,124	N/A
Construction Phase		
Improvements to Land and Buildings	9,930	N/A
Engineering Support	57	N/A
Construction Management/Inspection (1.1% of TEC)	180	N/A
Project Management (2.3% of TEC)	368	N/A
Total, Construction Costs (65.8% of TEC)	10,535	N/A
Contingencies		
Design Phase (2.1% of TEC)	337	N/A
Construction Phase (25.0% of TEC)	4,004	N/A
Total, Contingencies (27.1% of TEC)	4,341	N/A
Total, Line Item Costs (TEC)	16,000	N/A

5. Method of Performance

Conceptual design will be performed by the on-site performance-based management contractor. The design and construction will be accomplished by fixed-price contract and subcontracts awarded on the basis of competitive bidding.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	0	1,461	0	1,461
Construction	0	0	0	3,943	10,596	14,539
Total, Line Item TEC	0	0	0	5,404	10,596	16,000
Other Project Costs						
Conceptual design cost	0	503	0	0	0	503
Other project-related costs	0	0	0	0	2,848	2,848
Total Other Project Costs	0	503	0	0	2,848	3,351
Total Project Cost (TPC)	0	503	0	5,404	13,444	19,351

7. Related Annual Funding Requirements [a]

(FY 2006 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	TBD
Annual facility maintenance/repair costs	TBD	TBD
Programmatic operating expenses directly related to this facility	TBD	TBD
Utility costs	TBD	TBD
Total related annual funding (operating from FY 2007 through FY 2035)	TBD	TBD

[a] Annual funding requirements will be determined during the design phase.

05-D-140, Project Engineering and Design (PED) - RTBF, Various Locations

Significant Changes

- The TEC has decreased $11.6 million due to the following changes:

- NNSA is not requesting additional design funds in FY 2006 for the Albuquerque Transportation and Technology Center (ATTC) subproject pending further analysis. The selection of alternatives for the Component Evaluation Facility project has been delayed to allow additional analysis and as a result the funding required for design has been reduced in FY 2006 and increased in FY 2007.

- 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 will evaluate the feasibility of consolidating high-explosive fabrication required for future missions into one location. Accordingly, no funds in FY 2006 for the DX High Explosive Characterization Facility Project at the Los Alamos National Laboratory project will be requested. The location of the new facility will be determined once the evaluation is completed.

- In FY 2005 Congress appropriated an additional $5 million (less 0.8% government-wide rescission enacted by Public Law 108-447) to initiate design for the Impact Resistant Bunkers at Pantex.

- The schedule for some subprojects has changed to reflect project planning consistent with funding currently supported within FYNSP.

- Critical Decision 0 (CD-0), Approve Mission Need, was approved for the Component Evaluation Facility project in August 2004. CD-0 was approved for the Test Capabilities Revitalization (TCR) II project in December 2002 when TCR I and II were being planned as one project; CD-1, Approve Alternative Selection and Cost Range is planned for 1Q FY 2005.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)[a]
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2005 Budget Request *(A-E and technical design only)*...............................	1Q 2005	1Q 2008	1Q 2006	4Q 2010	42,800
FY 2006 Budget Request *(A-E and technical design only)*...............................	2Q 2005	2Q 2008	2Q 2007	4Q 2011	31,196

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations[b]	Costs
Design			
2005	16,469[c]	8,533	4,389
2006	5,000	5,000	9,144
2007	9,727	9,727	8,100
2008	0	0	1,643

3. Project Description, Justification, and Scope

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

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

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[a] The Total Estimated Cost (TEC) is for design only for the subprojects currently included in this data sheet.

[b] The obligations and costs assume a reprogramming upon enactment of the FY 2005 appropriation to move the FY 2005 ATTC design funding ($5,952,000) to address alternative financing approaches, and $1,984,000 for the DX High Explosives Characterization Project will be reprogrammed to address other program requirements.

[c] 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).

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 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 2005 Design Projects

05-01: DX High Explosives Characterization 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		
NA	NA	NA	NA	NA	25,000-40,000

Fiscal Year	Appropriations	Obligations	Costs
2005	1,984[a]	0	0
2006	0	0	0

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 will evaluate the feasibility of consolidating high-explosive fabrication required for future missions into one location. Accordingly, no funds in FY 2006 for the DX High Explosive Characterization Facility Project at the Los Alamos National Laboratory project will be requested. The location of the new facility will be determined once the evaluation is completed. FY 2005 funds appropriated will be reprogrammed to address other program requirements.

[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).

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 2005	4Q 2007	2Q 2008	4Q 2011	7,200	60,000-70,000

Fiscal Year	Appropriations	Obligations	Costs
2005	1,589[a]	1,589	1,589
2006	2,500	2,500	2,500
2007	3,100	3,100	3,100

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 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 for correcting stockpile defects. 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. 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] 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).

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 2005	2Q 2008	2Q 2008	2Q 2011	11,127	101,000-135,000

Fiscal Year	Appropriations	Obligations	Costs
2005	1,984[a]	1,984	300
2006	2,500[b]	2,500	4,184
2007	6,627	6,627	5,000
2008	0	0	1,627

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.

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 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

[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.

[b] The original request was for $4,500,000. The selection of alternatives for the Component Evaluation Facility project has been delayed to allow additional analysis and as a result the funding required for design has been reduced in FY 2006 by $2,000,000 and increased by a corresponding amount in FY 2007.

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 LINAC, Mass Properties and CT Bays are included in the construction project.

05-04: Albuquerque Transportation and Technology Center (ATTC), AL

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	0

Fiscal Year	Appropriations	Obligations	Costs
2005	5,952[a]	0	0

NNSA is not requesting additional design funds in FY 2006 for the Albuquerque Transportation and Technology Center (ATTC) subproject pending further analysis.

05-05: Impact Resistant Bunkers, 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		
TBD	TBD	TBD	TBD	TBD	TBD

Fiscal Year	Appropriations	Obligations	Costs
2005	4,960[b]	4,960[a]	2,500
2006	0	0	2,460

This subproject was a Congressional addition to the FY 2005 appropriation.

The project will provide for the design of Impact Resistant Bunkers which will increase the capacity of Pantex staging areas. It will also provide more secure facilities to meet changing security requirements. Various security, utility, and transportation systems may be upgraded as well.

[a] The FY 2005 appropriation was reduced by $48,000 due to the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[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).

4. Details of Cost Estimate[a]

	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	26,516	36,380
Design Management costs (5% of TEC)	1,560	4,280
Project Management costs (10% of TEC)	3,120	2,140
Total, Design Costs	31,196	42,800

5. Method of Performance

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.

6. Schedule of Project Funding[b]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design b	0	0	4,389	9,144	9,727	23,260
Total, Line Item TEC	0	0	4,389	9,144	9,727	23,260
Other Project Costs						
Conceptual design cost	0	725	1,650	120	0	2,495
NEPA	0	20	10	5	0	35
Other project-related costs	703	1,049	3,216	2,302	20,175	27,445
Total Other Project Costs	703	1,794	4,876	2,427	20,175	29,975
Total Project Cost (TPC)	703	1,794	9,265	11,571	29,902	53,235

[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 assume a reprogramming upon enactment of the FY 2005 appropriation to move the FY 2005 ATTC design funding ($5,952,000) to address alternative financing approaches, and $1,984,000 for the DX High Explosives Characterization Project will be reprogrammed to address other program requirements.

05-D-401, Building 12-64 Production Bays Upgrade
Pantex Plant, Amarillo, Texas

Significant Changes

- The Performance Baseline was approved by the Acquisition Executive (Critical Decision 2) in June 2004, and this data sheet represents the approved baseline cost, scope and schedule. The FY 2005 budget request reflected a Preliminary Estimate.

1. Construction Schedule History

	Fiscal Quarter					
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000)	Total Project Cost ($000)
FY 2005 Budget Request (*Preliminary Estimate*)...........	1Q 2004	1Q 2006	4Q 2005	1Q 2007	30,976	36,976
FY 2006 Budget Request (*Performance Baseline*)	1Q 2004	1Q 2005	3Q 2005	2Q 2007	38,770	43,897

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [a]			
2003	1,106 [a]	1,106	0
2004	1,663 [b]	1,663	2,517
2005	99 [c]	99	351
Construction			
2005	24,902 [d]	24,902	8,049
2006	11,000	11,000	23,963
2007	0	0	3,890

[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] The TEC includes the cost of preliminary and final design ($2,869,000) which was appropriated in 03-D-103, Project Engineering and Design (PED). FY 2004 appropriated amount was reduced by $6,891 by a Government-wide mandatory rescission of 0.59 percent (P.L. 108-99).

[e] FY 2005 appropriated amount was for $100,000. This was reduced by $800 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[d] FY 2005 appropriated amount was for $25,100,000. This was reduced by $198,453 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005, (P.L. 108-447).

3. Project Description, Justification, and Scope

The Building 12-64 Production Bays Upgrade Project at the Pantex Plant will provide a crucial asset in meeting the Doe's objective of maintaining confidence in the nuclear weapons stockpile. The Project Mission for the Building 12-64 Production Bays Upgrade is defined as completing the modifications necessary to allow Pantex the ability to conduct Nuclear Explosive (NE) operations on any weapon program, in any bay, at any time. This project will upgrade seventeen NE bays to the Pantex and DOE complex standard for weapon operations. The need for the proposed project is workload driven. This project will provide modifications to an existing facility to increase capacity to meet the impact of changing weapon complexity, projected workload, and the life extension project activities in future planning. The project will modify the bays and the infrastructure serving the bays to bring them up to the capability of the more modern bay facilities. The project will install systems necessary to allow any weapons program to be started in any of the bays in Building 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.

These modifications will allow the facility to resume nuclear explosive work. This will add another 17 bays to alleviate the projected bay resource short-fall to support the planned workload for the life extension project expected to start in FY 2007. The construction activities are planned to occur on a non-interference basis with the on-going production activities in Building 12-64. At present, the pit repackaging efforts occur in the majority of the bays in Building 12-64. These efforts will be complete in time for construction to begin on schedule.

The project is interrelated with the Building 12-44 Production Cells Upgrade Project. The weapons must go through operations in the bays before transportation to the cells. This project will prepare the weapons for the cell operations. Both projects provide additional capacity to meet the planned life extension project schedules.

Project Milestones

FY 2005:	Approve Start of Construction (CD-3)	2Q
FY 2007:	Physical Construction complete	2Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase (7.4% of TEC) [a]	2,868	2,876
Construction Phase		
Improvements to Land	0	33
Buildings	24,872	19,437
Removal Cost less salvage	0	1,876
Construction Management (5.1% of TEC)	1,987	2,071
Project Management (0.8% of TEC)	300	239
Total, Construction Costs (70.1% of TEC)	27,159	23,656
Contingencies		
Construction Phase (22.6% of TEC)	8,743	4,444
Total, Line Item Costs (TEC)	38,770	30,976

5. Method of Performance

The design services (Title I, II,) are being accomplished by an outside A-E firm and the contract is being administered by the Managing and Operating (M&O) Contractor (BWXT Pantex, LLC). The construction services of this project will be performed by an outside construction contractor operating under a contract to be awarded on the basis of competitive bids. Title III design services will be performed by the design A-E firm. Both contracts will be administered by the M&O Contractor (BWXT Pantex, LLC). Construction Management Services will be performed by the M&O Contractor (BWXT Pantex, LLC). Best value practices will be used for design and construction services.

[a] Design funding was appropriated in 03-D-103, Project Engineering and Design (PED).

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	2,517	351	0	0	2,868
Construction	0	0	8,049	23,963	3,890	35,902
Total, Line Item TEC	0	2,517	8,400	23,963	3,890	38,770
Other Project Costs						
Conceptual design cost	480	12	0	0	0	492
Other project-related costs	189	889	125	1,000	2,432	4,635
Total Other Project Costs	669	901	125	1,000	2,432	5,127
Total Project Cost (TPC)	669	3,418	8,525	24,963	6,322	43,897

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

	Current Estimate	Previous Estimate
Facility operating costs	1,100	1100
Facility maintenance and repair costs	644	464
Programmatic operating expenses directly related to this facility	500	500
Capital equipment not related to construction	400	400
Utility costs	100	302
Total related annual funding (operating from FY 2007 through FY 2036)	2,744	2,766

05-D-402, Beryllium Capability (BeC) Project
Y-12 National Security Complex, Oak Ridge, Tennessee

Significant Changes

- The BeC project has been revised to support the start of preliminary design (Critical Decision 1, which is planned for the 2Q FY 2005) as follows:
  - The total estimated cost (TEC) range is $36–44 million; the total estimated cost (TEC) and total project cost (TPC) have been increased consistent with this range
  - The architect-engineering (A-E) work initiated date has changed from 3Q 2004 to 1Q 2005 to address additional program evaluation and project alternatives development. Overall, the construction complete date has been moved from 2Q 2008 to 3Q 2008.
- The FY 2005 line item funding was requested in order to support Critical Decision 2A/3A, which is planned during the 4Q FY 2005, for long-lead procurement of glove-boxes and special equipment required during design and prior to the start of construction.
- This project is still in the planning phase. As a result, the cost and schedule are preliminary estimates and are subject to change once the Performance Baseline is validated and approved by the Acquisition Executive at the completion of the preliminary design (Critical Decision 2B), which is expected for the project during the 1Q FY 2006. Line item funding requested in FY 2006 will be used to initiate facility construction.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2005 Budget Request (*Preliminary Estimate*).....	3Q 2004	3Q 2005	1Q 2006	2Q 2008	40,000	50,000
FY 2006 Budget Request (*Preliminary Estimate*).....	1Q 2005	2Q 2006	2Q 2006	3Q 2008	42,998 [b]	52,802

[a] The TEC includes the cost of preliminary and final design appropriated in 02-D-103, PED. This is a preliminary baseline estimate. The performance baseline will be established following completion of preliminary design and Critical Decision 2 (CD-2).

[b] The TEC and TPC were reduced by $28,677 by a 0.8 percent rescission included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations		Obligations [a]	Costs [a]
Design [b]				
2002	0	[c]	0	0
2003	0	[d]	0	0
2004	7,700		0	0
2005	0		7,700	5,857
2006	0		0	1,843
Construction				
2005	3,598	[e]	3,598	1,656
2006	7,700		7,700	9,642
2007	22,000		22,000	20,522
2008	2,000		2,000	3,478

3. Project Description, Justification and Scope

This project provides equipment and facilities for the BeC project at the Y-12 National Security Complex. The BeC project will provide a new long-term capability to maintain existing beryllium components instead of manufacturing new components.

The BeC project will replace existing beryllium operations capabilities that are obsolete and inadequate to meet program and ES&H requirements. The scope includes capability for cleaning, handling, and

[a] Obligations and costs assume that $713,000 will be reprogrammed in FY 2005 from PED (02-D-103) to this line item to support the construction phase of this project.

[b] Design funding was appropriated in 02-D-103, PED.

[c] 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.

[d] 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 year balances reduction.

[e] Original appropriation was $3,627,000. This was reduced by $28,627 by the rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

inspecting Beryllium Oxide (BeO) parts as well as sample preparation. Much of the existing equipment has deteriorated and is at the end of its useful life. The systems are inefficient and unreliable due to their age and the state of disrepair, and maintenance is difficult and expensive due to the age, contamination levels of the equipment, and difficulty in acquiring spare parts. New equipment will provide an increased level of worker and personnel protection. This project will also have the additional benefit of vacating old facilities that are seriously degraded, which will allow for further footprint reduction and reduction of the maintenance backlog. The new equipment will be located in existing operating facilities for consolidation and efficiency gain in operations. Demolition and removal of old process equipment within these facilities will provide sufficient space for installation of the new state-of-art hazard protecting process equipment.

Project Milestones

FY 2005:	Initiate Design	2Q
	Initiate Construction	4Q (long lead procurement)
FY 2006:	Start Facility Construction	2Q
	Complete Design	2Q
FY 2008:	Complete Construction	3Q

4. Details of Cost Estimate [a,b]

	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase	6,492	7,000
Construction Phase		
Buildings	3,403	8,500
Special Equipment	11,454	9,500
Inspection, design and project liaison, testing, checkout and acceptance	2,193	3,200
Construction Management (15% of TEC)	6,446	1,100
Project Management (5.5% of TEC)	2,366	1,500
Total, Construction Costs (60.1% of TEC)	25,862	23,800
Contingencies		
Design Phase (2.8% of TEC)	1,208	0
Construction Phase (21.9% of TEC)	9,436	9,200
Total, Contingencies (24.8% of TEC)	10,644	9,200
Total, Line Item Costs (TEC)	42,998	40,000

5. Method of Performance

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 Security Complex Management and Operating (M&O) contractor, BWXT Y-12, including design, procurement, construction, and commissioning.

The M&O contractor will provide preliminary sketches and equipment specifications to a General Order Agreement (GOA) subcontractor A-E to perform preliminary design and Title II drawings and specifications for demolition and installation. The equipment purchases will be design/fabricate subcontracts. Construction will be performed by the M&O contractor.

[a] Design funding was appropriated in 02-D-103, PED.

[b] This is a preliminary estimate. The Performance Baseline will be established following completion of preliminary design and approval of CD-2.

6. Schedule of Project Funding [a,b]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	5,857	1,843	0	7,700
Construction	0	0	1,656	9,642	24,000	35,298
Total, Line Item TEC	0	0	7,513	11,485	24,000	42,998
Other Project Costs						
Conceptual design cost	0	450	0	0	0	450
Other project-related costs	0	1,580	2,395	791	4,588	9,354
Total Other Project Costs	0	2,030	2,395	791	4,588	9,804
Total Project Cost (TPC)	0	2,030	9,908	12,276	28,588	52,802

7. Related Annual Funding Requirements [c]

(FY 2008 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	TBD
Utility costs	TBD	TBD
Total related annual funding (operating from FY 2008 through FY 2028)	TBD	TBD

[a] The Conceptual design costs include costs for completion of the CD-1 package and related documentation (e.g., project execution plan, conceptual design report, acquisition strategy, National Environmental Protection Act evaluation, ES&H plan, and quality assurance plan).

[b] Other project related costs include plant support to the project and commissioning/startup activities (e.g., development of plans and procedures, commissioning, and startup).

[c] Annual facility operating costs to be determined during design.

04-D-103, National Nuclear Security Administration
Project Engineering and Design (PED)
Various Locations

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 will evaluate the feasibility of consolidating high-explosive capabilities required for future missions into one location. The location of the new facility will be determined once the evaluation is completed.

1. Construction Schedule History

	Fiscal Year				
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000) [a]
FY 2004 Budget Request *(A-E and technical design only)*	1Q 2004	3Q 2006	N/A	N/A	3,500
FY 2005 Budget Request *(A-E and technical design only)*	2Q 2004	4Q 2006	N/A	N/A	5,064
FY 2006 Budget Request *(A-E and technical design only)*	2Q 2004	1Q 2007	N/A	N/A	7,031

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2004	3,543[b]	1,200	2
2005	1,488	3,831	3,750
2006	2,000	2,000	2,591
2007	0	0	688

3. Project Descriptions, Justification, and Scope

This project provides for Architect-Engineering (A-E) services for several National Nuclear Security Administration (NNSA) construction projects, allowing designated projects to proceed from conceptual

[a] The Total Estimated Cost (TEC) is for design only for the subprojects currently included in this data sheet.

[b] The FY 2004 appropriation reflects a rescission of 0.59 percent , or $21,029, which reduced the appropriated amount to $3,543,000 enacted by Pubic Law 108-199.

design into preliminary design and final design. The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction costs based on the approved design and working drawings and specifications, and provide construction schedules, including procurements. The designs will be extensive enough to establish performance baselines and to support construction or long-lead procurements in the fiscal year in which line item construction funding is requested and appropriated.

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

FY 2004 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.

FY 2004 Proposed Design Projects

04-01: NTS Replace Fire Station No. 1 & 2, Nevada Test Site

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 2005	1Q 2007	3Q 2006	1Q 2008	2,343	24,707 – 27,500

Fiscal Year	Appropriations	Obligations	Costs
2004	2,343 a	0	0
2005	0	2,343	2,000
2006	0	0	343

This design project provides for the A-E services to develop and complete preliminary and final design for the proposed, and now combined NTS Replace Fire Station No. 1 & 2, Nevada Test Site. Fire Station 2 will design the replacement for an existing undersized fire station facility built in 1966. The new Fire Station will be approximately 12,460 square feet, as compared to the existing 4,255 square foot facility, and will comply with National Fire Protection Association (NFPA) 1500 and provide the correct space to accommodate emergency response units. It will also provide administrative and dormitory space, as well as restrooms, a kitchen, training classrooms, storage, and support areas (e.g., medical treatment room). The facility will include all heating, ventilation, and air-conditioning (HVAC), fire protection, electrical, communications, and local area network (LAN) systems and a fiber optics communications network throughout the facility to meet present and projected requirements. The project will include all administrative equipment, furniture, and associated equipment necessary to operate the facility.

[a] Original appropriation was $2,364,000. This was reduced by $21,029 for a rescission of 0.59 percent enacted by Pubic Law 108-199. The FY 2004 Appropriations Act added funding for design of the replacement of the NTS Fire Station No. 1, which increased the TEC by $1,564,000.

In addition, this design project provides for the A-E services to develop and complete preliminary and final design for the proposed NTS Replace Fire Station No. 1, Nevada Test Site. Approximately 1000 employees and 1300 square miles of the Nevada Test Site are being served by Fire Stations No. 1 and No. 2, located 25 miles apart. Constructed to meet the 1960's codes, the buildings do not meet current code requirements. The design for replacing Fire Station No. 2 is also included in this data sheet (subproject 01), and was requested in the FY 2004 Congressional budget because it was considered of higher priority due to the physical condition of the facility. The FY 2004 Appropriation Act added funding for the design of this fire station as well.

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 function of the station include those of a standard municipal fire and emergency management facilities (structural and vehicular fire fighting and rescue) and in addition, are equipped for airfield and wild-land fires; respond to HAZMAT conditions; provide training for fire fighting personnel and those who respond to HAZMAT conditions; and, respond to search and rescue operations. Fire Station No. 1 also has all of the function of the main administrative station in a small city, plus the responsibilities and facilities requirements associated with 911 call centers.

Preliminary design for the project will address the potential of a design-build acquisition strategy to shorten the construction schedule and potentially lower the cost.

04-02: High Explosives (HE) Pressing Facility, Pantex Plant
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 will evaluate the feasibility of consolidating high-explosive capabilities required for future missions into one location. The location of the new facility will be determined once the evaluation is completed.

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 2004	1Q 2007	1Q 2007	2Q 2008	4,688	30,000-36,000

Fiscal Year	Appropriations	Obligations	Costs
2004	1,200	1,200	2
2005	1,488 a	1,488	1,750a
2006	2,000	2,000	2,248
2007	0	0	688

[a] The FY 2005 original appropriation was $1,500,000 was reduced by $11,860 by a rescission of 0.80 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

The proposed HE Pressing Facility will support requirements of the Stockpile Stewardship and Management Program. The project will provide a new facility replacing the aging presses and Buildings 12-17, 12-21A, and 12-63, that house the high explosive main charge pressing activities at the Pantex Plant. It will provide Pantex the facilities to meet the impact of changing weapon complexity, projected workload, and the refurbishment activities in future planning, including several LEPs.

The proposed HE Pressing Facility consists of approximately 43,000 square feet and includes the main pressing facility, a magazine storage area, and a ramp. The facility will consist of:

- Powder inspection/weighing bay
- Oven bays to heat the explosives prior to pressing
- HE press bays for isostatic and mechanical presses
- NDE bay to evaluate pressed HE parts prior to machining
- Machining bay for rough cut machining
- Staging bays for staging explosives powder, pressed pieces, and rough cut pressed pieces.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design costs (Design Drawings and Specifications)…………….	5,976	4,314
Design Management costs (10% of TEC)……………………………………………….	703	500
Project Management costs (5% of TEC)…………………………………………………	352	250
Total, Design Costs (100% of TEC)…………………………………………………………..	7,031	5,064
Total, Line Item Costs (TEC, Design Only)…………………………………………………..	7,031	5,064

5. Method of Performance

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, and other concerns.

[a] The percentage for Design Management, Project Management, and Design Phase Contingency are estimates based on historical records and are preliminary estimates.

6. Schedule of Project Funding

	(dollars in thousands)					
	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Cost						
Facility Cost						
Project Engineering and Design	0	2	3,750	2,591	688	7,031
Total, Line Item TEC	0	0	3,750	2,591	688	7,031
Total, Facility Costs (Federal and Non-Federal)......	0	0	3,750	2,591	688	7,031
Other Project Costs						
Conceptual design costs	605	350	50	0	0	1,005
NEPA	5	5	5		0	15
Other project-related costs	0	0	375	1,410	0	1,785
Total, Other Project Costs	610	355	430	1,410	0	2,805
Total, Project Costs	610	355	3,573	1,410	0	9,836

04-D-125, Chemistry and Metallurgy Research Building Replacement Project, Los Alamos National Laboratory
Los Alamos, New Mexico

Significant Changes

- Construction and financial schedules in previous data sheets reflected Pre-Conceptual Project Plan information for the Chemistry and Metallurgy Research Building Replacement (CMRR) project. CMRR Conceptual Design activities are now complete. The design has progressed sufficiently to develop a cost estimate range, to set the scope for the project, and select an acquisition strategy. The scope of the project is limited to core programmatic mission capabilities that include replacement of analytical chemistry (AC), materials characterization (MC), and actinide research and development (R&D) operations from existing CMR Building at LANL; providing space for storage of special nuclear materials (SNM); and providing space for large vessel handling. The cost range is $745 - $975 million, which compares to the CD-0 previously published cost range of $420 - $955 million. The acquisition strategy selected implements the project in three phases: Phase A - Radiological Laboratory/Utility/Office Building (RLUOB); Phase B - Special Facilities Equipment (SFE); and Phase C, Nuclear Facility (NF), each with a design-build procurement following development of detailed performance specifications.

- The Financial Schedule in Section 2 has been modified to reflect Project Engineering and Design (PED) funding requirements consistent with the CMRR Acquisition Strategy. PED funding provided under 03-D-103 has increased from $24.5 million to $66.392 million (an increase of $41.892 million). This PED increase is necessary to complete CMRR preliminary design activities in order to establish a performance baseline at the next Critical Decision Point (CD-2/3, 2Q 2007). The increase in 03-D-103 PED reflects an offsetting reduction and transfer of preliminary design costs and scope originally included in the CMRR line-item construction project, 04-D-125. While the total amount of funds estimated for CMRR design activities has not changed significantly, however, the allocation between PED and the line-item construction project has changed as a result of the finalized acquisition approach. As such, both 03-D-103 and 04-D-125 data sheets have been revised to reflect this implementation approach and clearly specify funding requirements.

1. Construction Schedule History [a]

	Fiscal Quarter				Total Estimated Cost [b] ($000)	Total Project Cost [c] ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2004 Budget Request (*Preliminary Estimate*).............	1Q 2004	3Q 2006	2Q 2004	1Q 2011	500,000	600,000
FY 2005 Budget Request *(Preliminary Estimate)*.............	3Q 2004	3Q 2007	3Q 2005	3Q 2012	500,000	600,000
FY 2006 Budget Request *(Preliminary Estimate)*	2Q 2005	4Q 2009	1Q 2006	4Q 2010	738,192	838,192

[a] The TEC and TPC for this project reflect results of Conceptual Design phase activities. Updated estimates provided in this FY 2006 request reflect funding currently supported in FYNSP/ICPP. The NNSA evaluated the impacts of prior year funding reductions and projected resource availability and has adjusted this CD-1 profile and schedule accordingly. The start of physical construction relates to the Radiological Laboratory/Utility/Office Building; completion of A-E services and physical construction relate to the Nuclear Facility.

[b] The TEC includes the cost of preliminary design appropriated in 03-D-103, Project Engineering and Design (PED).

[c] CMRR CD-1 TPC estimate range is currently $745 - $975 million and the TPC may be revised as performance baselines are established at respective CD-2/3's.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations		Obligations	Costs
Design (PED)				
2003	0	a	0	0
2004	9,500	b	0	0
2005	13,567	c	23,067	23,067
2006	29,000	d	29,000	29,000
2007	14,325	d	14,325	14,325
Construction				
2004	9,941	b	0	0
2005	39,684	c	49,625	49,625
2006	55,000	d	55,000	55,000
2007	122,422	d	122,422	122,422
2008	160,586		160,586	160,586
2009	168,011		168,011	168,011
2010	116,156		116,156	116,156

3. Project Description, Justification and Scope

Project Description

The Chemistry and Metallurgy Research Building Replacement (CMRR) Project seeks to relocate and consolidate mission critical analytical chemistry, material characterization, and actinide research and development capabilities, as well as providing SNM storage capabilities to ensure continuous national security mission support capabilities beyond 2010 at LANL. Other NNSA programmatic capabilities include providing space for large vessel handling.

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[a] Original FY 2003 PED appropriation in 03-D-103 was $10,000,000.This appropriation 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 reduced by $3,675,000 for a reprogramming. The remaining appropriation of $6,375,000 was not authorized for use, pending CD-1 approval, and was subsequently eliminated by the FY 2004 Appropriation Act use of PY balances reduction.

[b] Original FY 2004 appropriation under 03-D-103 was $4,500,000. NNSA restored $5,000,000 of the PED funding eliminated in the PY balances reduction via a May 2004 reprogramming action; The FY 2004 appropriated amount of $10,000,000 was reduced by $59,003 by a rescission of 0.59 percent (P.L. 108-199).

[c] Includes $16,000,000 increased FY2005 appropriated above original budget request. Also reflects a rescission of $316,260 or 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[d] Current funding profile reflects total CMRR TEC funding (PED and line-item construction project) at $738,192,000.

Justification

In January 1999, the NNSA approved a strategy for managing risks at the Chemistry and Metallurgy Research (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 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 facility outages have resulted in the unplanned 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 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; and office space for CMRR workers located outside of perimeter security protection systems. 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, as examples): 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 and would be executed in conjunction with the Nuclear Laboratory phase.

- Phase C, CMRR Nuclear Laboratory: Construction of a facility located behind perimeter security protective systems of approximately 22,500[a] net square feet to house Hazard Category II nuclear laboratory space for analytical chemistry/material characterization (AC/MC), and actinide research & development (R&D) operations. (Space estimates cited were identified through joint NNSA/LANL Integrated Nuclear Planning Activities and validated as part of final CMRR scope determination

[a] Space estimates cited were identified through joint NNSA/LANL Integrated Nuclear Planning Activities and validated as part of final CMRR scope determination proceedings with NNSA in September 2004.

proceedings with NNSA in September 2004. Additionally, this facility will include SNM Storage, and a large vessel handling capability.

Project Milestones

FY 2005:	Combined Critical Decision 1 for RLUOB, SFE and NF	2Q
	Critical Decision 2/3, RLUOB (Design-Build)	4Q
	Award RLUOB Design-Build Contract	4Q
FY 2006:	Physical Construction Start, RLUOB	1Q
FY 2007:	Critical Decision 2/3, SFE/NF (Design-Build)	2Q

4. Details of Cost Estimate [a]

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase[b]	66,392	24,500
Construction Phase		
Buildings	463,000	358,500
Construction Management (4.8% of TEC)	36,000	7,000
Project Management (3.5% of TEC)	26,500	25,000
Total, Construction Costs (69% of TEC)	525,500	390,500
Contingencies		
Construction Phase (20% of TEC)	146,300	85,000
Total, Line Item Costs (TEC)	738,192	500,000

5. Method of Performance

Design and Construction Management will be implemented by the University of California through LANL Management and Operating Contract. 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.

6. Schedule of Project Funding [a]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	23,067	29,000	14,325	66,392
Construction	0	0	49,625	55,000	567,175	671,800
Total, Line Item TEC	0	0	72,692	84,000	581,500	738,192
Other Project Costs						
Conceptual design cost	11,697	4,930	0	0	0	16,627
NEPA documentation costs	1,247	288	0	0	0	1,535
Operational Readiness/Transition	0	0	0	0	39,000	39,000
Other project-related costs	5,253	2,836	5,000	5,000	24,749	42,838
Total Other Project Costs	18,197	8,054	5,000	5,000	63,749	100,000
Total Project Cost (TPC)	18,197	8,054	77,692	89,000	645,249	838,192

7. Related Annual Funding Requirements

No estimates available*

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Related annual costs (estimated life of project (50 years)		
Annual facility operating costs	N/A*	N/A*
Annual facility maintenance/repair costs	N/A*	N/A*
Programmatic operating expenses directly related to this facility	N/A*	N/A*
Programmatic capital equipment not related to construction	N/A*	N/A*
Utility costs	N/A*	N/A*
Total related annual funding	N/A*	N/A*

As directed by the DOE Acquisition Executive at CD-0, the NNSA and LANL completed an initial study of requirements for Deactivation and Decommissioning (D&D) of the existing CMR Building located at TA-3, LANL during development of the CMRR conceptual design. The initial pre-conceptual cost estimate range for D&D of the CMR Building is $200 - $350 million (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 becomes $350 -$500 million). NNSA is committed to D&D of the CMR Building upon completion of CMRR construction and transition of nuclear operations. As such, NNSA will evaluate the CMR D&D requirements in the outyear program planning cycle as a follow-on project separate from CMRR.

04-D-128, Criticality Experiments Facility (CEF)
Los Alamos National Laboratory
Nevada Test Site, Nevada

Significant Changes

- Conceptual design activities were completed and the approval of alternative selection and cost range (Critical Decision 1) was issued on June 14, 2004. The project name was changed from TA-18 Mission Relocation to the Criticality Experiments Facility (CEF) to better reflect the activities that are transferring from Los Alamos National Laboratory (LANL) to the Nevada Test Site (NTS).

- The project scope now includes modifications to the Device Assembly Facility (DAF) to house 4 critical assemblies, special nuclear material, and other diagnostic equipment; modifications to the DAF Entry Guard Station to support larger workforce; design and construction of a material control and accountability (MC&A) system for the DAF; and modifications to two support facilities (Control Point-9 and -72) to provide office space and personnel processing into the DAF. Also included in the scope of this project is the movement of critical assemblies from LANL Technical Area (TA)-18 to the DAF and the design and construction of critical assembly control systems.

- NNSA is assessing opportunities to accelerate some portions of this project and possibly phase procurement and/or construction activities. As this 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, which is expected 4Q FY 2005. No funding will be used for construction without prior approval from the Acquisition Executive.

- Additional Project Engineering and Design funds in the amount of $9 million are requested in FY 2006 to implement nuclear facilities' design requirements. Construction funding request in FY 2006 is reduced by the same amount.

1. Construction Schedule History

	Fiscal Quarter					
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000)[a]	Total Project Cost ($000)[b]
FY 2004 Budget Request *(Preliminary Estimate)*	3Q 2004	4Q 2005	4Q 2004	2Q 2008	111,000	130,000
FY 2005 Budget Request *(Preliminary Estimate)*.........	4Q 2004	TBD	TBD	TBD	TBD	TBD
FY 2006 Budget Request *(Preliminary Estimate)*.........	4Q 2004	4Q 2006	4Q 2006	3Q 2008	105,892	142,723

[a] The TEC includes the cost of preliminary and final design appropriated in 01-D-103, PED. This is a preliminary baseline estimate. The performance baseline will be established following completion of preliminary design and Critical Decision 2 (CD-2).

[b] Cost includes approximately $14,500,000 in prior year other project costs for initial conceptual design activities and environmental studies.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [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	11,558
2006	9,000	9,000	10,679
Construction			
2004	3,768 [e]	3,768	0
2005	0	0	3,768
2006	13,000	13,000	13,000
2007	22,000	22,000	22,000
2008	22,000	22,000	22,000
2009	21,156	21,156	21,156

[a] Design accomplished in 01-D-103, Project Engineering and Design (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] 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 RTBF operating funds (Operations of Facilities and Containers) to support early movement of special nuclear material from TA-18 to DAF.

3. 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, minimize overall cost 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.

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 siting 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 Nevada Test Site.

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.

- Support facilities will be developed for the CEF staff not assigned within the DAF itself through modifications of existing facilities at the NTS. The NTS control point (CP)-9 facility, approximately 5 miles from DAF, will be modified to provide classified workstations and telecommunications between the secure CP area, DAF, and LANL in New Mexico. CP-72 outside the security area will be modified to provide workstations and a large unclassified conference room. CP-72 will also serve as the DAF and CEF access control facility.

Project Milestones

FY 2004:	Complete Conceptual Design	4Q
FY 2005:	Complete Preliminary Design (Title I)	4Q
FY 2006:	Complete Final Design (Title II)	4Q
FY 2008:	Complete Construction (Title III)	3Q
FY 2010:	Transition/Closeout	1Q

4. Details of Cost Estimate [a]

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Total, Design Phase (22.6% of TEC)	23,968	TBD
Construction Phase		
Improvements to Land	3,000	TBD
Buildings	51,000	TBD
Standard Equipment	2,000	TBD
Inspection, design and project liaison, testing, checkout and acceptance (1.9% of TEC)	2,000	TBD
Construction Management (4.2% of TEC)	4,462	TBD
Project Management (2.8% of TEC)	3,000	TBD
Total, Construction Costs (61.8% of TEC)	65,462	TBD
Contingencies		
Construction Phase (15.5% of TEC)	16,462	TBD
Total, Line Item Costs (TEC)	105,892	TBD

5. Method of Performance

An acquisition execution plan was developed during Conceptual Design and approved on June 14, 2004. Preliminary design activities are assessing the potential to accelerate key project activities in FY 2005. Options under consideration include construction outside the DAF proper, design and procurement of critical assembly control systems, and/or design and procurement of material control and accountability system.

[a] This project is still in the planning phase. The cost is a preliminary estimate subject to change once the performance baseline is approved by the Acquisition Executive at the completion of the preliminary design.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	1,731	11,558	10,679	0	23,968
Construction	0	0	3,768	13,000	65,156	81,924
Total, Line Item TEC (a)	0	1,731	15,326	23,679	65,156	105,892
Other Project Costs						
Conceptual design cost	8,920	700	0	0	0	9,620
NEPA documentation costs	1,825					1,825
Other ES&H Costs	365					365
Other project-related costs	2,725	925	4,700	5,048	11,623	25,021
Total Other Project Costs	13,835	1,625	4,700	5,048	11,623	36,831
Total Project Cost (TPC)	13,835	3,356	20,026	28,727	76,779	142,723

7. Related Annual Funding Requirements

(FY 2008 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	TBD
Annual facility maintenance/repair costs	TBD	TBD
Programmatic operating expenses directly related to this facility	TBD	TBD
Programmatic capital equipment not related to construction	TBD	TBD
Utility costs	TBD	TBD
Total related annual funding (operating from FY 2008 through FY 2037) (b)	TBD	TBD

[a] The TEC includes the cost of preliminary engineering and final design appropriated in 01-D-103, PED. This is a preliminary baseline estimate. The performance baseline will be established following completion of preliminary design and CD-2.

[b] Facility operating costs will be developed during the Title I Design.

03-D-103, National Nuclear Security Administration Project Engineering and Design (PED), Various Locations

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 will evaluate the feasibility of consolidating high-explosive capabilities required for future missions into one location. The location of the new facility will be determined once the evaluation is completed. Accordingly, no FY 2006 construction funds are requested for the Energetic Materials Processing Center Project at the Lawrence Livermore National Laboratory.

- The TEC for 03-D-103 PED project was increased by a total of $41,854,000 to incorporate inclusion of the expanded, preliminary design costs for two of the three phases of the project as PE&D efforts. In previous fiscal years, these design costs for these two phases were included as line-item costs. . The schedule for completing architect-engineering services is accordingly pushed out. See project 04-D-125 for additional detail on the CMRR project. Funding for the final designs for these two phases is not expected to be provided to the prime contractor for execution until the CMRR project is baselined.

1. Construction Schedule History

	Fiscal Quarter				
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000) [a]
FY 2003 Budget Request *(A-E and technical design only)*	1Q 2003	4Q 2006	N/A	N/A	63,709
FY 2004 Budget Request *(A-E and technical design only)*	3Q 2003	3Q 2006	N/A	N/A	23,209
FY 2005 Budget Request *(A-E and technical design only)*	1Q 2004	3Q 2007	N/A	N/A	33,276
FY 2006 Budget Request (A-E and technical design only)	1Q 2004	3Q 2007	N/A	N/A	75,130

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

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2003	1,106[a]	1,106	0
2004	15,545[b]	6,045	4,146
2005	15,154[c]	24,654	27,659
2006	29,000	29,000	29,000
2007	14,325	14,325	14,325

3. Project Description, Justification, and Scope

This project provides for Architect-Engineering (A-E) services for several 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 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.

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[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. 108-447).

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-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q 2005	3Q 2007	1Q 2006	4Q 2010	66,392	645,000 - 875,000

Fiscal Year	Appropriations	Obligations	Costs
2003	0 [a]	0	0
2004	9,500	0	0
2005	13,567 [b]	23,067	23,067
2006	29,000	29,000	29,000
2007	14,325	14,325	14,325

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 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 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.

[a] 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.

[b] 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).

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 2004	1Q 2006	4Q 2005	1Q 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, 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 will evaluate the feasibility of consolidating high-explosive capabilities required for future missions into one location. The location of the new facility will be determined once the evaluation is completed. 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 2004	4Q 2005	1Q 2006	4Q 2008	4,376	44,000-60,000

Fiscal Year	Appropriations	Obligations	Costs
2004	2,888	2,888	1,842
2005	1,488a	1,488 [a]	2,534

This subproject includes the preliminary and final design for the proposed Energetic Materials Processing Center (EMPC) project that replaces existing facilities and energetic material processing equipment that is quickly becoming obsolete and inadequate to meet the mission requirements at Lawrence Livermore National Laboratory (LLNL). This facility will support requirements of the Stockpile Stewardship Program, including the National Hydrotest Program, and help meet mission needs in research, development, and directed stockpile work that are not available in other parts of the NNSA/DOE Complex. The EMPC focus is on custom explosives parts, extremely precise assemblies, and work with non-standard weapon explosives. LLNL will continue to rely on Pantex for its explosives production needs. The new facility will be located at LLNL Site 300 and be used to support the Stockpile Stewardship Program. As currently planned, the facility will provide a total of approximately 34,400 gross square feet of space for energetic material machining, radiography, inspection and assembly with separate control rooms, magazines, and a technical support area. Co-location of these currently separate operations will increase efficiency and productivity. By incorporating modern energetic material protection and safety philosophies, the EMPC will be designed to provide an increased level of worker and personnel protection up to 75 kilograms of Class 1 Division 1 explosives. The assembly bays will be designed for 100 kilograms of Class 1 Division 1 explosives. This project will also have the additional benefit of vacating old energetic material facilities that are seriously degraded which will allow for further footprint reduction and reduction of maintenance backlog.

[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).

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 2004	4Q 2005	1Q 2006	3Q 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 capability is needed at LLNL to enable its programs to meet mission objectives in stockpile stewardship and energy research. The proposed Tritium Facility Modernization (TFM) 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 work-for-others. More generally, it restores an important element of LLNL Research & Development capability 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.

4. Details of Cost Estimate[a]

	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase[b]		
Preliminary and Final Design costs (Design Drawings and Specifications)	63,861	28,286
Design Management costs (10% of TEC)	7,513	3,330
Project Management costs (5% of TEC)	3,756	1,160
Total, Design Costs (100% of TEC)	75,130	33,276
Total, Line Item Costs (TEC, Design Only)	75,130	33,276

5. Method of Performance

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.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design[c]	0	4,146	27,659	29,000	14,325	75,130
Total, Line Item TEC	0	4,146	27,659	29,000	14,325	75,130
Other Project Costs						
Conceptual design cost	317	870	0	0	0	1,187
NEPA	0	25	50	0	0	75
Other project-related costs	54	115	70	0	2,970	3,209
Total Other Project Costs	371	1,010	120	0	2,970	4,471
Total Project Cost (TPC)	371	5,156	27,779	29,000	17,295	79,601

[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.

[b] The percentages for Design Management, Project Management, and Design Phase Contingency are estimates based on historical records and are preliminary estimates.

[c] Once line item construction funding is requested, the Other Project Costs associated with the project are included in the construction data sheet and are no longer reflected here.

01-D-103, National Nuclear Security Administration Project Engineering and Design (PED), Various Locations

Significant Changes

- Subproject Number 01-07, the TA-18 Mission Relocation Project was renamed to Criticality Experiments Facility (CEF), Project Number 04-D-128, to better reflect the activities that are transferring from the Los Alamos National Laboratory (LANL) to the Nevada Test Site (NTS).

- Additional Project Engineering and Design funds in the amount of $9,000,000 are requested in Fiscal Year 2006 for the CEF to implement nuclear facilities' design requirements. FY 2006 Construction Project funding request for 04-D-128 is reduced by the same amount.

1. Construction Schedule History

	Fiscal Quarter				
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000) [a]
FY 2001 Budget Request *(A-E and technical design only)*	1Q 2001	2Q 2002	N/A	N/A	14,500
FY 2002 Budget Request *(A-E and technical design only)*	1Q 2001	4Q 2003	N/A	N/A	110,665
FY 2001 Congressional Budget Supplemental *(A-E and technical design only)*	1Q 2001	4Q 2003	N/A	N/A	82,676
FY 2003 Budget Request *(A-E and technical design only)*	2Q 2001	2Q 2005	N/A	N/A	56,086
FY 2004 Budget Request *(A-E and technical design only)*	2Q 2001	4Q 2005	N/A	N/A	55,122
FY 2005 Budget Request *(A-E and technical design only)*	2Q 2001	3Q 2006	N/A	N/A	TBD
FY 2006 Budget Request *(A-E and technical design only)*	2Q 2001	4Q 2006	N/A	N/A	57,938

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

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations [a]	Costs
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	11,558
2006	9,000	9,000	10,679

3. Project Description, Justification and Scope

This is the fifth 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 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

[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).

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.

FY 2001 Design Projects

01-01: Microsystems and Engineering Sciences Applications (MESA), SNL

Fiscal Quarter				Total 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 2001	1Q 2003	3Q 2003	3Q 2010	14,925 [a]	462,469

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 2002	4Q 2003	3Q 2004	4Q 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 project.

[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.

01-04: Engineering Technology Complex Upgrade, LLNL

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 2002	3Q 2003	4Q 2002	4Q 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 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 2001	1Q 2002	1Q 2002	TBD	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 as Criticality Experiments Facility (CEF) at NTS

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
4Q2004	4Q2006	4Q2006	3Q2008	23,968	105,892

Fiscal Year	Appropriations	Obligations	Costs
2001	998 [a]	0	0
2002	6,426	0	0
2003	0	7,424	0
2004	1,591[b]	1,591	1,731
2005	5,953[c]	5,953	11,558
2006	9,000	9,000	10,679

This subproject provides for preliminary and final design associated with the LANL Technical Area (TA)-18 Mission Relocation Project (MRP), 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. The NNSA recently 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. Given the recent change in direction, additional preliminary design activities are required to develop detailed project scope, schedules, and budget; however, it is anticipated that this project will include capabilities to house and operate critical assemblies, store associated special nuclear

[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).

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 are requested in FY 2006 for the CEF to implement nuclear facilities' design requirements. Construction funding request in FY 2006 is reduced by the same amount.

01-08: Sandia Underground Reactor Facility (SURF), SNL

Fiscal Quarter				Total Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection Cost ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
3Q 2001	4Q 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.

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 2002	3Q 2003	3Q 2003	4Q 2004	9,793 [b]	$37,977

Fiscal Year	Appropriations	Obligations	Costs
2001	6,783	6,783	0
2002	3,010 [c]	3,010	3,080
2003	0	0	5,766
2004	0	0	947

[a] The appropriations, obligations and costs now reflect the actual cost of design.

[b] 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.

[c] $3,010,000 was reprogrammed to this subproject in FY 2002 to support the increased design TEC.

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.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	45,538	TBD
Design Management costs	4,800	TBD
Project Management costs	7,600	TBD
Design Phase Contingency (current estimates include contingency based on risk analysis)	0	TBD
Total, Design Costs	57,938	TBD
Total, Line Item Costs (TEC)	57,938	TBD

5. Method of Performance

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 concerns.

6. Schedule of Project Funding

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Cost						
Facility Cost						
Design	32,719	2,982	11,558	10,679	0	57,938
Total, Line Item TEC	32,719	2,982	11,558	10,679	0	57,938
Total, Facility Costs (Federal and Non-Federal)	32,719	2,982	11,558	10,679	0	57,938
Other Project Costs [a]						
Conceptual design costs	8,920	700	0	0	0	9,620
Other project-related costs	0	0	0	0	0	0
Total, Other Project Costs	8,920	700	0	0	0	9,620
Total Project Costs	41,639	3,682	11,558	10,679	0	67,558

[a] Once line item construction funding is requested, the Other Project Costs associated with the project are included in the construction data sheet and are no longer reflected here. All design subprojects in this PED line item have either been deferred/cancelled or have a separate line item construction project data sheet.

01-D-124, Highly Enriched Uranium Materials Facility
Y-12 National Security Complex, Oak Ridge, Tennessee

Significant Changes

- The Performance Baseline presented in this data sheet includes all revisions to the scope identified during the facility design. This includes the cost for resolution of critical foundation and safety authorization issues raised during Preliminary Design and include the effect of the higher-than-expected price proposals for the Facility. Reflecting all these changes and using current overhead and current escalation rates, the revised Total Estimated Cost is increased to $280,731,000 and the Total Project Cost (TPC) is $323,711,000.
- Start of operations is scheduled for the third quarter of FY 2008.
- This information reflects the Revised Performance Baseline, based on anticipated approval of proposed BCP-05-151, in accordance with DOE Order 413.3 requirements with an allowance for contingency.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2001 Budget Request *(Preliminary Estimate)*......................	1Q 2001	1Q 2002	2Q 2001	2Q 2005	120,000	144,000
FY 2002 Budget Request	3Q 2001	4Q 2002	4Q 2001	2Q 2005	119,949 [a]	143,949
FY 2003 Budget Request..................	3Q 2001	4Q 2003	2Q 2002	4Q 2006	119,949	143,949
FY 2004 Budget Request..................	3Q 2002	4Q 2003	3Q 2002	3Q 2006	184,000	222,500
FY 2005 Budget Request (*Performance Baseline)*	4Q 2002	1Q 2004	2Q 2003	1Q 2007	211,898	251,198
FY 2006 Budget Request *(Revised Performance Baseline)* [b].....	4Q 2002	1Q 2004	2Q 2003	1Q 2007	280,731	323,711

[a] Original TEC was $120,000,000. This was reduced by $51,000 for Safeguards and Security (S&S) Amendment in 2001.

[b] This information reflects the Revised Performance Baseline, based on anticipated approval of proposed BCP-05-151, in accordance with DOE Order 413.3 requirements with an allowance for contingency.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations [a]	Costs [a]
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	70,350	70,350	151,960
2007	10,698	10,698	40,419
2008	0	0	177

3. Project Description, Justification and Scope

The Highly Enriched Uranium (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 minimum storage requirements of 24,000 containers.

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

[a] This information reflects the Revised Performance Baseline, based on anticipated approval of proposed BCP-05-151, in accordance with DOE Order 413.3 requirements with an allowance for contingency.

[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 $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.

[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).

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 2006 funding will be utilized to continue facility construction activities.

Project Milestones:

FY 2002:	A-E Work Initiated	4Q
FY 2003:	Physical Construction Started	2Q
FY 2004:	A-E Work Completed	1Q
	Facility Construction Started	2Q
FY 2007:	Physical Construction Completed	1Q
	Startup Testing Completed	4Q
	Operational Readiness Review Completed	4Q
FY 2008:	Project Closeout and Begin Operations	3Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	16,734	19,802
Design Management costs (0.4% of TEC)	1,108	1,108
Project Management costs (1.3% of TEC)	3,730	3,731
Total, Design Costs (7.8% of TEC)	21,572	24,641
Construction Phase		
Buildings	176,841	107,442
Other Structures	5,799	0
Utilities	13,832	5,842
Special Equipment	9,964	11,325
Inspection, design & project liaison, testing, checkout & acceptance (3.1% of TEC)	8,489	5,698
Other Program Activities	1,823	4,313
Construction Management (3.6% of TEC)	9,885	13,393
Project Management (1.2% of TEC)	3,392	7,094
Total, Construction Costs (81.7% of TEC)	230,025	155,107
Contingencies		
Design Phase (0.0% of TEC)	19	756
Construction Phase (10.5% of TEC)	29,115	31,394
Total, Contingencies (10.5% of TEC)	29,134	32,150
Total, Line Item Costs (TEC) [b]	280,731	211,898

5. Method of Performance

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 partially completed 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

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[a] Includes FSAR, CAAS Programming, UCNI Security and Project Documentation.

[b] The annual escalation rates assumed are based on forward pricing rates for BWXT labor and approved DOE annual escalation rates for other costs.

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.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	15,629	5,716	201	45	0	21,591
Construction	5,593	11,010	50,026	151,915	40,596	259,140
Total, Line Item TEC	21,222	16,726	50,227	151,960	40,596	280,731
Other Project Costs [a] [b]						
Conceptual design cost	1,925	0	0	0	0	1,925
Other project-related costs	19,950	1,670	1,031	7,920	10,484	41,055
Total Other Project Costs	21,875	1,670	1,031	7,920	10,484	42,980
Total Project Cost (TPC)	43,097	18,396	51,258	159,880	51,080	323,711

[a] Conceptual Design Report (CDR) and its addendum were completed in FY 2001 at an estimated cost of $1,925,000.

[b] Other project-related prior year costs include $7,010,000 in FY 2000, $4,125,000 in FY 2001, $6,140,000 in FY 2002, $2,675,000 in FY 2003, and $1,384,000 in FY 2004. Activities supported with this funding include: selection of AE subcontractor and RFP preparation, storage system development, criticality safety evaluations and preparations of technical safety basis documentation, Preliminary Safety Analysis Report, vulnerability analysis, Hazardous Materials Evaluation, preparation of the PEP, design criteria, acquisition plans in support of issuing CD-1, site characterizations, operations support, preparing a waste management plan, finalizing plans for CD-1, site planning and investigations, independent project assessments, ORR support, DNFSB support, and project management and project support. Costs for moving material into the new facility is not included.

7. Related Annual Funding Requirements [a]

(FY 2009 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs [b]	1,050	1,050
Facility maintenance and repair costs [c]	1,650	1,650
Programmatic operating expenses directly related to the facility [d]	5,900	5,900
Other costs [e]	400	400
Security Forces [f]	0	0
Total related annual funding (operating from FY 2009 through FY 2058)	9,000	9,000

[a] These costs are from the cost/benefit analysis for the defense-in-depth design concept.

[b] Operating costs are the costs of managing the facility.

[c] Facility use costs are combined with the facility maintenance and repair costs.

[d] These are the costs for receipt, storage, and inventory of the contents.

[e] Other costs include the ES&H costs for keeping the facility compliant.

[f] Security forces are funded as a part of the overall site security budget.

Secure Transportation Asset - Overview

Funding Schedule by Activity

(dollars in thousands)

Secure Transportation Asset (STA)	FY 2004	FY 2005	FY 2006	$ Change	% Change
Operations and Equipment……….	127,241	142,736	143,766	+ 1,030	+ 0.7 %
Program Direction……………….	59,211	56,973	68,334	+ 11,361	+ 19.9 %
Subtotal, Secure Transportation Asset ……	186,452	199,709	212,100	+ 12,391	+ 6.2 %
Use of Prior Year Balance……….	-20,000	0	0	0	0 %
Total, Secure Transportation Asset ……	166,452	199,709	212,100	+ 12,391	+ 6.2 %
Total, Full Time Equivalents	**404**	**555**	**575**	**+20**	**+3.6%**

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Secure Transportation Asset	212,100	222,705	233,840	245,532	257,809	1,171,986

Description

The goal of the Secure Transportation Asset (STA) Program is to safely and securely transport nuclear weapons, weapons components, and special nuclear materials to meet projected Department of Energy (DOE), Department of Defense (DoD), and other customer requirements.

Benefits to Program Goal 01.36.00.00 Secure Transportation Asset

The Secure Transportation Asset 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) schedule, 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 interests and the associated approval of a new Design Basis Threat posture, which will necessitate the development of a new Site Safeguards and Security Plan (SSSP). The new posture will require that more assets be deployed during the execution of convoys, resulting in a greater need for increased capacity. An increase in capacity requires increasing the number of agents, the inventory of vehicles and supplies necessary to fulfill the mission, and the support staff. Related costs for mission training requirements for a larger agent force will also necessitate an increase to instructor staff, material costs, and facilities. If new and innovative force multiplier technologies can be acquired and implemented, it may alleviate some of the need for these additional assets.

Secure Transportation Asset - Operations and Equipment

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Operations and Equipment					
Mission Capacity................................	73,470	70,875	72,283	+ 1,408	+ 2.0%
Security/Safety Capability..................	14,136	14,416	13,248	- 1,168	- 8.1%
Infrastructure and C3 Systems............	28,944	28,717	27,040	- 1,677	- 5.8%
Design Basis Threat Response...........	0	18,300	19,100	+ 800	+ 4.4%
Program Management........................	10,691	10,428	12,095	+ 1,667	+ 16.0%
Subtotal, Secure Transportation Asset, Operations and Equipment...........................	127,241	142,736	143,766	+ 1,030	+ 0.7%
Use of Prior Year Balances................	-9,400	0	0	0	+ 0.0%
Total, Secure Transportation....................	117,841	142,736	143,766	+ 1,030	+ 0.7%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Secure Transportation Asset Operations and Equipment	143,766	139,677	147,033	154,783	163,380	748,639

Benefits to Program Goal 01.36.00.00 Secure Transportation Asset

Within the Secure Transportation Asset (STA) – Operations and Equipment Activity, each of five Major Technical Elements (MTEs) make unique contributions to Program Goal 01.36.00.00. These MTEs 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 operations, and utilizes contract drivers to move empty vehicles. (2) Security/Safety Capability: development and implementation of new fleet technologies, intensified agent training, and Security/Safety programs. (3) Infrastructure and command, control, and communications (C3) systems: facility maintenance, support for construction projects, and C3 systems. (4) Design Basis Threat (DBT): the assessment, modification, and application of new state-of-the-art detection and deterrence technology for mobile site security. (5) Program Management: corporate functions and business operations that control, assist, and direct secure transport operations.

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 Secure Transportation Asset (STA) Program has incorporated feedback from OMB into the FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

For FY 2006, the OMB evaluated the STA Program using the PART. Overall, OMB rates the STA program 81 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 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, independent evaluations of program effectiveness have not been completed recently to validate prior assessments. In response to the OMB findings, the NNSA is increasing the number of supporting accounts to increase management flexibility in responding to changing security conditions and mission priorities and improve obligation and costing of funds. The NNSA is also establishing an independent assessment branch in the organization to ensure more frequent independent evaluations.

Major FY 2004 Achievements

- Completed 91 convoys.
- Added 3 SafeGuards Transporters (SGTs), for a total of 31 SGTs.
- Replaced 20 escort vehicles.
- Achieved training level of 25 percent of total agent time.
- Completed FY 2004 planned command and control upgrades to the primary and alternate Transportation and Emergency Control Center.
- Procured narrow band Very High Frequency (VHF) radio system to meet the Federal Communication regulations.
- Added 2 armored tractors to achieve a capacity of 51 armored tractors.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There are no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual percentage of shipments completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material.	R : 100%	R : 100%	R : TBD	T : 100%	T : 100%	T : 100%	T : 100%	T : 100%	Annually, ensure 100% of shipments are completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material.
Annual percentage of requested packages of nuclear weapons, components, and material shipped (Annual Outcome)	R: 80%	R: 85%	T: 87%	T: 89%	T: 90%	T: 91%	T: 92%	T: 93%	By 2010, achieve 93% of requested packages of nuclear weapons, components, and material shipped.
Annual number of secure convoys completed (Annual Output)	R: 78	R: 91 T: 90	T: 105	T: 120	T: 130	T: 140	T: 150	T: 150	By 2009, complete 150 convoys per year.
Cumulative number of Safeguard Transporters (SGTs) in operation (Long-term Output)	R: 28	R: 31 T: 32*	T: 33**	T: 37	T: 40	T: 43	T: 46	T: 49	By 2011, achieve an SGT fleet of 51.

* Target was incorrectly set at 32; should have been 31, based on 3 new Safeguard Transporters annually.
** The budget reduction for prior year balances in FY 2004 exhausted the parts stream for the SGTs so that three could be produced. The continuing resolution delayed the procurement of parts for FY 2005, consequently, only 2 SGTs will be produced in FY 2005.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Mission Capacity	**73,470**	**70,875**	**72,283**

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 80 students**.** (2) Replace 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) Ensure the readiness 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) Optimize the use of agent time through the use of contract drivers, government aircraft, and computer planning systems. Contract drivers move empty vehicles and trailers to their staging area. Aircraft are used to move agents and contract drivers to staging points to minimize travel time. Aircraft are also used to transport Limited Life Components of nuclear weapons. Funding supports contract drivers and the operation and maintenance of two DC-9s, one C-9, one G3, and one Lear jet. The reduced funding in FY 2005 represents the completion of the armored tractor production line in FY 2004.

In FY 2006, specific activities focus on: 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	**14,136**	**14,416**	**13,248**

Provides support to the program goal of strengthening the STA security and safety capability. This goal includes the following sub-elements: (1) Identify, design, and test 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) Sustain and support intensified training. Funding supports the technical equipment, logistics, curriculum development, and staffing necessary to conduct Special Response Force, Operational Readiness, and Sustainment training. (3) Maintain security, safety, and emergency management 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) Maintain and upgrade the NNSA Emergency Operations Center (EOC) in Albuquerque, NM.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

The focus in FY 2006 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 agent weapons and equipment and the review and approval of the draft Nuclear Explosives Safety Master Study.

Infrastructure and C3 Systems....................	**28,944**	**28,717**	**27,040**

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. The focus for FY 2006 will be to complete parts fabrication, documentation, and installation of the Vehicle Network System (VNS) into operational vehicles. (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 2006 activities include deploying new Very High Frequency (VHF) radios, fielding Mobile Interface Controllers, replacing outdated communications hardware, and establishing the Alternate Transportation Emergency Control Center.

Design Basis Threat Response	**0**	**18,300**	**19,100**

The March 2003 Design Basis Threat (DBT) increases requirements associated with assessing site vulnerabilities. This response constitutes a two-year, $37.4 million project to meet the new standard. This funding request supports new equipment and training ready for immediate incorporation into mobile operations in response to this new DBT. Many potential technological enhancements judged to effectively bolster security for fixed site facilities have not, as yet, been studied for application to a mobile environment. This funding also supports formally assessing these technologies for best and most cost effective results supporting the development of force multiplying technologies and enhanced detection capabilities. Specifically, this funding supports the following existing activities: (1) Increase agent end-strength; (2) Evaluate new technology for use in a mobile environment and deployment of previously evaluated technology; (3) Develop and train modified tactical doctrine; and (4) Conduct safety and security studies associated with a change to the security posture and the Site Safeguards and Security Plan.

The focus for FY 2006 will be to invest in "force multiplier" technology to alleviate the need to add more Federal Agents to the convoys and potentially save lives of current Federal Agents. In addition, it will provide Federal Agents with specialized training and equipment to improve upon the Agents' current skillset.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Program Management	**10,691**	**10,428**	**12,095**

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 and equipment, medical contract costs, configuration management, 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, and business integration activities by support contractors.

Total, Secure Transportation Asset Operations and Equipment	**127,241**	**143,736**	**143,766**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Mission Capacity	
The increase supports Safeguards Transporter refurbishment, Safe and Secure Trailer decommissioning activities, and the increased agent equipment costs associated with a larger workforce	**+1,408**
Security/Safety Capability	
The decrease represents the completion of an FY 2005 upgrade project to the Emergency Operations Center in Albuquerque, NM.	**-1,168**
Infrastructure and C3 Systems	
This decrease represents the completion of equipment purchases for the Vehicle Network System and the completion of the shoot-house at Ft. Chaffee, AR	**-1,677**
Design Basis Threat Response	
This increase reflects implementation of the new Design Basis Threat through the assessment, modification, and application of new state-of-the-art detection and deterrence technology for mobile site security and improvement in Agents' skillset. This funding is the final installment for the two-year security enhancement project, which totals $37.4 million	**+800**
Program Management	
This increase supports the increased costs of the Human Reliability Program and the annual Joint Testing Exercise. It will also support an expansion of the internal review and oversight functions	**+1,667**
Total Funding Change, Secure Transportation Asset Operations and Equipment	**+1,030**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(Dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	4,426	4,560	4,697	+ 137	+ 3.0%
Capital Equipment	2,276	2,344	2,414	+ 70	+ 3.0%
Total, Capital Operating Expenses	6,702	6,904	7,111	+ 207	+ 3.0%

Secure Transportation Asset Program Direction

Funding Schedule by Activity

(dollars in thousands)

Secure Transportation Asset Program Direction	FY 2004	FY 2005	FY 2006	$ Change	% Change
Salaries and Benefits	51,578	49,739	60,720	+ 10,981	+ 22.1 %
Travel..	6,362	5,689	6,069	+ 380	+ 6.7 %
Other Related Expenses....................	1,271	1,545	1,545	0	0.0 %
Subtotal, Secure Transportation Asset, Program Direction...............	59,211	56,973	68,334	+ 11,361	+ 19.9%
Use of Prior Year Balances...............	-10,600	0	0	0	0
Total, Secure Transportation Asset Program Direction..................	48,611	56,973	68,334	+ 11,361	+ 19.9%
Total, Full Time Equivalents	**404**	**555**	**575**	**+20**	**+3.6%**

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Secure Transportation Asset Program Direction	68,334	83,028	86,807	90,749	94,429	423,347

Benefits to Program Goal 01.36.00.00 Secure Transportation Asset

Within the Secure Transportation Asset Program Direction Activity, three subprograms make unique contributions to Program Goal 01.36.00.00: (1) salaries and benefits - overtime, workman's compensation, and health/retirement benefits, (2) travel - associated with over 120 secure convoys, and (3) other related expenses - professional development, Permanent Change of Station (PCS) moves, and contractual services.

Major FY 2004 Achievements

- Achieved agent end strength of 280 agents.
- Reduced annual average of scheduled overtime hours per federal agent from 1,200 to 1,100 hours.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There are no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative number of Federal Agents at the end of each year (Long-term Output)	R: 248	R: 283 T: 266	T: 335	T: 370	T: 405	T: 420	T: 420	T: 420	By 2008, achieve end strength of 420 Agents.
Annual average scheduled overtime hours per agent (EFFICIENCY MEASURE)	*R: 1,200*	*R: 1,100*	*T: 900*	*T: 800*	*T: 700*	*T: 600*	*T: 600*	*T: 600*	*By 2008, achieve annual Agent overtime of 600 hours. (FY 2002 baseline 1300)*

Detailed Justification

Secure Transportation Asset Program Direction	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Salaries and Benefits	**51,578**	**49,739**	**60,720**

Provides for the salaries and benefits of the Program staff at Albuquerque, NM; Fort Chaffee, AR; and Washington, D.C., as well as the Federal agents and support staff at the three Federal Agent Force locations (Albuquerque, NM; Oak Ridge, TN; and Pantex, TX). Includes overtime, workman's compensation, and health/retirement benefits associated with Federal agents and staff.

Travel	**6,362**	**5,689**	**6,069**

Provides for travel associated with a projected 120 annual secure convoys, training at other U.S. Government facilities and military installations, and program oversight.

Other Related Expenses	**1,271**	**1,545**	**1,545**

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	**59,211**	**56,973**	**68,334**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Salaries and Benefits	
The increase reflects the impact of two forty-person agent candidate training (ACT) classes conducted in FY 2005. The impact of this hiring will be noticed in FY 2006 (agents are hired at a student rate with only a few months remaining in the fiscal year). In FY 2006, 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 supporting staff positions because of the larger agent force. A portion of the increase is due to removing the overtime pay cap based on the National Defense Authorization Act for Fiscal Year 2004. The removal of the Overtime Cap has caused a 45-percent increase in estimated overtime cost. While overtime hours per agent are being reduced, the agents now earn their actual hourly rate as opposed to being capped at the GS-10 level. In addition, the fact that there are more agents also increases total and associated overtime costs. Increases are due to planned staff and agent increases to 575 FTEs	**+10,981**
Travel	
The increase reflects higher travel costs associated with a larger agent force	**+380**
Total Funding Change, Secure Transportation Asset Program Direction	**+11,361**

Other Related Expenses

(Dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Training	548	953	953	0	0%
PCS Moves	700	500	500	0	0%
Other Contractual Services	23	92	92	0	0%
Total, Other Related Expenses	1,271	1,545	1,545	0	0%

Nuclear Weapons Incident Response

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Nuclear Weapons Incident Response					
Emergency Response......................	83,168	92,337	101,682	+ 9,345	+ 10.1%
Emergency Management.................	5,999	6,090	6,615	+ 525	+ 8.6%
Operations Support [a] ……………..	7,030	9,949	10,499	+ 550	+ 5.5%
Total, Nuclear Weapons Incident Response.................................	96,197	108,376	118,796	+ 10,420	+ 9.6%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Nuclear Weapons Incident Response.........	118,796	124,736	130,973	137,522	144,398	656,425

Description

The Nuclear Weapons Incident Response (NWIR) program responds to and mitigates nuclear and radiological incidents worldwide.

Starting with the FY 2005 budget request, this is a separate control line. Funding was previously included in Readiness in Technical Base and Facilities. This budget reflects several realignments. First, an initiative started in FY 2001 realigned the traditional Accident Response Group under the Nuclear Emergency Support Team (NEST) as reflected in our FY 2005 budget reducing this budget line item from over $12 million to less than $2 million basically for Disposition activities. The FY 2006 budget realigns the remainder of that small activity into the NEST line to better reflect the way the program is managed.

Second, 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

[a] FY 2004 and FY 2005 include comparability adjustments of $7,030,000 and $9,949,000 respectively, reflecting the transfer of DOE's Emergency Operations Center and associated functions previously funded the Office of Security and Safety Performance Assurance Activities to NNSA. The amount in FY 2006 is $10,293.

Operations Centers and associated functions are included within this program under "Operations Support" consistent with management responsibility. Program Direction to support all NWIR programs is budgeted for in the Office of the Administrator appropriation account, including funds to staff the Emergency Operations Centers.

The NWIR program provides funding for emergency management, operations support, and radiological emergency response activities that ensure a central point of contact and an integrated response to emergencies requiring Departmental assistance. Specific attention is focused on providing an appropriate technical response to any nuclear or radiological emergency within the Department, the United States and abroad in accordance with Presidential Decision Directives 39 and 62, the Atomic Energy Act as amended, and Executive Order 12656. This is accomplished through the seven unique Departmental assets for both crisis and consequence management events. Capabilities range from providing radiological assistance in support of state and local agencies to responding to major national or international nuclear/radiological accidents or incidents. In addition, outreach, technical support, training, and exercise support is continually provided to the response community. Asset staffing consists primarily of engineers, scientists, and other technical personnel from the national laboratories, manufacturing facilities and other DOE/NNSA management and operating contractors.

In meeting these mission requirements, the DOE possesses the ability to monitor and predict environmental impacts of radiation at major DOE and other federal agency facilities in the event of a radiological accident or incident. DOE's response is further rounded out by the ability to provide medical and health physics support to radiological accidents and for incident resolution. This requires a close working relationship with federal agencies and the military to support the operations, exercises, and training of associates who provide technical assistance in response to the incident/situation.

This request accomplishes some minor reprioritization of requirements, needed realignments, and price growth at approved escalation rates. It also includes some growth to better align our response program capabilities with our expanded program breadth and increased OPSTEMPO. This budget represents the minimum required to accomplish our vital national security missions.

Benefits to Program Goal 01.37.00.00 Nuclear Weapons Incident Response

Within the Nuclear Weapons Incident Response program, the Emergency Response, Emergency Management, and Operations Support subprograms each make unique contributions to Program Goal 01.37.00.00. Emergency Response 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. Emergency Management 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 supports 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. The Program 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 2004 Achievements

- Deployed multiple field teams to conduct operations in support of Homeland Security, including each elevation to Level Orange, National Special Security Events, and National Security Events.

- Participated in multiple interagency national and international counter terrorism exercises, including TOPOFF II and Eligible Receiver.

- Established an additional Radiological Assistance Program location to support the National Capital Region.

- Improved the capacity of Triage, a radiological reach-back capability, to provide first responders with expert analysis of detector readings.

- Prepared for and participated successfully in two major Continuity of Operations exercises—the first ever in DOE.

Major Program Shifts

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" consistent with management responsibility.

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 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative number of the 8 designated Radiological Assistance Program (RAP) Regions with a maritime radiation search program.	N/A	R: 1 T: 1	T: 3	T: 5	T: 6	T: 7	T: 7	T: 8	Establish a maritime radiation search program in the 8 designated RAP Regions by the end of FY 2010.
Cumulative percentage of identified RAP team members (80 of 216) qualified to provide technical assistance in managing and executing the response to a radiological or nuclear event.	N/A	R: 29% T: 30%	T: 60%	T: 80%	T: 100%	N/A	N/A	N/A	Qualify 100% of identified RAP team members (80 of 216) to support the NNSA CMRT by the end of FY 2007. This satisfies the program requirement to have CMRT qualified team members in 8 RAP Regions.
Annual number of “no-notice” emergency management exercises conducted.	N/A	R: 8 T: 8	T: 9	T: 10	T: 11	T: 12	T: 12	T: 12	Conduct annually 12 “no-notice” emergency management exercises by the end of FY 2008.
Annual Triage capability, measured in numbers of calls that could be resolved, to provide remote isotopic identification of an unknown item and determine if a threat exists. (EFFICIENCY MEASURE)	*N/A*	*R: 250* *T: 250*	*T: 300*	*T: 350*	*T: 400*	*T: 450*	*T: 500*	*T: 500*	*The Triage system will be able to resolve up to 500 calls per year by the end of FY 2009.*
Cumulative percentage of emergency response equipment replaced, upgraded, or re-certified.	N/A	R: 100% T: 15%	T: 30%	T: 45%	T: 60%	T: 75%	T: 100%	N/A	Replace, upgrade, or re-certify 100% of FY2003 baseline equipment by the end of FY 2009.
Annual percentage of time the Emergency Communications Network is operationally ready to exchange classified and unclassified data, video, and voice information between headquarters and 32 remote locations.	N/A	N/A	T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	T: 95%	Annually ensure that the Emergency Communications Network is operationally ready to exchange all data, video, and voice information at least 95% at the time.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Emergency Response	**83,168**	**92,337**	**101,682**

Emergency Response 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.

Engineers, scientists, and technical personnel from national laboratories and production facilities, and other DOE management and operating contractors supporting the nuclear weapons complex primarily staff the emergency response assets. The radiological assets managed by the NNSA Office of Emergency Operations are staffed by scientists and highly technical personnel holding full-time jobs at national laboratories and manufacturing facilities who agree to serve as volunteers, similar to "volunteer firemen", to deploy in the event of a potential nuclear incident. The pool of potential volunteers is greater than 900 individuals. These volunteers come from a broad mix of DOE scientific facilities and national laboratories. However, specialized assistance is provided largely by the Remote Sensing Laboratory at Nellis Air Force Base, Nevada; Los Alamos, Lawrence Livermore, and Sandia National Laboratories.

Historically, these assets have been maintained as distinct activities; the Accident Response Group (ARG), the Nuclear Emergency Support Team (NEST), and Other Assets. As a result of the September 11th attacks, Emergency Response program activity has increased significantly. Search and response teams remain on full alert. The accelerated pace and additional requirements are likely to continue in response to changing national security and law enforcement needs. To remain responsive, the program is managing the assets as integrated units, using expertise and equipment across funding categories to support mission requirements.

In FY 2006, the NNSA Office of Emergency Operations will continue to work cooperatively with the Department of Homeland Security to provide assistance in emergency situations. Upon direction, the NNSA Office of Emergency Operations will deploy the radiological assets as directed by the Department of Homeland Security.

Since September 11th, NNSA's response assets have increasingly been a part of security missions led by federal law enforcement agencies. There is a consensus within the counter-terrorism community that a psychological threshold has been crossed by terrorist organizations with respect to the use of Weapons of Mass Destruction (WMD) against large civilian populations. Correspondingly, the need to respond to covert and deliberate incident threats, involving WMD, has risen dramatically. Additionally, increased monitoring at the borders and significant proliferation of radiation detection equipment in the hands of law enforcement has resulted in a higher volume of requests for NNSA assistance, comprehensive training, and liaison.

To address these threats more effectively, the NNSA Office of Emergency Operations is restructuring its asset deployment capability to increase geographical coverage and improve response time throughout the country. Radiological Assistance Program (RAP) teams that currently serve in nine

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

RAP regions on a part-time basis will be restructured to provide full-time regional response with increased search and identification capabilities throughout the country.

The restructuring will expand response capabilities to mirror the regions used by the DHS Emergency Preparedness and Response (EP&R) Directorate. Instead of centralized search operations from one location, the assets will be dispersed throughout the country to provide a faster response capability. Each region will have full response capability, and all regions would be interconnected for classified data transmission and home team support. The realignment will also improve coordination with representatives from other responding agencies in the region, such as the Federal Bureau of Investigation (FBI), Environmental Protection Agency (EPA), and Tribal, state and local authorities.

	FY 2004	FY 2005	FY 2006
Nuclear Emergency Support Team (NEST)	**59,189**	**67,940**	**77,299**

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 WMD. The Nuclear Emergency Support Team (NEST) program was initiated in 1974 to provide DOE/NNSA technical assistance to a LFA, whether it be DHS, DOE, FBI, EPA, Nuclear Regulatory Commission (NRC), or DOD, to deal with incidents, including terrorist threats, that involve the use of nuclear materials. 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 and characterization of any nuclear weapon or radioactive device by using the TRIAGE first responder support system initiated as part of the FY 2002 Supplemental Appropriation. TRIAGE provides first responders throughout the country with a “911” type of identification and communication system. A phone call-in number is staffed around the clock to give emergency responders anywhere in the world instant access to expert nuclear scientists in the event of a suspected nuclear situation. Using their analysis of the data transmitted to them via the communications device, the scientists can provide immediate guidance and facilitate deployment of portable detection equipment to determine what type of nuclear material the responder may be facing. TRIAGE is part of the overall priority effort to develop broader geographical coverage and improve response time of emergency responders to address potential nuclear situations.

Additionally, NEST has the capability to search for possible additional devices that may have been emplaced and provide assistance for final disposition. In recognition of the increasing potential for such an incident with little or no advance warning, NEST has been restructured to rapidly respond by deploying small, highly capable technical teams to the incident.

This request includes $8 million to better support our first responders. It provides for long needed new equipment, required training, and a communications package that resolves long-standing compatibility problems. It also provides for a first responder outreach program. Rapid response is critical to our success and this program trains other Federal, state, and local officials on our capabilities and how to contact us in an emergency. Last, it provides for an increase to our Technology Integration Program. Technology integration is an important process that keeps our responders equipped with cutting edge equipment and analysis methods.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Other Assets	**23,979**	**24,397**	**24,383**

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 Measurement System (AMS) detects, measures, and tracks radioactive material at an emergency scene to determine contamination levels using fixed 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, FEMA, NRC, EPA, DoD, state and local agencies, and others.
- The Radiological 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 United States and abroad.

Emergency Management	**5,999**	**6,090**	**6,615**

Emergency Management provides for the comprehensive, integrated emergency planning, preparedness, and response programs throughout the Department. The Emergency Management 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 provides overall coordination and consultation regarding the Department's Emergency Management System, and includes promulgation of Departmental requirements and implementation guidance. The Emergency Management program also conducts emergency preparedness and readiness assurance activities to ensure effective emergency management programs are in place throughout the Department. The program also includes emergency management assistance and mobilization when the National Response Plan is activated for radiological and non-radiological hazardous materials events, or in the event of malevolent threats or terrorist acts such as nuclear materials smuggling. The Emergency Management program supports a variety of inter-agency emergency planning, preparedness, and information exchange functions.

The program also coordinates inter-agency and intra-Departmental emergency planning, preparedness and information exchange activities, and coordinates with state and local governments, international agencies, foreign governments, and industry on emergency planning, preparedness and exercise issues.

The Emergency Management program is also 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. Continuity Programs

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

are also now part of this program. Lastly, this program includes management of the Emergency Operations Training Academy.

Operations Support	**7,030**	**9,949**	**10,499**

This function was transferred from DOE to NNSA in FY 2004. It maintains the Forrestal Operations Center and the Germantown Alternate Operations Center. These activities include: operation of a 24 hour-a-day Headquarters Watch Office which serves as the Department's Headquarters point-of-contact for notification of reports of unusual occurrences, incidents and emergencies at DOE/NNSA sites and facilities; operation of the Emergency Communications Network which connects 32 remote DOE, Federal and international sites; support to Headquarters emergency response operations; and Team Rooms, which provide emergency facilities for classified/unclassified operations with an uninterrupted power supply and generator backup. Two rooms at the Forrestal Operations Center are cleared Sensitive Compartmented Information Facilities (SCIF) and support emergency-related activities at the Special Compartmented Information level.

Total, Nuclear Weapons Incident Response...	**96,197**	**108,376**	**118,796**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Emergency Response	
Nuclear Emergency Support Team (NEST)	
Increase for escalation	**+1,359**
The increase brings capability more into alignment with post 9/11 operations tempo (OPSTEMPO). First, it replaces outdated and inoperable equipment. Second, it provides training necessary to qualify volunteer responders with the skills necessary to respond to the full range of emergency situations. Third, it provides for prototype development and fielding of a communications kit that eliminates incompatibility issues for our first responders. Fourth, it provides for development and implementation of a first responder outreach program which will educate and train local emergency responders and decision makers on the capabilities of the NNSA nuclear emergency response teams as well as how best to work with the team when needed. Fifth, it provides a modest increase to the Technical Integration (TI) program to partially buy back the investment necessary to provide our volunteer responders with adequate equipment and protocols. The TI program provides capabilities that make the equipment purchase program more effective. For several years, this program has been under-funded due to ever increasing OPSTEMPO requirements.	**+8,000**
Other Assets	
Increase for escalation	**+510**
Decrease realigns funding for Continuity Programs to Emergency Management (See Emergency Management below)	**-403**
Disposition Training and Drills is the method used to ensure the capabilities to handle the disposition of a damaged or recovered nuclear weapon, improvised nuclear device, or radiological dispersal device. This decrease accommodates changing overall program priorities	**-121**
Subtotal, Emergency Response	**+9,345**
Emergency Management	
Increase for escalation	**+122**
In FY 2004, Continuity Programs were moved to Emergency Operations. This increase realigns the funding from Emergency Response-- Other Assets	**+403**
Subtotal, Emergency Management	**+525**

	FY 2006 vs. FY 2005 ($000)
Operations Support	
Increase for escalation	**+206**
Increase supports Emergency Communications Network preventive maintenance to replace outdated components necessary to insure the system will function as designed in emergency situations	**+344**
Subtotal, Operations Support	**+550**
Total Funding Change, Nuclear Weapons Incident Response	**+10,420**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	160	165	170	+ 5	+3.0%
Capital Equipment	6,047	6,228	6,415	+ 187	+3.0%
Total, Capital Operating Expenses	6,207	6,393	6,585	+ 192	+3.0%

Facilities and Infrastructure Recapitalization Program

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Facilities and Infrastructure Recapitalization Program					
Operations and Maintenance					
Recapitalization..............................	165,378	212,353	162,728	- 49,625	- 23.4%
Facility Disposition........................	45,000	50,000	45,000	- 5,000	- 10.0%
Infrastructure Planning...................	24,680	26,884	25,756	- 1,128	- 4.2%
Subtotal, Operations and Maintenance.........	235,058	289,237	233,484	- 55,753	- 19.3%
Construction	3,697	24,485	50,025	+ 25,540	+ 104.3%
Total, Facilities and Infrastructure Recapitalization Program..................	238,755	313,722	283,509	- 30,213	- 9.6%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Facilities and Infrastructure Recapitalization Program						
Operations and Maintenance						
Recapitalization..................	162,728	151,867	139,314	160,399	193,215	807,523
Facility Disposition............	45,000	45,000	45,000	45,000	45,000	225,000
Infrastructure Planning.......	25,756	24,639	26,906	30,691	29,370	137,362
Subtotal, Operations and Maintenance.........	233,484	221,506	211,220	236,090	267,585	1,169,885
Construction................	50,025	67,957	84,322	65,658	40,500	308,462
Total, Facilities and Infrastructure Recapitalization Program	283,509	289,463	295,542	301,748	308,085	1,478,347

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 weapons complex sites.

FIRP is a capital renewal and sustainability program that was established to reduce the large backlog of 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, 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. With FIRP scheduled for completion in 2011, the Program is working with facilities and infrastructure organizational counterparts at Headquarters and NNSA sites to institutionalize responsible and accountable facility management practices.

Benefits to Program Goal 01.38.00.00 Facilities and Infrastructure Recapitalization Program

FIRP supports the overall goals of the Weapons Activities appropriation through improvements to NNSA facilities and infrastructure that result in improved operational efficiency and effectiveness. 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 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 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 the Program's long-term goal for excess facilities disposition. FIRP is effectively executing the Program and reports the corresponding planned and actual performance results in the congressional budget request, the DOE Annual Performance Plan, 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.

Program Assessment Rating Tool (PART)

The Department implemented the PART tool to evaluate selected programs. PART was developed by 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 Facilities and Infrastructure Recapitalization Program has incorporated feedback from OMB into the FY 2006 Budget Request and has taken the necessary steps to continue to improve performance.

As reported last year, OMB conducted a PART review on FIRP for the FY 2004 Budget. The PART assessment noted that the program was well managed. Because the Program was new, with only limited measurable results to date, OMB assigned its highest allowable rating of "Moderately Effective." FIRP provided OMB with an FY 2005 update to its FY 2004 PART, and completed an FY 2006 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.

Major FY 2004 Achievements

The FIRP has successfully executed hundreds of repair and infrastructure projects within approved cost, scope, and schedule, and continues to deliver measurable results that support increased operational efficiency and effectiveness of the NNSA weapons complex sites. The Program has met all of its annual performance targets to date, including those for FY 2004.

- FIRP's approved FY 2004 projects will result in a reduction to NNSA's deferred maintenance of $97 million, against a target of $79 million. NNSA's deferred maintenance will be stabilized on schedule in FY 2005.

- The Facilities Disposition subprogram's approved FY 2004 projects will result in the elimination of over 525,000 gross square feet (gsf) of excess space, exceeding the annual target of 325,000 gsf. NNSA is now over halfway to its long-term goal of eliminating three million gross square feet of excess space by FY 2009.

- Infrastructure Planning funds have been authorized for over 77 percent of FY 2005 Recapitalization projects against a target of 53 percent, demonstrating FIRP's ongoing commitment to improved project planning and excellence in supporting DOE Order 413.3, "*Program and Project Management for the Acquisition of Capital Assets*".

- The recently established FIRP Roof Asset Management Program is a best business practice employed by FIRP throughout the weapons complex. The program contracts an integrating manager to oversee an economical roof repair program at six of the eight nuclear weapons sites. This innovative initiative is delivering 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 deferred maintenance reduction.

- In a 2004 report, the National Research Council, Committee on the Renewal of DOE Infrastructure, commented that the "Facilities and Infrastructure Recapitalization Program was developed to address the backlog of deferred maintenance in the NNSA and appears to be working effectively. The program has strong central direction, and is linked to a ten year comprehensive site plan and five year funding plans."

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	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%)	T: $154.75M (21%) Stabilize deferred mainten-ance by the end of FY 2005.	T: $140M (33%)	T: $140M (44%)	T: $140M (56%)	T: $140M (68%)	T: $140M (79%)	The 2009 date for elimination of 100% of the $1.2B 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%)	T: 350,000 (69%)	T: 300,000 (79%)	T: 275,000 (88%)	T: 275,000 (97%)	T: 100,000 (100%)	T: 100,000 (103%)	Reduce the NNSA footprint by three million gross square feet (gsf) by FY 2009.
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 MEASURE)*	*N/A*	*R: 7.2%* *T: 10%*	*T: 9%*	*T: 8%*	*T: 7%*	*T: 6%*	*T: 5%*	*T: 5%*	*Return the condition of mission essential facilities and infrastructure to industry standards by the end of FY 2009.*

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Recapitalization..	**165,378**	**212,353**	**162,728**

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 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 invested over $5 million in FY 2004 on its complex-wide Roof Asset Management Program, and will invest an additional $15 million in FY 2005 and at least $10 million in FY 2006 to establish and implement 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 2006 will be on achieving NNSA's aggressive corporate goal to reduce complex-wide deferred maintenance to within industry standards. The NNSA has established its deferred maintenance baseline and will track progress against deferred maintenance reduction performance goals.

Facility Disposition..	**45,000**	**50,000**	**45,000**

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 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. 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.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

- **Congressionally Directed Activity:** The House Report accompanying the Consolidated Appropriations Act, 2005 includes the following:
  - The Committee directs that at least $50,000,000 of the facilities and infrastructure funding in fiscal year 2005 be used to dispose of excess facilities.
  - The Committee directs the NNSA to continue a free and open competition process for at least 70 percent of the funds provided for disposing of excess facilities.

Infrastructure Planning................................	**24,680**	**26,884**	**25,756**

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..	**3,697**	**24,485**	**50,025**

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 Planning, Engineering, and Design (PED) for several new projects in FY 2005 and will begin construction in FY 2006 for selected utility line item projects, consistent with Project Data Sheets. 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*", and all FIRP Line Item Construction Projects are rated as "Green" by the DOE Office of Engineering and Construction Management.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **06-D-160, FIRP Project Engineering and Design (PED) Project**.......................	**0**	**0**	**5,811**

This FIRP PED project provides for Architect-Engineering (A-E) services (Title I and Title II) for several Facilities and Infrastructure Recapitalization Program (FIRP) 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, Potable Water System Upgrade and Electrical Distribution System Upgrade projects at Y-12 National Security Complex) 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.

▪ **06-D-601, Electrical Distribution System Upgrade (EDSU)**	**0**	**0**	**4,000**

Funding for this project provides for the initial construction of 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**	**0**	**3,700**

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 44,405 linear feet (8.4 miles) of carbon steel pipe offsite, 29,930 linear feet (5.7 miles) of carbon steel pipe onsite, and 23,000 feet (4.4 miles) of high density polyethylene (HDPE) 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. 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 the GMDSU.

▪ **06-D-603, Steam Plant Life Extension Project (SPLEP), Y-12**...........................	**0**	**0**	**729**

Funding for this project provides for the advance procurement of equipment for the Steam Plant Life Extension (SPLE) project at the Y-12 National Security Complex. 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, feed-water system, wet and dry ash handling systems, steam plant

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

wastewater system, steam plant control system, steam plant electrical system, and steam plant structural system. Completion of this project will eliminate approximately $21,250,000 in deferred maintenance costs associated with the steam plant facility at Y-12. 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.

	FY 2004	FY 2005	FY 2006
▪ **05-D-160, FIRP Project Engineering and Design (PED) Project**......................	**0**	**8,631**	**10,644**

This FIRP PED project provides for Architect-Engineering (A-E) services (Title I and Title II) for several Facilities and Infrastructure Recapitalization Program (FIRP) utility construction projects that begin in FY 2005 (i.e., TA I Heating System Modernization (HSM) at Sandia National Laboratories, Steam Plant Life Extension Project (SPLEP) at Y-12 National Security Complex, and Electrical Distribution System Upgrade (EDSU) and Gas Main and Distribution System Upgrade (GMDSU) at Pantex Plant) 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.

	FY 2004	FY 2005	FY 2006
▪ **05-D-601, Compressed Air Upgrades Project**..	**0**	**4,365**	**9,741**

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 the 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.

	FY 2004	FY 2005	FY 2006
▪ **05-D-602, Power Grid Infrastructure Upgrade**..	**0**	**9,921**	**8,500**

The primary objectives of this project 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 Los Alamos. 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 2004	FY 2005	FY 2006
▪ **05-D-603, New Master Substation, Technical Areas I and IV**........................	**0**	**595**	**6,900**

This project provides long-lead procurement of the transformer for the New Master Substation Utility for Technical Areas I and IV at Sandia National Laboratories in Albuquerque, New Mexico. The procurement mitigates the significant risk to project schedule and cost identified during the Conceptual Design Report (CDR) phase related to purchase of the main transformer. The project will enable 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 is 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 New Master Substation.

▪ **04-D-203, FIRP Project Engineering and Design (PED) Project**.......................	**3,697**	**973**	**0**

This FIRP PED project provides for Architect-Engineering (A-E) services (Title I and Title II) for two utility construction projects that begin in FY 2004 (i.e., Compressed Air Upgrades Projects at Y-12 National Security Complex and the New Master Substation, Technical Area 1 and IV at Sandia National Laboratories) 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.

Total, Facilities and Infrastructure Recapitalization Program.............................	**238,755**	**313,722**	**283,509**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Recapitalization	
The request will support capital renewal and sustainability projects required to restore the facilities and infrastructure of the nuclear weapons complex to an acceptable condition. The program will preferentially fund projects that result in significant reductions to the FY 2003 deferred maintenance baseline.	**-49,625**
Facilities Disposition	
Excellent results from prior year execution of this subprogram will support achievement of the long-term goal to eliminate three million gross square feet of excess space by FY 2009 at the reduced funding level.	**-5,000**
Infrastructure Planning	
The request supports the continuation of credible, up-front planning and baselining of planned outyear Recapitalization projects, at the reduced level. These planning activities will ensure the effective and efficient use of FIRP funds.	**-1,128**
Construction	
Increase supports the initiation of several new Project Engineering and Design construction projects that meet the criteria for funding within the Recapitalization subprogram, and provides follow-on funding for projects already under construction or included in the Project Engineering and Design for FY 2005. This increase also supports commencement of utility line item construction activities that will result in significant reductions in NNSA's deferred maintenance.	**+25,540**
Total Funding Change, Facilities and Infrastructure Recapitalization Program	**-30,213**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses [a]

(Dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	99,549	102,535	92,281	- 10,254	- 10.0%
Capital Equipment	12,317	12,686	11,417	- 1,269	- 10.0%
Total, Capital Operating Expenses	111,866	115,221	103,698	- 11,523	- 10.0%

[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 2005 and FY 2006 funding shown reflects estimates based on FY 2004.

Construction Projects [a, b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappropriated Balance
06-D-160, Facilities and Infrastructure Recapitilization Program Project Engineering and Design, VL	10,411	0	0	0	5,811	4,600
06-D-601, Electrical Distribution System Upgrade, PX	8,100	0	0	0	4,000	4,100
06-D-602, Gas Main & Distribution System Upgrade, PX	3,700	0	0	0	3,700	0
06-D-603, Steam Plant Life Extension Project, Y-12	34,247	0	0	0	729	33,518
05-D-160, Facilities and Infrastructure Recapitilization Program Project Engineering and Design, VL	19,275	0	0	8,631	10,644	0
05-D-601, Compressed Air Upgrades Project, Y-12	14,808	0	0	4,365	9,741	702
05-D-602, Power Grid Infrastructure Upgrade, LANL	18,421	0	0	9,921	8,500	0
05-D-603, New Master Substation, Technical Area I & IV, SNL	7,495	0	0	595	6,900	0
04-D-203, Facilities and Infrastructure Recapitilization Program Project Engineering and Design, VL	4,670	0	3,697	973	0	0
Total Construction	121,127	0	3,697	24,485	50,025	42,920

[a] The TEC estimate is for design only for the PED projects included in 06-D-160.

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

06-D-160, National Nuclear Security Administration Facilities and Infrastructure Recapitalization Program (FIRP) Project Engineering and Design (PED), Various Locations

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2006 Budget Request *A-E and technical design only)*	1Q 2006	3Q 2007	2Q 2007	2Q 2010	10,411

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2006	5,811	5,811	4,741
2007	4,600	4,600	5,670

3. 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

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

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		
2Q 2006	2Q 2007	3Q 2007	1Q 2009	1,686	18,500

Fiscal Year	Appropriations	Obligations	Costs
2006	1,686	1,686	1,316
2007	0	0	370

The High Pressure Fire Loop (HPFL) – Zone 12 South MAA project has been identified as a high priority project in the 2004 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 SSC as defined in the AB 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. This Project will replace ductile iron pipe and evaluate sections not replaced for the installation of a cathodic protection system. Failures in the HPFL lines are occurring in the ductile iron sections that were installed in the 1970s and 1980s.

- Cathodic Protection Installation. Cathodic protection will be installed on all ferrous piping left in place such as facility tie-ins and valves in contact with the soil during the installation of new piping. The cathodic protection systems will prevent further degradation of the piping that is not replaced.

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.

Deferred maintenance for this project is estimated to be $1,000,000.

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 2006	1Q 2007	2Q 2007	3Q 2009	1,025	13,700-19,200

Fiscal Year	Appropriations	Obligations	Costs
2006	1,025	1,025	1,025

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 FY2003 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 dutied, 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.

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.

Deferred maintenance for this project is estimated to be $6,430,000.

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		
2Q 2006	3Q 2007	1Q 2008	3Q 2009	2,700	12,000 – 17,000

Fiscal Year	Appropriations	Obligations	Costs
2006	1,300	1,300	1,000
2007	1,400	1,400	1,700

This subproject includes the preliminary and final design for the proposed Electrical Distribution System Upgrade (EDSU) project which corrects deficiencies in the 161 kV and 13.8 kV electrical systems serving the Y-12 National Security Complex (Y-12). This project directly supports 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 improve the system reliability and availability, allow quicker restoration of power after a system failure, enhance worker safety by provide better access to equipment, and reduce the deferred maintenance backlog by approximately $4.5 million. The electrical distribution system is considered a “mission-essential” service and is critical to meeting Y-12’s mission. To continue to operate the system in the current condition increases the vulnerability of losing electrical service to critical facilities, which in turn could result in loss of mission capability at Y-12.

The project will include: 1) replacing Transformer Station 849 and associated switchgear, 2) reconfiguring the 161 kV distribution lines, and 3) reconfiguring and rehabilitating the Elza 2 switchyard.

Transformer Station 849 and associated switchgear is the primary source of power for several production facilities and is an alternate source for several other facilities. The unit is undersized for its current use and is improperly sized for optimum switching operations. The surge arrestors used to protect the system from surges caused by lighting strikes and switching operations are over 50 years old and have greatly exceeded their expected life. The existing spill-containment basin under the transformer is not environmentally compliant. The switchgear is obsolete and repair/replacement parts are not readily available.

06-04: Potable Water System Upgrade, 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 2006	3Q 2007	1Q 2008	2Q 2010	5,000	28,000-45,000

Fiscal Year	Appropriations	Obligations	Costs
2006	1,800	1,800	1,400
2007	3,200	3,200	3,600

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, minimize the risk of cross contamination of the City of Oak Ridge water supply by backflow of water from the Y-12 Complex; and reduce the deferred maintenance backlog by an estimated $15 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) providing positive separation (backflow prevention) between the Y-12 water distribution system and the City of Oak Ridge supply lines, and 3) providing enhanced cross connection control between the potable water system and non-potable water systems.

Correction of system deficiencies will include replacement of distribution mains, replacement of potable and fire water building supply lines, replacement of obsolete fire hydrants, and repair and upgrades to the emergency storage tanks serving the complex.

Separation between the Y-12 potable water system and the City will be accomplished by reducing the number of supply connections to the complex from seven to two and installing backflow preventers and booster pumps at each supply connection. 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.

Improvements in the cross connection controls between the potable water system and non-potable systems will be achieved by one of the following options:

- Providing local backflow prevention between fire sprinkler systems that contain antifreeze and the potable water system, or

- Providing a separate potable water system and using the existing system for supplying process and fire protection needs.

4. Details of Cost Estimate [a, b]

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	8,849	N/A
Design Management costs (1.0% of TEC)	1,041	N/A
Project Management costs (0.5% of TEC)	521	N/A
Total, Design Costs (100% of TEC)	10,411	N/A
Total, Design Costs (TEC, Design only)	10,411	N/A

5. Method of Performance

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, etc. concerns.

[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 percentages for Design Management; Project Management; and Design Phase Contingency are estimates based on historical records.

6. Schedule of Project Funding

	(dollars in thousands)					
	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design	0	0	0	4,741	5,670	10,411
Total, Line Item TEC	0	0	0	4,741	5,670	10,411
Other Project Costs						
Conceptual design cost	0	97	3,038	0	0	3,135
NEPA	0	0	170	0	0	170
Other project-related costs	0	0	260	916	3,597	4,773
Total Other Project Costs	0	97	3,468	916	3,597	8,078
Total Project Cost (TPC)	0	97	3,468	5,657	9,267	18,489

06-D-601, Electrical Distribution System Upgrade
Pantex Plant, Amarillo, Texas

- This project is requesting construction funding in FY 2006 to ensure the earliest and most flexible contracting for construction. This approach reduces program and project risk and enables potential project acceleration to better support the life extension project deliverables schedule.

- The Performance Baseline is currently scheduled to be validated by March 2005. No construction funds will be used until the Performance Baseline has been validated as required by DOE M 413.3-1, Project Management for the Acquisition of Capital Assets.

1. Construction Schedule History

	Fiscal Quarter					
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost ($000)	Total Project Cost ($000)
FY 2006 Budget Request (*Preliminary Estimate*)...........	1Q 2005	4Q 2006	4Q 2006	3Q 2008	9,700[a]	10,700

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [a]			
2005	1,600	1,600	900
2006			400
2007			300
Construction			
2006	4,000	4,000	200
2007	4,100	4,100	6,900
2008			1,000

[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).

3. Project Descriptions, 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, and unavailability of spare 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 be protected from ground faults and line surges. The project design 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 in many cases over 30 years old. Lines are deteriorating to the point that a major fault or weather incident could destroy lines, critical facilities, systems and equipment, and potentially cause a major outage to the Pantex plant.

- Facility Standby Diesel Generator Upgrade: This subproject will replace facility generators and Uninterruptible Power Supplies (UPF) that have operations and maintenance problems due to their age, obsolescence and difficulty in obtaining parts as the equipment age. 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 $2,970,000 (FY 2003 baseline).

Project Milestones

FY 2005:	A-E Work Initiated	1Q
FY 2006:	A-E Work Completed	4Q
	Physical Construction Start	4Q
FY 2008:	Physical Construction Complete	3Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase (16.4% of TEC) [a]	1,600	N/A
Construction Phase		
Buildings	5,927	N/A
Construction Management (3.9% of TEC)	383	N/A
Project Management (1.3% of TEC)	120	N/A
Total Construction Costs (66.3% of TEC)	6,430	N/A
Contingencies		
Construction Phase (17.2% of TEC)	1,670	N/A
Total, Line Item Costs (TEC) [b]	9,700	N/A

5. Method of Performance

The design services (Title I, II) will be accomplished by an outside A-E firm and will be administered by the Managing and Operating (M&O) Contractor. BWXT Pantex, LLC will perform equipment design and procurement. An outside construction contractor operating under a contract to be awarded on the basis of competitive bids will perform the construction services for this project. Title III design services will be performed by the design A-E firm. The M&O Contractor, BWXT Pantex, LLC will administer the contracts. Also, the M&O Contractor, BWXT Pantex, LLC will perform the construction Management Services. Best value practices will be used for design and construction services.

[a] Design funding was appropriated in 05-D-160-03, PED.

[b] This is a preliminary estimate. The performance baseline will be established following completion of preliminary design.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	900	400	300	1,600
Construction	0	0	0	200	7,900	8,100
Total, Line item TEC	0	0	900	600	8,200	9,700
Total Facility Costs (Federal and Non-Federal)	0	0	900	600	8,200	9,700
Other Project Costs						
Conceptual design cost	100	230	0	0	0	330
Other project-related costs	0	70	200	200	200	670
Total Other Project Costs	100	300	200	200	200	1,000
Total Project Cost (TPC)	100	300	1,100	800	8,400	10,700

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

	Current Estimate	Previous Estimate
Related annual costs (estimated life of project – 30 years)		
Facility operating costs	500	N/A
Facility maintenance and repair costs	200	N/A
Utility costs	60	N/A
Total related annual funding (operating from FY 2009 through FY 2039)	760	N/A

06-D-602, Gas Main and Distribution System Upgrade
Pantex Plant, Amarillo, Texas

- This project is requesting the construction funding in FY 2006 to ensure the earliest and most flexible contracting for construction. This approach reduces program and project risk and enables potential project acceleration to better support the life extension project deliverables schedule.

- The Performance Baseline is currently scheduled to be validated by March 2005. No construction funds will be used until the Performance Baseline has been validated as required by DOE M 413.3-1, Project Management for the Acquisition of Capital Assets.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget Request (*Preliminary Estimate*)...........	1Q 2005	3Q 2006	3Q 2006	4Q 2007	4,800[a]	6,370

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design [a]			
2005	1,100	1,100	500
2006			550
2007			50
Construction			
2006	3,700	3,500	500
2007		200	3,000
2008			200

[a] The TEC includes the cost of preliminary and final design ($1,100,000) which was appropriated in 05-D-160, Project Engineering and Design (PED).

3. Project Descriptions, 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. The distribution system consists of approximately 49 thousand feet of schedule 40 carbon steel pipe and 23 thousand feet of high-density polyethylene 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
  Failure 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 two Motor Operated Isolation Valves (MOIV) and remote operation capability will allow for the isolation of the gas main at the point of Government ownership and 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 $3,100,000.

Project Milestones

FY 2005:	A-E Work Initiated	1Q
FY 2006:	A-E Work Completed	3Q
	Physical Construction Start	3Q
FY 2007:	Physical Construction Complete	4Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase (22.9% of TEC) [a]	1,100	N/A
Construction Phase		
Utilities	2,468	N/A
Construction Management (7.2% of TEC)	349	N/A
Project Management (1.9% of TEC)	92	N/A
Total Construction Costs (60.6% of TEC)	2,909	N/A
Contingencies		
Construction Phase (16.5% of TEC)	791	N/A
Total, Line Item Costs (TEC) [b]	4,800	N/A

5. Method of Performance

The design services (Title I, II) will be accomplished by an outside A-E firm and will be administered by the Managing and Operating (M&O) Contractor. BWXT Pantex, LLC will perform equipment design and procurement. An outside construction contractor operating under a contract to be awarded on the basis of competitive bids will perform the construction services for this project. Title III design services will be performed by the design A-E firm. The M&O Contractor, BWXT Pantex, LLC will administer the contracts. Also, the M&O Contractor, BWXT Pantex, LLC will perform the construction Management Services. Best value practices will be used for design and construction services.

[a] Design funding was appropriated in 05-D-160, PED.

[b] This is a preliminary estimate. The performance baseline will be established following completion of preliminary design.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	500	550	50	1,100
Construction	0	0	0	500	3,200	3,700
Total, Line item TEC	0	0	500	1,050	3,250	4,800
Total Facility Costs (Federal and Non-Federal)	0	0	500	1,050	3,250	4,800
Other Project Costs						
Conceptual design cost	100	220	0	0	0	320
Other project-related costs	0	280	300	300	370	1,250
Total Other Project Costs	100	500	300	300	370	1,570
Total Project Cost (TPC)	100	500	800	1,350	3,620	6,370

7. Related Annual Funding Requirements

(FY 2007 dollars in thousands)

	Current Estimate	Previous Estimate
Related annual costs (estimated life of project 30 years)		
Facility operating costs	200	N/A
Facility maintenance and repair costs	50	N/A
Total related annual funding (operating from FY 2007 through FY 2038)	250	N/A

06-D-603, Steam Plant Life Extension Project
Y-12 National Security Complex, Oak Ridge, Tennessee

This project is still in the Planning Phase. As a result, 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), which is expected 1Q FY 2006. This project has completed conceptual design and is awaiting approval of Critical Design-1, Approve Preliminary Baseline Estimate.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget Request *(Preliminary Estimate)....*	3Q 2005	4Q 2006	3Q 2007	1Q 2010	48,867	49,480

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2005	2,976 [b]	2,976	2,976
2006	7,644	7,644	7,644
Construction			
2006	729	729	725
2007	15,801	15,801	14,863
2008	9,359	9,359	9,456
2009	8,358	8,358	8,388
2010	0	0	815

3. Project Descriptions, Justification and Scope

Project Description

The Steam Plant Life Extension (SPLE) Project provides for the design, engineering and construction to repair, upgrade and/or replace existing systems, structures and components at the existing Y-12 National

[a] The TEC includes the cost of preliminary and final design which was appropriated in 05-D-160, Project Engineering and Design (PED), Various Locations.

[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).

Security Complex (Y-12) Steam Plant. The project will extend the useful life of the existing steam plant to the year 2025 and prevent further degradation of this “mission essential” utility service.

Justification

The existing steam plant has been operating continuously since its construction in 1954. A service life extension upgrade completed in the mid-1980s is projected to extend the life of three of the four boilers (boilers 1, 2, and 4) and supporting auxiliaries to about 2010. Boiler 3 was not upgraded, and the steam plant has undergone no significant modifications or upgrades since the previous life extension program.

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. If it is necessary to maintain the capability of boiler 3, it will need to undergo a major overhaul or be replaced. Some components of the auxiliary equipment, including the coal-handling system, feed-water 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 Y-12 National Security Complex.

If the SPLE Project is not approved to provide timely repair/replacement of the above systems by 2010, loss of the existing steam service will occur, and major restoration actions will be required to restore service. Loss of steam service would 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, feed-water system, wet and dry ash handling systems, wastewater system, steam plant control system, steam plant electrical system, and steam plant structural system.

Completion of this project will eliminate approximately $21,250,000 in deferred maintenance costs associated with the steam plant facility at Y-12.

Project Milestones:

FY 2005	A-E Work Initiated	3Q
FY 2006	A-E Work Completed	4Q
	Long Lead Procurement	2Q
FY 2007	Physical Construction Start	3Q
FY 2010	Physical Construction Complete	2Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	7,265	N/A
Design Management costs (3.7% of TEC)	1,691	N/A
Project Management costs (3.6% of TEC)	1,664	N/A
Total, Design Costs (23.7% of TEC)	10,620	N/A
Construction Phase		
Equipment	5,300	N/A
Construction	11,503	N/A
Title III	1,784	N/A
Construction Management (8.0% of TEC)	3,649	N/A
Project Management (3.5% of TEC)	1,587	N/A
Total, Construction Costs (56.8% of TEC)	23,823	N/A
Contingencies		
Design Phase (4.4% of TEC)	2,021	N/A
Construction Phase (18.5% of TEC)	8,403	N/A
Total, Contingencies (22.9% of TEC)	10,424	N/A
Total, Line Item Costs (TEC)	44,867	N/A

5. Method of Performance

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 by A/E subcontractors.

A specialty control systems Engineering-Procurement (E-P) subcontractor to the M&O will 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 E-P 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 of facilities, and all readiness assessments or operational readiness reviews (as appropriate). Subcontractors and vendors may be used to provide task-based support for these activities.

6. Schedule of Project Funding

(dollars in thousands)

(dollars in thousands)	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	2,976	7,644	0	10,620
Construction	0	0	0	725	33,522	34,247
Total, Line Item TEC	0	0	2,976	8,369	33,522	44,867
Other Project Costs						
Conceptual design cost	0	1,100	0	0	0	1,100
NEPA documentation costs	0	0	0	0	0	0
Other ES&H Costs	0	0	0	0	0	0
Other project-related costs	0	0	251	365	2,897	3,513
Total Other Project Costs	0	1,100	251	365	2,897	4,613
Total Project Cost (TPC)	0	1,100	3,227	8,734	36,419	49,480

7. Related Annual Funding Requirements

(FY 2007 dollars in thousands)	Current Estimate	Previous Estimate
Annual facility operating costs	3,800	N/A
Annual facility maintenance/repair costs	3,300	N/A
Programmatic operating expenses directly related to this facility	0	N/A
Utility costs	3,500	N/A
Total related annual funding (operating from FY 2010 through FY 2025)	10,600	N/A

05-D-160, National Nuclear Security Administration
Facilities and Infrastructure Recapitalization Program (FIRP)
Project Engineering and Design (PED),
Various Locations

Significant Changes

- The total estimated cost (TEC) of the PED increased from $14,700,000 to $19,274,000 due to better scope definition of the Steam Plant Life Extension (SPLE) subproject at Y-12.

- The TEC of $19,343,000 was reduced by $69,000 to $19,274,000 because of an FY 2005 rescission. This reduction will have no impact on subproject completions because contingency funds will be utilized to make up the rescission amount.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2005 Budget Request *(A-E and technical design only)*..............	1Q 2005	1Q 2007	3Q 2006	4Q 2011	14,700
FY 2006 Budget Request *(A-E and technical design only)*..............	4Q 2004	4Q 2006	3Q 2006	4Q 2011	19,924 [b]

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

[b] The FY 2005 appropriated amount of $8,700,000 was reduced by $69,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2005	8,631[a]	8,631 [a]	7,352
2006	10,644	10,644	11,594
2007	0	0	328

3. 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.

[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).

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 2005	3Q 2006	2Q 2007	4Q 2011	5,976	60,000

Fiscal Year	Appropriations	Obligations	Costs
2005	2,976 [a]	2,976	2,976
2006	3,000	3,000	3,000

This project provides and enables 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 detail 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 will be separately requested after completion of preliminary (Title I) design work.

Space heating, domestic water heating, and process heating requirements at Sandia National Laboratories (SNL) 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.

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. Alternative courses of action have been identified and a recommended alternative will be extensively explored in a Conceptual Design Report (CDR), in support of a Request for Critical Decision One (CD-1), scheduled for submission early in FY05. An Energy Systems Acquisition Advisory Board (ESAAB) review will be performed in preparation for CD-1, as required.

Pre-conceptual planning estimates indicate that this utility line item project is likely to result in a $14 to $37 million reduction in deferred maintenance. Actual values will be determined later in the project lifecycle. This sizable decrease clearly demonstrates alignment with the Facilities and Infrastructure Recapitalization program overriding criteria to reduce deferred maintenance.

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[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).

Through the design efforts covered by this data sheet, the TA I Heating System Modernization project feasibility will be validated in detail design drawings and specifications. Detailed estimates of construction costs based on the selected design will be developed, and working drawings, specifications, and construction schedules, including procurements, will be completed. Construction funding for the TA I Heating System Modernization project will be requested separately after completion of preliminary (Title I) design work.

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		
3Q 2005	4Q 2006	3Q 2007	4Q 2009	10,620	43,260-54,650

Fiscal Year	Appropriations	Obligations	Costs
2005	2,976 [a]	2,976	2,976
2006	7,644	7,644	7,644

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.

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 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.

[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).

Completion of this project will eliminate approximately $25,100,000 in deferred maintenance costs associated with the steam plant facility at Y-12.

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		
1Q 2005	4Q 2006	4Q 2006	3Q 2008	1,587	9,630 – 13,380

Fiscal Year	Appropriations	Obligations	Costs
2005	1,587 [a]	1,587	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 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 approximately16 facility generators 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

[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).

and maintenance problems with the possibility of facility shut down until reliable generators are installed. Approximately seven (7) building locations require Uninterruptible Power Supplies (UPS) replacement or upgrade due to the age and obsolescence of the existing UPS. The cost of maintaining the UPSs has averaged over $250,000 per year over the past four years (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. The anticipated deferred maintenance reduction associated with this project is $2,970,000.

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		
1Q 2005	3Q 2006	3Q 2006	4Q 2007	1,091	3,770-5,970

Fiscal Year	Appropriations	Obligations	Costs
2005	1,091 [a]	1,091	500
2006	0	0	550
2007	0	0	41

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. The distribution system consists of approximately 49 thousand feet of schedule 40 carbon steel pipe and 23 thousand feet of 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
  Failure 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 two Motor Operated Isolation Valves (MOIV) and remote operation capability will allow for the isolation of the gas main at the point of Government ownership and at the Pantex Plant boundary. This will provide quick shutdown capability should an incident occur that requires gas isolation.

[a] The FY 2005 appropriated amount of $1,100,000 was reduced by $13,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

- 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. The anticipated deferred maintenance reduction associated with this Project is $3,100,000.

4. Details of Cost Estimate [a, b]

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	16,344	12,495
Design Management costs (10% of TEC)	1,930	1,470
Project Management costs (5.1% of TEC)	1,000	735
Total, Design Costs (100% of TEC)	19,274	14,700
Total, Design Costs (TEC, Design Only)	19,274	14,700

5. Method of Performance

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, etc. concerns.

[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 percentages for Design Management; Project Management; and Design Phase Contingency are estimates based on historical records and are preliminary estimates.

6. Schedule of Project Funding

	(dollars in thousands)					
	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design	0	0	7,352	11,594	328	19,274
Total, Line Item TEC	0	0	7,352	11,594	328	19,274
Other Project Costs						
Conceptual design cost	200	2,550	0	0	0	2,750
Other project-related costs	0	350	751	1,865	4,467	7,433
Total Other Project Costs	200	2,900	751	1,865	4,467	10,183
Total Project Cost (TPC)	200	2,900	8,103	13,459	4,795	29,457

05-D-601, Compressed Air Upgrades Project
Y-12 National Security Complex, Oak Ridge, Tennessee

Significant Changes

- The total estimated cost (TEC) was increased from $18,141,000 to $18,821,000 and the total project cost (TPC) was increased from $21,205,000 to $22,006,000 due to better-defined project estimates than at the conceptual design phase. The CD-2/3a estimate is approximately $190,000 above the conceptual design phase, due to better information as a result of obtaining preliminary vendor quotes and material cost increases. The project added the commissioning process to include readiness review, startup and testing, operating procedures, and maintenance with an increase of $156,000 in the OPC.

- The TEC was again reduced from $18,821,000 to $18,778,000 and the TPC from $22,041,000 to $21,998,000 because of FY 2005 rescission. This reduction will have no impact on the project's completion because contingency funds will be utilized to make-up the rescission amount.

- This project is still in the Planning Phase. As a result, 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).

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2005 Budget Request *(Preliminary Estimate)*...........	1Q 2004	3Q 2005	2Q 2005	4Q 2006	18,141	21,205
FY 2006 Budget Request *(Performance Estimate)*	1Q 2004	1Q 2006	4Q 2005	4Q 2007	18,778 [b]	21,998 [b]

[a] The TEC includes the cost of preliminary and final design ($4,000,000) 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).

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design[a]			
2004	2,997[b]	2,997	290
2005	973[c]	325	2,801
2006	0	0	879
Construction			
2005	4,365[d]	4,365	3,551
2006	9,741	9,741	8,649
2007	702	702	2,608

3. 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 will be completed during FY 2005.

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

[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).

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.

Completion of this project will eliminate approximately $17,500,000 in deferred maintenance costs associated with the compressed air facilities at Y-12.

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 four 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. A new roof will be put on the building and a new roof access system will be provided to enhance maintenance access. Cooling tower 9409-13 will also be upgraded; new pumps and control valves and a new sprinkler system 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.

Project Milestones:

FY 2004:	Initiate AE Work	1Q
FY 2005	Complete AE Work	3Q
	Initiate Physical Construction	2Q
FY 2006	Complete Physical Construction	4Q

4. Details of Cost Estimate [a, b, c]

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase (21.1% of TEC)	3,970	3,200
Construction Phase		
Special Facilities	6,634	7,775
Building Modifications	268	500
Construction Management (17.6% of TEC)	3,301	888
Project Management (6.3% of TEC)	1,175	2,150
Total, Construction Costs (60.6% of TEC)	11,378	11,313
Contingencies		
Design Phase (4.1% of TEC)	772	800
Construction Phase (14.2% of TEC)	2,658	2,828
Total, Contingencies (18.3% of TEC)	3,430	3,628
Total, Line Item Costs (TEC)	18,778	18,141

5. Method of Performance

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.

[a] Design funding was appropriated in 04-D-203, Project Engineering and Design.

[b] Current Construction Management change from $888,000 to $3,301,000 because the previous estimate was because of a coding error of categories in the estimating program an after another review of the preliminary estimate these mistakes were discovered and corrected.

[c] This is a preliminary estimate. The Performance Baseline will be established following completion of preliminary design and approval of Critical Decision 2.

6. Schedule of Project Funding [a, b, c]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	290	2,801	879	0	3,970
Construction	0	0	3,551	8,649	2,608	14,808
Total, Line Item TEC	0	290	6,352	9,528	2,608	18,778
Other Project Costs						
Conceptual design cost	1,070	0	0	0	0	1,070
NEPA documentation costs	0	0	0	0	0	0
Other ES&H Costs	0	0	0	0	0	0
Other project-related costs	0	316	220	886	728	2,150
Total Other Project Costs	1,070	316	220	886	728	3,220
Total Project Cost (TPC)	1,070	606	6,572	10,414	3,336	21,998

7. Related Annual Funding Requirements

(FY 2007 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs [d]	360	445
Annual utility costs (estimated based on FY 2003 rate structure)	1,224	1,224
Total related annual funding (operating from FY 2007 through FY 2027)	1,584	1,669

[a] The TEC includes the cost of preliminary and final design, which was appropriated in 04-D-203, Project Engineering and Design.

[b] The Conceptual design costs include costs for completion of the Critical Decision 1 package and related documentation (project execution plan, conceptual design report, acquisition strategy, NEPA evaluation, ES&H plan, QA plan, etc.) in June 2003.

[c] Other project related costs include plant support to the project and commissioning/startup activities (development of plans and procedures, commissioning, startup, etc.).

[d] The annual facility operating costs includes annual maintenance and repair costs.

05-D-602, Power Grid Infrastructure Upgrade (PGIU), Los Alamos National Laboratory, Los Alamos, New Mexico

Significant Changes

- This project is in the preliminary design phase, having received Critical Decision (CD)-1, approval to begin Preliminary Design in December 2003. Therefore, the performance baseline has not been established yet. The performance baseline will be established after CD-2 is approved by the Acquisition Executive.

- The total estimated cost was reduced from $18,500,000 to $18,421,000 and the total project cost from $20,000,000 to $19,921,000 because of the FY 2005 rescission included in the Consolidated Appropriations Act, 2005 (P.L. 108-447). This reduction will have no impact on the project's completion because contingency funds will be utilized to accommodate the rescission amount.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2005 Budget Request *(Preliminary Estimate)*..................	see note[a]	see note[a]	3Q 2005	4Q 2007	18,500	20,000
FY 2006 Budget Request *(Preliminary Estimate)*..................	1Q 2005	3Q 2005	1Q 2005	4Q 2007	18,421 [b]	19,921

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design/Construction			
2005	9,921[b]	9,921[b]	9,000
2006	8,500	8,500	8,500
2007	0	0	921

[a] 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.

[b] The FY 2005 appropriated amount of $10,000,000 was reduced by $79,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

3. Project Description, Justification and Scope

Project Description

The Laboratory is connected to the northern New Mexico power grid by two 115kV lines. The lines terminate at a single point at the Eastern Technical Area (ETA) substation on Laboratory property. The Laboratory and DOE have been aware for years that this existing electrical service of two 115kV lines with one common power delivery point represents a single point of failure. The Cerro Grande fire caused a single point failure in the system leaving the Laboratory and Los Alamos County without power during the fire. The fire burned up to the edge of the ETA substation and burned poles of both incoming lines. Both outside sources of power were lost. In addition, microwave communications with the grid were also lost. Normal practice would require a minimum of three independent sources of power. With this project, a new line would be built and the single point of failure on site would be eliminated.

The proposed action includes construction of an approximately 9-mile 115-kV power transmission line across DOE administered property; and associated terminal facilities. The line would originate at a new Southern Technical Area (STA) Switchyard and proceed northwesterly through the central portion of LANL to the West Technical Area (WTA) Substation. The entire right of way would be constructed using 115kV type structures.

The proposed STA switchyard would be constructed utilizing a 115 kV ring bus & circuit breaker scheme that allows power to be fed either to the WTA or ETA substation. The new STA switchyard would be energized from the Reeves line that currently exists.

This proposed project would also address deferred maintenance items associated with the Eastern Technical Area (ETA) Substation. The equipment associated with the ETA has not been able to receive critical maintenance and repairs due to the inability to de-energize the ETA to perform this maintenance. After completion of this project, the existing Norton line and Reeves line can then be individually de-energized to perform future critical maintenance while allowing LANL to continue normal operations without interruption.

Project Justification

The primary driver for this project is the need to address deferred maintenance issues at the Eastern Technical Area (ETA) substation. The effort from a deferred maintenance stand point will address systems and equipment associated with the ETA and the existing Norton line which have not been able to be maintained due to the fact that power cannot be shut down to perform this maintenance. Many of the items to be replaced as deferred maintenance have surpassed their useful life and many others have been run to failure. This replacement/repair can only be made after the new system comes on line. The deferred maintenance buy down amount will be $7.0 million for this effort.

The secondary driver for this project is reliability. In accordance with NERC (North American Electric Reliability Council) and WSCC (Western Systems Coordinating Council) Planning Criteria, critical loads require two physically separate and independent sources of power. This requirement is not currently being complied with for the following reasons:

- The existing two incoming lines to Los Alamos terminate at the same location, the Eastern Technical Area substation. A single event could potentially remove both lines from service.

- The existing two lines cross one another at one location, which creates the potential for total loss through a failure of a structure or conductor of the upper line resulting in the loss of the lower line due to a single event.

- Due to the need for continuing repairs of the structures and conductors on the existing two lines and the substation, there is a potential for total loss of service to LANL should an event such as equipment failure or natural calamities like lightning and fire occur. Even when maintenance is not being performed, total loss of service could occur as has happened in the past due to lightning, fire, and equipment failures. These occurrences are not acceptable in critical nuclear facilities like Los Alamos National Laboratory.

- Standard utility industry reliability planning criteria require the utility organization to be able to serve its entire load with the single largest generation or transmission facility out of service. Currently the two 115kV lines that provide power to the site do not meet this requirement. The proposed high-voltage line would fulfill LANL's obligation for meeting some of the regional bulk utility planning criterion.

- This project would allow LANL to address a number of deferred maintenance items that has been steadily growing due to the inability to de-energize the existing lines and ETA.

- The recent failure of one of the lines due to equipment failure, and the recent action by the San Ildefonso Pueblo to cancel all permits to LANL for maintenance work on the portion of the existing 115 kV Norton line within the Pueblo, makes the Laboratory very vulnerable to total power "black-out".

The power system is vulnerable and reliability is definitely at risk. Failure to provide, as soon as possible, a completely independent source of power in an orderly, planned manner could lead to prolonged outages resulting in negative and unacceptable effects on the programmatic missions of the Laboratory.

Project Scope

The primary objective of the Power Grid Infrastructure Upgrade project is to construct a new STA switchyard, install a new 115kV transmission line from the Southern Technical Area Switchyard to the Western Technical Area Substation and address deferred maintenance issues at the Eastern Technical Area Substation thus eliminating future vulnerabilities to the power supply and distribution systems in Los Alamos. The primary objective will be achieved by providing the following:

- **Transmission System:** The new system will provide structures and transmission lines as required by National Codes and Standards. The structures will be capable of resisting identified threats including Design Basis Accidents (DBA) and Natural Phenomena so that they may perform their function during and after these events. At LANL these events may be earthquakes, wild fires, high winds, terrorist actions, or other events as determined by Vulnerability Analysis and Hazards Assessment.

- **Switchyard:** A Southern Technical Area switchyard will be constructed in a desirable location adjacent to the existing Reeves transmission line. This switchyard will be the new connection point for the Reeves line, this connection will energize the STA switchyard and the new 115kV transmission line that will terminate at the Western Technical Area substation. This STA switchyard will be constructed utilizing a ring bus & circuit breaker scheme that allows power to be fed either to the WTA or ETA substation.

- **ETA Substation equipment:** This project will include the procurement and installation of substation equipment and transmission line equipment to address deferred maintenance issues that have been ever increasing due to the inability to de-energize the ETA and Norton and Reeves lines for maintenance. This element will be accomplished after the new STA switchyard and new 115kV leg are installed and energized.

- **STA to WTA 115 KV Line:** The 115kV power line route will be selected so that it is in the best possible location accounting for easement, accessibility and affordability. The utility corridor cleared area will be large enough to assure that wildfire cannot threaten the transmission lines, structures or any of its outlying support equipment and structures (security systems, utilities equipment, etc.). Los Alamos is located in mountainous terrain where the climate ranges from high desert to wet alpine forest. The route will be selected to avoid areas of heavy snow cover, potential flash flood areas, high wind zones, weather extreme zones, areas with high lightning strike frequency and non-DOE properties. The site will be selected to avoid the presence of seismic faults where practical. The site selection will also be integrated with the Ten-Year Comprehensive Site Plan.

- **Access**: Utility corridor access roads will be provided where practical for routine maintenance.

- **Security**: Security requirements will be tailored to the particular area of the Laboratory being entered. All work performed on DOE properties will follow site-specific requirements for entry, escorting and prohibited items for the area being entered.

Project Milestones:

FY 2004:	Approval to Start Preliminary Design (Critical Decision 1)	1Q
FY 2005:	Establish Performance Baseline (Critical Decision 2/3)	1Q
	Initiate Physical Construction	1Q
FY 2007:	Complete Physical Construction	4Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase [a] (10.3% of TEC)	1,900	1,926
Construction Phase		
Improvements to Land	684	658
Standard Equipment	11,930	11,930
Inspection, design and project liaison, testing, checkout, and acceptance	163	163
Construction Management	207	207
Project Management (3.9% of TEC)	729	729
Total, Construction Costs (84.8% of TEC)	13,713	13,687
Contingencies		
Construction Phase	2,808	2,887
Total, Contingencies (15.2% of TEC)	2,808	2,887
Total, Line Item Costs (TEC)	18,421	18,500

5. Method of Performance

Design and construction will be accomplished through a combination of competitively awarded and existing contracts, using fixed price and cost reimbursable pricing methods. The design effort is relatively simple and the construction scope is straightforward. Due to this, design-build is being planned as the execution approach at this conceptual stage and the preliminary estimate assumes this approach. The acquisition and execution approach will be specifically defined during the conceptual design phase.

[a] This project will be executed with a design-build acquisition strategy.

6. Schedule of Project Funding [a]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	1,900	0	0	1,900
Construction	0	0	7,100	8,500	921	16,521
Total, Line Item TEC	0	0	9,000	8,500	921	18,421
Other Project Costs						
Conceptual Design Cost	0	1,150	0	0		1,150
NEPA [b]	100	0	0	0	0	100
Other Project-Related Costs	0	0	0	125	125	250
Total, Other Project Costs	100	1,150	0	125	125	1,500
Total Project Cost (TPC)	100	1,150	9,000	8,625	1,046	19,921

7. Related Annual Funding Requirements

(dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	50	50
Annual facility maintenance and repair costs	100	100
Total related annual funding	150	150
Total operating costs (operating FY2006 through FY2026)	3,000	3,000

[a] The baseline for this project will be established at CD-2 based on the selected contractor's fixed-price proposal.

[b] NEPA costs were performed prior to CD-0 in a site wide engineering study.

05-D-603, New Master Substation, Technical Areas I and IV
Sandia National Laboratories, Albuquerque, New Mexico

Significant Changes

- The total estimated cost (TEC) was reduced from $8,200,000 to $8,195,000 and the total project cost (TPC) from $8,750,000 to $8,745,000 because of the FY 2005 Government-wide rescission. This reduction will have no impact on the project's completion because contingency funds will be utilized to make up the rescission amount.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2005 Budget Request *(Preliminary Estimate)*.........	2Q 2004	4Q 2005	2Q 2006	2Q 2008	700	8,750
FY 2006 Budget Request *(Performance Estimate)*	2Q 2004	4Q 2005	2Q 2006	2Q 2008	8,195 [a b]	8,745

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2004	700 [b]	700	162
2005	0	0	538
Construction			
2005	595 [a c]	595	440
2006	6,900	6,900	4,500
2007	0	0	2,555

[a] The FY 2005 appropriated amount of $600,000 was reduced by $5,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] The TEC includes the cost of the preliminary and final design ($700,000) which was appropriated in 04-D-203 National Nuclear Security Administration, Facilities and Infrastructure Recapitalization Program (FIRP), Project Engineering and Design (PE), Various Locations.

[c] Funding will be used for long-lead procurement of main transformer component to insure the project is completed within budget and in accordance with the schedule.

3. Project Description, Justification, and Scope

This project has previously been authorized to procure the Architect-Engineering (A-E) services required to develop and complete preliminary and final (Title I and Title II) design for the new Sandia National Laboratories New Master Substation Utility for Technical Areas I and IV. Through this design effort, the New Master Substation feasibility will be validated in detail, 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 identification of long lead procurements, will be completed.

The New Master Substation design would be similar to Substation 41, which was constructed in 1998 and incorporates the design basis features for Sandia's standardized master substations. Standardized substations allow for using 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 would connect the New Master Substation to the existing normal service master substations (Subs 35, 36, 37, & 41) in the Technical Area I-IV campus in a radial/loop configuration. This configuration allows for any one master substation to be shutdown for any operating or maintenance necessity (i.e. emergency, corrective, or preventive maintenance) by transferring building substations from one master substation to another. These transfers are usually performed without interruption of service to buildings.

The New Master Substation will be designed to address the following objectives:

- Provide sufficient main power transformer and distribution feeder capacity/configuration to meet planned electrical loads in the Technical Area I-IV campus as shown in the FY 2003 TYCSP.

- Provide additional 12.47 kilovolt radial/loop feeders to supplement the single radial/loop feeder serving Technical Area IV.

- Remove Substation 38, which presently supplies standby service to Technical Area IV.

- Continue to operate safely and in accordance with regulatory, environmental, and health policies.

Critical Decision One (CD-1), Approve Alternative Selection and Cost Range, was approved October 9, 2003.

The New Master Substation Utility for Technical Areas I and IV at Sandia National Laboratories in Albuquerque, New Mexico (SNL/NM) is needed to meet funded and future planned facilities shown in the FY 2003 TYCSP. These facilities include Line Item and General Plant Projects such as JCEL, MESA, CINT, SARC, MERC, Computing District Central Utility Building, Scientific Computing Facility, INSRC, and several IGPPs. These individual projects do not have sufficient funds to construct the New Master Substation. Additionally, since the New Master Substation and associated distribution feeders support Sandia's strategic objectives, which transcend multiple DOE/NNSA/Other Federal Agency programs, it would not be equitable to burden any one specific project/program with its cost.

A significant risk to project schedule and cost was identified during the Conceptual Design Report (CDR) phase for the procurement, and fabrication of the main transformer component for the Master Substation. To mitigate the risk, long lead procurement of the main transformer is scheduled for

3rd quarter FY 2005 for an estimated cost of $600,000. This long lead procurement strategy will ensure that the Main Transformer could be purchased and delivered to the site in concert with the beginning of the construction work. The construction work is set to start in FY 2006.

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. This project would directly contribute to the safety and reliability of one of the nation's most sensitive nuclear weapons sites.

Project Milestones:

FY 2004:	Initiate AE Work	2Q
FY 2005	Complete AE Work	4Q
	Long Lead Procurement	3Q
FY 2006	Initiate Physical Construction	2Q
FY 2008	Complete Physical Construction	2Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase [a]		
Preliminary and Final Design Costs	516	480
Design Management Costs (0.1% of TEC)	70	140
Project Management Costs (0.1% of TEC)	82	80
Total, Engineering Design, Inspection, and Administration of Construction Costs (8.4% of TEC)	668	700
Construction Phase		
Utilities [b]	6,535	6,700
Construction Management (2.9% of TEC)	244	300
Project Management (0.1% of TEC)	71	500
Total, Construction Costs (83.6% of TEC)	6,850	7,500
Contingencies		
Design Phase (0.1% of TEC)	32	80
Construction Phase (7.8% of TEC)	645	620
Total, Contingencies (8.3% of TEC)	677	700
Total, Line Item Cost	8,195	8,200
Total, Line Item Costs (TEC)	8,195	8,200

5. Method of Performance

Design of this project will be by the operating contractor or a subcontractor as appropriate. To the extent feasible, construction and procurement will be accomplished by fixed-priced contracts awarded on the basis of competitive bids.

[a] The design for this project was appropriated and accomplished in 04-D-203, National Nuclear Security Administration, Facilities and Infrastructure Recapitilization Program (FIRP), Project Engineering and Design (PED), Various Locations.

[b] This includes the $600,000 long lead procurement of the main transformer.

6. Schedule of Project Funding [a b c]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	162	538	0	0	700
Construction	0	0	440	4,500	2,555	7,495
Total, Line Item TEC	0	162	978	4,500	2,555	8,195
Other Project Costs						
Conceptual design cost	300	0	0	0	0	300
NEPA documentation costs	0	0	0	0	0	0
Other ES&H Costs	0	11	0	0	0	11
Other project-related costs	18	70	82	55	14	239
Total Other Project Costs	318	81	82	55	14	550
Total Project Cost (TPC)	318	243	1,060	4,555	2,569	8,745

7. Related Annual Funding Requirements

(FY 2007 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	TBD
Annual utility costs (estimated based on FY 2003 rate structure)	TBD	TBD
Total related annual funding (operating from FY 2007 through FY 2027)	TBD	TBD

[a] The TEC includes the cost of preliminary and final design, which was appropriated in 04-D-203, Project Engineering and Design.

[b] The Conceptual design costs include costs for completion of the Critical Decision 1 package and related documentation (project execution plan, conceptual design report, acquisition strategy, NEPA evaluation, ES&H plan, QA plan, etc.) in June 2003.

[c] Other project related costs include plant support to the project and commissioning/startup activities (development of plans and procedures, commissioning, startup, etc.).

Environmental Projects and Operations –Overview

Funding Schedule by Activity

(dollars in thousands)

Environmental Projects and Operations	FY 2004	FY 2005	FY 2006 [a]	$ Change	% Change
Program	162,443	173,887	156,504	- 17,383	- 10.0 %
Program Direction	19,209	18,313	17,885	-428	-2.3 %
Total, Environmental Projects and Operations.....	181,652	192,200	174,389	-17,811	-9.2%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Environmental Projects and Operations……….	174,389	160,034	131,500	112,629	116,967	695,519

Background

The Department of Energy (DOE) has directed the transfer of a number of environmental activities from the Office of Environmental Management (EM) to the National Nuclear Security Administration (NNSA) beginning in FY 2006. These activities are finite with specific end dates. This functional transfer includes environmental restoration, legacy waste management and disposition, and decontamination and decommissioning activities. These functional transfers align responsibility with accountability for environmental activities at NNSA Sites consistent with the intent of the NNSA Act.

The NNSA will corporately manage these activities within NNSA's newly established Environmental Projects and Operations Program. This Program will assume responsibility for discrete environmental transfer projects and the associated funding and full time equivalents in FY 2006. These environmental transfers represent a "zero-sum" budget transfer with no increase in funding or staffing. Additional zero-sum target transfers will occur in 2011 and beyond until these activities are completed.

This transfer will result in significant benefits to the Department. By transferring the responsibility, personnel and funding for the remaining environmental legacy of the Cold War at NNSA Sites from EM to NNSA and assigning the authority to manage this legacy to one organization within the NNSA, the Department expects to improve management efficiency and effectiveness. NNSA will eliminate a dual chain of command from the process of assigning work to contractors, improve efficiencies, and will simplify and clarify the lines of authority, accountability and responsibility at NNSA Sites, a long-

[a] FY 2006 funding reflects the realignment of environmental responsibilities from the Office of Environmental Management (EM) Defense Site Acceleration Completion and Defense Environmental Services (Community & Regulatory Support and Program Direction*)* to NNSA Environmental Projects and Operations. FY 2004 and FY 2005 reflect comparability adjustments of $181,652,000 and $192,200,000 respectively associated with the FY 2006 transfer.

standing issue within the Department. Successful implementation and execution of these environmental transfer activities will streamline organizational reporting relationships, increase accountability and responsibility for NNSA's environmental activities consistent with the tenets of the NNSA Act, and ensure clear accounting of the total cost of ownership for the NNSA sites.

Description

The mission of the Environmental Projects and Operations Program is to accelerate risk reduction and cleanup of the environmental legacy at National Nuclear Security Administration (NNSA) sites in accordance with applicable environmental laws and regulations, and in consultation with affected stakeholders and tribal governments.

The Program includes environmental restoration, legacy waste management and disposition, and decontamination and decommissioning at the Kansas City Plant (KCP), Lawrence Livermore National Laboratory (LLNL), Nevada Test Site (NTS), Sandia National Laboratories (SNL), Pantex Plant (PX), and the Separations Process Research Unit (SPRU). Additionally, the realignment includes the waste disposal facilities at the Nevada Test Site. The environmental transfer scope is finite and projectized and will be managed using the framework of EM's existing Project Baseline Summaries (PBS), which contain the projects' baseline scope, cost, and schedule. Once transferred, these environmental projects will be integrated into the broader NNSA program and project management system, consistent with DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*. The NNSA will leverage the project management expertise developed in the creation of the Facilities and Infrastructure Recapitalization Program (FIRP) to execute its new environmental responsibilities.

Environmental activities at the Los Alamos National Laboratory (LANL) and the Y-12 National Security Complex (Y-12) will transfer from EM to the NNSA in future years. Due to recent changes to the regulatory framework, the transfer of LANL EM activities to the NNSA has been deferred to FY 2007. The timing of the transfer of the Y-12 environmental restoration projects will be coordinated with the transition of contracting arrangements for environmental services at Oak Ridge.

Benefits to Program Goal 06.65.00.00 Environmental Projects and Operations

The major focus of this transfer is to assure streamlining of reporting and site operations by eliminating an inefficient dual chain of command that exists currently, thus achieving full compliance with the NNSA Act. This Program under NNSA will continue to accelerate risk reduction and 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. This Program directly supports NNSA's Stockpile Stewardship Program in that the effective and efficient completion of site cleanup at NNSA Sites will result in greatly reduced risk and hazards to human health and the environment. In addition, as the cleanup remedies are implemented and completed, the resources needed to maintain environmental compliance will be significantly reduced.

Environmental Projects and Operations - Program

Funding Schedule by Activity

	(dollars in thousands)				
	FY 2004[a]	FY 2005[a]	FY 2006	$ Change	% Change
Environmental Projects and Operations - Program					
Site Acceleration Completions					
2006 Accelerated Completions	42,782	45,037	30,495	-14,542	-32.3%
2012 Accelerated Completions	39,167	43,066	41,727	-1,339	-3.1%
2035 Accelerated Completions	69,254	80,045	79,914	-131	- 0.2%
Subtotal, Site Acceleration Completions	151,203	168,148	152,136	-16,012	-9.5%
Community and Regulatory Support	11,240	5,739	4,368	-1,371	-23.9%
Total, Environmental Projects and Operations – Program	162,443	173,887	156,504	-17,383	-10.0%

FYNSP Schedule

	(dollars in thousands)					
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Environmental Projects and Operations - Program						
Site Acceleration Completions....................						
2006 Accelerated Completions..........	30,495	0	0	0	0	30,495
2012 Accelerated Completions..........	41,727	40,046	21,401	240	240	103,654
2035 Accelerated Completions..........	79,914	97,138	90,417	94,049	97,768	459,286
Subtotal Site Acceleration Completions	152,136	137,184	111,818	94,289	98,008	593,435
Community and Regulatory Support	4,368	4,282	4,116	3,959	4,013	20,738
Total, Environmental Projects and Operations – Program	156,504	141,466	115,934	98,248	102,021	614,173

Description

The goal of the Environmental Projects and Operations program is to accelerate risk reduction and cleanup of the environmental legacy at the National Nuclear Security Administration (NNSA) Sites in accordance with applicable environmental laws and regulations and in consultation with affected stakeholders and tribal governments.

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[a] FY 2006 funding reflects the realignment of environmental responsibilities from the Office of Environmental Management (EM) Defense Site Acceleration Completion and Defense Environmental Services (Community & Regulatory Support and Program Direction) to NNSA Environmental Projects and Operations. FY 2004 and FY 2005 reflect comparability adjustments of $162,443,000 and $173,887,000 respectively associated with the FY 2006 transfer.

The Environmental Projects and Operations Program will be managed within the Weapons Activities appropriation and consist of the FY 2006 and outyear chronological budget structure and categories previously established by the Environmental Management program and approved and funded by Congress in prior years. NNSA will provide transparency, visibility, and focus on accelerated cleanup and risk reduction of environmental activities at NNSA sites. This Program includes three operating funded components: Site Acceleration Completion, Community and Regulatory Support, and Program Direction. Site Acceleration Completion funds activities needed to accelerate risk reduction and complete environmental cleanup at NNSA's geographic sites with planned closure dates of 2006, 2012 and 2035, as follows: (1) 2006 Accelerated Completions includes Sandia National Laboratories, Kansas City Plant, and Lawrence Livermore National Laboratory – Main Site; (2) 2012 Accelerated Completions includes Pantex Plant and Lawrence Livermore National Laboratory – Site 300; and (3) 2035 Accelerated Completions includes Nevada Test Site and Separations Process Research Unit. The Community and Regulatory Support program activities are indirectly related to on-the-ground cleanup results; however, they are integral to NNSA's ability to conduct cleanup at the transferred sites. Included in this category are: Agreements-in-Principle with state regulators and tribal nations, Site-Specific Advisory Boards, and State Grants. Program Direction provides the Federal staffing resources and associated costs required to manage the Program. It is re-emphasized that this is a zero sum transfer for funding and full time equivalents from EM to NNSA.

NNSA, working in concert with other Federal agencies, states, and affected stakeholders, will execute its clean-up and waste disposition projects in a cost effective, compliant and safe manner consistent with end states that support the nuclear weapons complex mission. NNSA's business strategy for accomplishing its new environmental responsibilities will build on EM's approach and experience while integrating these activities into NNSA's broader business model. The NNSA Environmental Projects and Operations Program will adopt and adapt key EM management initiatives, as well as those of NNSA's Facilities and Infrastructure Recapitalization Program. Specifically, the Program will: manage established site baselines and prioritize cleanup actions to reduce risk and ensure the successful completion of the projects being transferred; define end states that are consistent with end uses, utilizing stakeholder interaction; implement a budget structure that provides transparency into the projects being transferred and ensures clarity of financial integration with program performance; execute Project Baseline Summaries (PBSs) in accordance with the DOE Order 413.3, "Program and Project Management for the Acquisition of Capital Assets;" and implement a human capital management strategy for integrating EM employees into the NNSA management model.

Benefits to Program Goal 06.65.00.00 Environmental Projects and Operations Program
The major focus of this transfer is to assure streamlining of reporting and site operations by eliminating an inefficient dual chain of command that exists currently thus achieving full compliance with the NNSA Act. Under NNSA, this Program will continue to accelerate risk reduction and 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. This Program directly supports NNSA's Stockpile Stewardship Program in that the effective and efficient completion of site cleanup at NNSA Sites will result in greatly reduced risk and hazards to human health and the environment. In addition, as the cleanup remedies are implemented and completed the resources needed to maintain environmental compliance will be significantly reduced.

Major FY 2004 Achievements

- Kansas City Plant: All necessary activities to support a "No Further Action" decision on 95th Terrace remediation by State of Missouri were completed. State of Missouri accepted "No Further Action" in early FY 2005.

- Lawrence Livermore National Laboratory: Three Federal Facility Agreement milestones met, ten release sites will be completed, both the Main Site (2006) and Site 300 (2008) are currently on schedule to meet completion dates. Processed over 600 drums of transuranic (TRU) waste for disposal at Waste Isolation Pilot Plant and completed the physical Resource Conservation and Recovery Act (RCRA) closure activities of Area 514 (former waste treatment and storage area).

- Nevada Test Site: Disposed of over 3.5 million cubic feet (2,500 shipments) of low level waste from 26 generators without incident, successfully initiated TRU waste shipments resulting in over 500 drums being shipped to WIPP for disposal, and closed 39 RCRA industrial sites with State of Nevada approval.

- Sandia National Laboratories: Participated in finalizing and signing the Compliance Order on Consent (COoC) with the New Mexico Environment Department (NMED) that aligned the Order with the site's Performance Management Plan, exceeded the EM corporate metrics (Gold Chart) with 41 release site completions.

- Separations Process Research Unit (SPRU): Completed sampling to identify soil and groundwater contamination and submitted Resource Conservation and Recovery Act permit application to the State of New York.

Annual Performance Results and Targets[a]

(R = Results; T = Targets)

Performance Indicators	Pre-FY 2004 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Number of Geographic Sites Eliminated [b]	R: 1	N/A	N/A	T: 3	N/A	T: 2	N/A	N/A	8 Geographic Sites Eliminated
Number of Remediation Completions (# of Release Sites)	R: 1,116	R: 96 T: 95	T: 104	T: 124	T: 214	T: 143	T: 145	T: 84	2,744 Release Site Completions
Number of Industrial, Nuclear, and Radioactive Facility Completions	R: 2	R: 1 T: N/A	T: 1	T: 1	N/A	N/A	N/A	N/A	9 Facility Completions
Volume of Transuranic (TRU) Waste Shipped for Disposal at the Waste Isolation Pilot Plant (WIPP) (cubic meters) [c]	N/A	R: 108 T: 303	T: 508	N/A	T: 321	N/A	N/A	N/A	987m^3 TRU Waste Shipped to WIPP for Disposal
Volume of Low Level and Mixed Low Level Waste Disposed (cubic meters)[d]	R: 12,053	R: 5,927 T: 5,522	T: 3,116	T: 2,667	T: 2,296	T: 2,300	N/A	N/A	28,359 m^3 LL/MLLW Disposed
Remain within the limits of no greater than a ten percent negative cost and schedule variance for the overall consolidation cost and schedule performance indices for the Project Baseline Summaries (PBS) that will transfer in FY 2006 from EM to the NNSA, Environmental Projects and Operations Program (EFFICIENCY MEASURE)	*N/A*	*N/A*	*N/A*	*10%*	*10%*	*10%*	*10%*	*10%*	*Annually, remain within 10% negative cost and schedule variance for the overall consolidated cost and schedule performance indices.*

[a] EM will retain responsibility for FY 2005 performance execution. Metrics for FY 2006 and beyond will be reevaluated by NNSA and updated before program and budget execution.

[b] The Geographic Sites that will transfer to the NNSA in FY 2006 and the associated geographic site completion dates as reported by EM (shown in parenthesis) are as follows: KCP, SNL-NM, and LLNL-main site (2006); PX and LLNL-Site 300 (2008); SPRU (2014) and NTS (2027). SNL-CA, “completed” in 1999 and is reflected in the Pre-FY 2004 column.

[c] FY 2004 includes 105 m^3 of newly generated TRU waste. Shipments delayed beyond end of FY 2004 will be completed during the lst quarter of FY 2005.

[d] The estimated performance targeted for completion through FY 2006 exceeds the projected life-cycle under configuration control.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Site Acceleration Completions

The Environmental Projects and Operations Program Site Acceleration Completion activities provide for the accelerated cleanup and risk reduction for sites transferred from EM to NNSA that were used in the development of nuclear weapons and continue to operate national security programs. Site Acceleration Completion encompasses the following categories: 2006 Accelerated Completions, 2012 Accelerated Completions, and 2035 Accelerated Completions. The Program's FY 2006 responsibilities include facilities and areas at six sites located in six states, as detailed below.

2006 Accelerated Completions

	FY 2004	FY 2005	FY 2006
Soil and Water Remediation-Kansas City Plant VL-KCP-0030)	**2,066**	**3,478**	**4,526**

The Kansas City Plant manufactures non-nuclear components for defense purposes. Legacy contamination resulted from hazardous wastes that were released from the 1940's to the 1980's. The 95th Terrace is the final release site requiring remediation out of a lifecycle of 43 release sites. Storm sewers will be relined and grouted to reduce infiltration of polychlorinated biphenyl/solvent contamination. Groundwater contaminated with solvents will be treated prior to discharge into the sanitary sewer system. Pump and treat activities for contaminated groundwater and maintenance of institutional controls are the primary remedial alternatives being implemented and will continue beyond cleanup project completion.

In FY 2006, the following activities are planned to support the accelerated cleanup of the Kansas City Plant.

- Begin construction of the 95^{th} Terrace remediation phase. The baselined scope for remediation calls for institutional controls under 95^{th} Terrace roadway and sediment removal in the creek at the outfall.
- Continue pump and treat operations and continue operation of the Groundwater Treatment Facility as required by the Post Closure Permit.
- Continue remaining compliance work on the storm sewers, which includes the annual cleaning of Outfall 002. The polychlorinated biphenyl (PCB) contamination infiltration source was traced to the past release site.
- Continue oversight and administration of work required to complete the project.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Solid Waste Stabilization and Disposition - Lawrence Livermore National Laboratory (VL-LLNL-0013)..	**7,243**	**7,495**	**0**

The Solid Waste Stabilization and Disposition project scope involves the disposition of the remaining inventory of legacy waste from LLNL. The scope of work includes the characterization, packaging, treatment if needed, and safe removal of legacy waste from the LLNL. Waste types include low-level waste, mixed low-level waste, combined low-level waste, (a mixture of California State regulated hazardous with low-level waste), transuranic waste, and mixed transuranic waste. Activities in this project ensure all wastes are managed safely and in compliance with Federal, State, and local regulations, DOE Orders, and the LLNL policies and procedures. EM has committed to complete this project in FY 2005 prior to the transfer. Therefore, no funding is identified for transfer to the NNSA in FY 2006 and beyond.

Soil and Water Remediation – Lawrence Livermore National Laboratory - Main Site (VL-LLNL-0030)	**12,769**	**13,980**	**16,200**

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 groundwater. The major contaminants are volatile organic compounds, primarily trichloroethylene. The scope of work in this project consists of activities associated with existing contamination from these past operations; controlling contaminated groundwater migration; and effectively remediating soil and groundwater where contaminants exceed regulatory limits. Acceleration of approved remedial actions required by the Record of Decision will reduce the risks associated with 39 distinct groundwater plumes contaminated with volatile organic compounds, nitrate, tritium, and/or metals. The proposed end-state is that the remediation systems be phased into long-term operation and maintenance.

In FY 2006, the following activities are planned to support the LLNL accelerated cleanup.

- Continue to perform the annual surveillance and maintenance for operating 37 treatment systems at multiple on-site locations.
- Construct, install, and operate five new treatment systems to address groundwater contamination. The five new portable systems will be located at the Building 419 Source Area, Treatment Facility B and Treatment Facility C Hotspot, buildings 511/514 Source Area, Treatment Facility 406 South, and Treatment Facility 5475 South. These systems continue to support the accelerated cleanup strategy, by using a prioritized risk-based approach (off-site plume capture and cleanup, prevention of further off-site plume migration, distal interior plume capture and cleanup, and source control, thereby mitigating risk to on-site workers and preventing further releases to groundwater) to achieve operational and functional capability of the regulatory-required remediation network by the end of FY 2006.
- Continue site-wide regulatory reporting and monitoring.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Soil and Water Remediation-Sandia National Laboratory (VL-SN-0030)	**20,704**	**20,084**	**9,769**

The Sandia National Laboratories (SNL) Environmental Restoration project mission is to complete all necessary corrective actions at environmental restoration release sites. The end-state will be reached when: (1) all solid waste management units and areas of concern are remediated or remediation systems are constructed and operational, and all waste disposed of, and (2) when the site is placed under institutional controls and long-term monitoring in accordance with State and Federal requirements. New Mexico Environment Department's approval is required for final determination of No Further Action.

In FY 2006, the following activities are planned to support the SNL accelerated cleanup.

- Complete all activities required to fulfill the New Mexico Environment Department's Compliance Order on Consent.
- Submit Corrective Measure Implementation Reports for the Chemical Waste Landfill and the Mixed Waste Landfill.
- Submit the final Investigation Reports for the drains and septic systems.
- Complete the Corrective Measure implementation field work for groundwater.
- Complete transition of long-term environmental stewardship responsibilities for all sites that do not meet residential risk criteria and for groundwater.

Total, 2006 Accelerated Completions..........	**42,782**	**45,037**	**30,495**

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
2012 Accelerated Completions			
Solid Waste Stabilization and Disposition - LLNL/SPRU Sites (VL-FOO-0013B-D)....	**331**	**476**	**486**

Activities performed in this project are directed at achieving efficiencies through supporting multiple waste management and environmental restoration activities at the LLNL. Support for site investigations, hydrogeologic studies, regulatory review, and stakeholder liaisons are also managed within this project through wide applicability of these restoration activities to multiple projects/sites.

This project will end when the projects supported by the waste management and environmental restoration activities achieve their end-state.

In FY 2006, the following activities are planned to support LLNL accelerated cleanup.

- Support ongoing environmental/safety activities and disposal activities related to all forms of waste.
- Conduct environmental and engineering evaluation of treatment options for Government wastes and materials.
- Continue to transport packaged wastes and materials to designated facilities.
- Perform assessment and cleanup tasks involving work plan preparation, site assessments, Resource Conservation and Recovery Act (RCRA) closures, environmental analysis, and other technical activities that pertain to environmental support.

Soil and Water Remediation-Lawrence Livermore National Laboratory-Site 300 (VL-LLNL-0031)...	**7,909**	**12,481**	**13,280**

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. The remedial actions required by regulatory decision documents will reduce the risks, overall liability, and mortgage at Site 300 associated with 37 distinct groundwater plumes contaminated with volatile organic compounds, high explosives, nitrate, perchlorate, tritium, and/or depleted uranium. Build-out of the required remediation network system will address risk reduction associated with groundwater contamination and will complete the project.

In FY 2006, the following activities are planned to support LLNL accelerated cleanup.

- Complete Site-wide Final Remedial Evaluation Summary Report.
- Complete final amendment to the Interim Site-wide Record of Decision for the Pit 7 Complex.
- Complete Site-wide Final Proposed Plan for the Final Record of Decision.
- Complete the general services area final five-year review.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

- Hookup Building 830 proximal extraction wells to Building 830 source groundwater treatment system in Building 832 Canyon operating unit.
- Complete the Sandia Test Site characterization summary report.

Solid Waste Stabilization and Disposition-Nevada Test Site (VL-NV-0013)	**10,218**	**6,093**	**8,452**

The scope of work within this project includes storage, treatment (as needed), and disposal/disposition of on-site transuranic and mixed transuranic waste and material. Activities associated with this project include: characterization, certification, and shipment of transuranic waste to the Waste Isolation Pilot Plant (WIPP) for disposal; resizing and dispositioning oversized boxes of mixed transuranic waste; dispositioning drums of classified material and experimental spheres; and safe, compliant storage of all of the above until disposition. Additionally, the Waste Examination Facility, Transuranic Pad Storage Building, and the classified material storage area are maintained with appropriate authorization bases. Inspections of mixed transuranic waste are conducted according to hazardous waste requirements, as mandated by the RCRA until waste is dispositioned. Transuranic waste with no current path forward for disposition will be addressed with a new technology implemented at the NTS.

The end-state for this project will be the disposition of all transuranic waste at the NTS by disposal at the WIPP or by treatment and disposal.

In FY 2006, the following activities are planned to support NTS accelerated cleanup.

- Disposition of drums containing items that do not meet the WIPP Waste Acceptance Criteria; size reduce oversize boxes; and decontaminate the Visual Examination Repackaging Building.

Soil and Water Remediation-Pantex (VL-PX-0030)	**16,268**	**19,308**	**14,395**

Past operations have contaminated soils and portions of the upper or perched groundwater with high explosives, metals, and solvents. In 1989, the U.S. Environmental Protection Agency conducted a RCRA Facility Assessment of the Pantex Plant and identified 144 Solid Waste Management Units (250 release sites). This Assessment resulted in an Environmental Protection Agency Order stipulating response measures for these release sites. Two additional release sites were identified during the normal course of site investigations from new information (252 release sites).

Corrective Measures to be taken include continued operation of the pump and treatment systems and, if feasible, the deployment of in-situ technologies (e.g., bioremediation) to mitigate perched groundwater contamination; removal or containment of source term contamination in surface and subsurface soils using hot spot removal, engineered barriers, and soil vapor extraction. Under the accelerated cleanup plan, Pantex completed all investigations by September 2004 and will complete all corrective measures to reduce risk by September 2008.

In FY 2006, the following activities are planned to support accelerated cleanup of the Pantex Plant.

- Continue operation/maintenance of Zone 11 (soil vapor extraction) and Zone 12 (ozone injection; ditch liners) contamination source-term Interim Corrective Measures.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

- Site-Wide Groundwater – continue operation/maintenance of passive reactive barrier (sodium dithionite) Interim Corrective Measures adjacent to Zone 12; obtain regulator approve of Corrective Measures Study/Environmental Assessment; develop Corrective Measure Implementation Project Plan; and provide Human Health Risk Assessment Summary Report to the public.

Nuclear Facility D&D-Pantex (VL-PX-0040)	**4,441**	**4,708**	**5,114**

The Pantex Deactivation and Decommissioning project reduces the plant footprint and risks to workers, public health, and the environment through safe shutdown, decontamination, and demolition of contaminated surplus facilities. Included in the scope are: Building 12-24 Complex (multiple buildings/structures), Zone 10 Ruins (multiple buildings/structures), Building 8-008, and Building 11-44. These facilities represent approximately one million square feet, are 50 to 60 years old, and, in some cases, are a contributing source of legacy contaminants into the environment. Additional project activities include: hazard characterization and controls; termination of existing utilities; decontamination; and removal and recycling/disposal of plant equipment and structures (e.g., piping, concrete pads, roofs, underground concrete walls). Remediation of underlying soil and groundwater may be required for some facilities. These facilities are targeted for completion by the end of FY 2007.

In FY 2006, the following activities are planned to support accelerated cleanup of the Pantex Plant.

- Complete the demolition of Building 12-24 Complex.

Total, 2012 Accelerated Completions...........	**39,167**	**43,066**	**41,727**

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
2035 Accelerated Completions			
Soil and Water Remediation-Nevada Test Site (Excluding Offsites) (VL-NV-0030)	**58,593**	**69,664**	**68,382**

Historic atmospheric and underground nuclear tests on the NTS, Tonopah Test Range, and the U.S. Air Force's Nevada Test and Training Range resulted in contaminated support facilities, soils and groundwater. The NTS surface contamination includes 1,047 industrial sites and 27,000 acres of contaminated soil in excess of 40 pico curies per gram (pCi/g). NTS underground nuclear test activities (908 detonations) resulted in 132M curies of radioactivity. Approximately 1/3 of subsurface contamination is near or below the water table.

Within EM, this project contained work scope associated with the Nevada Offsites. Since the Nevada Offsites are not transferring to NNSA, this scope has been removed. Similarly, funding requirements associated with this scope are not included in the above budget authority estimates.

The current strategy for remediating the soil and groundwater at NTS is to:

- Complete remediation to support regulator closure of industrial release sites (mostly sites that were left after development of boreholes for underground tests)--eliminate access to contamination by removal and clean closure or closure in place, and capping and establishing appropriate use restrictions.
- Establish 1,000 pCi/g corrective action level for contaminated soil and mitigate associated risk to human health and environment—focus on areas of the Tonopah Test Range, the Nevada Test and Training Range, and the Nevada Test Site where soil contamination is above 1,000 pCi/g. Contamination will be isolated and contained and/or removed. Appropriate engineered barriers and use restrictions where contamination is not removed (primary method for the Nevada Test Site) will be established.
- Complete characterization of the Nevada Test Site subsurface predictive flow models will be developed and monitoring networks will be established to ensure contaminated groundwater from underground nuclear tests remains within expected boundaries. Information from these models and networks will be used to establish restrictions and institutional controls to preclude inadvertent contact with subsurface contaminants.

In FY 2006, the following activities are planned to support accelerated cleanup of the Nevada Test Site.

- For subsurface activities on the Nevada Test Site, plans are to complete Frenchman Flat Phase 2 transport data analysis, develop Pahute Mesa transport model, complete Yucca Flat geology/hydrology data analysis, complete Rainer Mesa well development/testing and lab studies.
- Surface activities on the Nevada Test Site include: completion of the characterization of waste dumps, contaminated soil sites, and other similar sites; complete closure of waste disposal sites, and a radiological contamination area; and D&D of Test Cell A. Plans are also to mobilize and actively remediate Clean Slate 2 to a level consistent with its use by the United States Air Force for training activities (1,000 pCi/g).

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Operate Waste Disposal Facility-Nevada (VL-NV-0080)	**5,250**	**4,930**	**5,038**

The scope of this project includes acceptance of low-level waste and mixed low-level waste and closure of individual disposal cells as they reach capacity. The end-state will be the closure and capping of the disposal areas, with subsequent monitoring and institutional control. Nevada maintains the capability to dispose low-level waste from approved on- and off-site generators throughout the DOE complex and mixed low-level waste from specific generators as allowed under permit conditions as administered by the State of Nevada. Projected total Nevada Test Site low-level waste and mixed low-level waste life-cycle disposal volume from complex-wide generators is approximately 1.2 million cubic meters. Activities associated with this project include Performance Assessment/Composite Analysis maintenance in support of the Disposal Authorization Statement; safety authorization document maintenance; the NTS waste acceptance program maintenance; required environmental monitoring/closure planning; and update/maintenance of the NTS RCRA Part B Permit. Mixed low-level waste is managed according to the Resource Conservation and Recovery Act, Federal Facility Compliance Act Consent Order and Mutual Consent Agreement to reduce potential risks to human health and the environment. Management of mixed low level waste includes identifying treatment options, selecting preferred and alternative treatment methods, verifying that the waste meets acceptance criteria required by treatment and disposal sites, shipping and tracking waste through disposal.

In FY 2006, the following activities are planned to support accelerated cleanup of NTS and the other sites that will use the NTS Waste Disposal Facility.

- Dispose of an estimated cumulative total of 1,014,866 m^3 of low-level waste and mixed low-level waste at the NTS through FY 2006.
- Dispose of on-site generated mixed waste and continue preparations for receipt of off-site generated mixed low-level waste.
- Accept and dispose of low-level waste from one new offsite generator.
- Accept and dispose of mixed low-level waste from other DOE sites pending approval of the RCRA Part B Permit issued by the State of Nevada.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Nuclear Facility D&D-Separations Process Research Unit (VL-SPRU-0040)....................	**5,411**	**5,451**	**6,494**

The Separations Process Research Unit is an inactive Atomic Energy Commission facility that supported the Manhattan Project in the early 1950s. This Unit was a chemical processing pilot plant used to test and prove the process of separating plutonium for irradiated fuel. Operations contaminated the nuclear facilities, auxiliary structures used to manage waste, surrounding land, and groundwater in the immediate vicinity of the nuclear facilities. The cleanup project objectives are to: characterize and remove the chemical and radiological contamination in the land surrounding the sites where waste was stored and address groundwater contamination; characterize and remove the transuranic waste contained in the SPRU waste tanks and tank enclosures, and ship the waste to the WIPP facility; and characterize, decontaminate, dismantle, and demolish the nuclear facilities. After demolition, the incidental remaining land will be chemically and radiologically cleaned, restored, and returned to the Knolls Atomic Power Laboratory for continued mission use.

In FY 2006, the following activities are planned to support accelerated cleanup of the Separations Process Research Unit.

- Prepare the safety basis for work in the nuclear facilities, and will continue cleanup activities of four release sites.
- Plan to remove approximately 50,000 cubic feet of soil/debris

Total, 2035 Accelerated Completions............	**69,254**	**80,045**	**79,914**

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Community and Regulatory Support			
National Nuclear Security Administration Service Center (NNSA/SC) Community and Regulatory Support (VL-FAO-0101)	**3,776**	**3,551**	**1,762**

This project includes the New Mexico, Texas, and Missouri Agreements-in-Principle between DOE and the respective state-designated lead agencies to provide environmental oversight and monitoring for independent verification of DOE compliance with federal, state, and local laws, including regulations at Los Alamos National Laboratory, Sandia National Laboratories/New Mexico, the Pantex Plant, and the Kansas City Plant. These Agreements-in-Principle provide support to the states to evaluate the adequacy of DOE activities related to environmental monitoring and conduct periodic state monitoring of discharges, emissions, or biological parameters for verifying the effectiveness of DOE programs. The Agreements-in-Principle are projected to continue for the duration of the environmental restoration projects within these states. The project end-date is 2015.

Congressionally Directed Activity: Congress earmarked $2.485 million in FY 2004 and $1.984 million in FY 2005 for the Consortium for Environmental Education and Technology Development (formerly known as the Waste Management Education and Research Consortium). These funds are not part of the transfer from EM to NNSA, and there is no funding included in the FY 2006 request for this activity.

In FY 2006, the following activities are planned to support accelerated cleanup:

- NNSA will continue its engagement with stakeholder groups to explain the transfer from EM to NNSA.
- The following Agreements-in-Principle activities are planned:
  - Continue monitoring environmental restoration, waste management, and environmental quality activities and perform public outreach to support the New Mexico, Texas and Missouri Agreements-in-Principle.
  - Continue waste management oversight and monitoring at the Los Alamos National Laboratory and the Sandia National Laboratories.

LLNL Community and Regulatory Support (VL-FOO-0100-D)..	**51**	**270**	**60**

This project provides funding for grants to the Regional Water Quality Control Board and the California Department of Toxic Substances Control to provide oversight of the RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) programs at the LLNL main-site and Site 300 to support tribal universities and college activities related to environmental cleanup:

In FY 2006, the following activities are planned to support the LLNL accelerated cleanup.

- Continue support of State regulatory oversight (funding for State Grants) of environmental programs at the LLNL sites. This includes the review of data and documentation associated with waste

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

management and environmental restoration activities and also involves active participation in a review endorsement of accelerated site closure proposals by DOE when requested.

Nevada Community and Regulatory Support (VL-NV-0100)..	**7,413**	**1,918**	**2,546**

This project provides for various agreements and grants with the states, universities, and other entities. Funding supports regulator oversight of the Nevada Test Site including surveillance and monitoring activities, research to accelerate project activities, and stakeholder involvement efforts.

Congressionally Directed Activity: FY 2004 includes \$4.97 million, of which \$.994 million is for State of Nevada oversight and \$3.976 million for affected local governments for external oversight of nuclear waste disposal. The funding provided by Congress in FY 2005 for these activities is not reflected because the funds were not included in the comparability adjustment to NNSA for the FY 2006 Request.

In FY 2006, the following activities are planned to support accelerated cleanup of Nevada.

- The Nevada Site Office will continue positive, proactive relationships with State regulators and stakeholders and will:
- Work closely with State regulators, stakeholders and Citizens Advisory Board to ensure issues and concerns are addressed and to ensure the States, stakeholders, and the Citizens Advisory Board are informed of EM activities.
- Complete all regulatory-required milestones as planned.
- Meet regularly with State regulators and stakeholders to keep channels of communication open.
- Appropriately fund State regulators and appropriate stakeholder involvement initiatives.
- Require its federal and contractor staff to provide appropriate support of regulator and stakeholder initiatives.

Total, Community and Regulatory Support	**11,240**	**5,739**	**4,368**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Site Acceleration Completions	
2006 Accelerated Completions	
Soil and Water Remediation-Kansas City Plant (VL-KCP-0030)	
▪ The increase supports construction costs for the 95th Terrace remediation to ensure project completion by the end of FY 2006; completion of the 95th Terrace design; groundwater treatment system refurbishments; and storm sewer work from the past Solid Waste Management Unit	+1,048
Solid Waste Stabilization and Disposition-Lawrence Livermore National Laboratory (VL-LLNL-0013)	
▪ The decrease is due to the completion of the legacy waste project in FY 2005	-7,495
Soil and Water Remediation-Lawrence Livermore National Laboratory-Main Site (VL-LLNL-0030)	
▪ The increase is attributable to the installation of remaining groundwater treatment facilities and operation of the all planned treatment systems.	+2,220
Soil and Water Remediation-Sandia National Laboratory (VL-SN-0030)	
▪ The decrease reflects the ramp down of work scope as Sandia approaches completion in FY 2006	-10,315
Subtotal Funding Change, 2006 Accelerated Completions	**-14,542**
2012 Accelerated Completions	
Solid Waste and Disposition- LLNL/SPRU Sites (VL-FOO-0013B-D)	
▪ The increase supports planned activities in FY 2006	+10
Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300 (VL-LLNL-0031)	
▪ Increase for planned remedial activities to maintain schedule for project completion in FY 2008	+799

	FY 2006 vs. FY 2005 ($000)
Solid Waste Stabilization and Disposition-Nevada Test Site (VL-NV-0013)	
▪ The increase reflects the transition from drum characterization to a more intensive period of managing prohibited items, oversized boxes, and D&D in FY 2006	+2,359
Soil and Water Remediation-Pantex (VL-PX-0030)	
▪ The decrease reflects completion of a significant portion of field work and regulatory approval of site-wide corrective measures study	-4,913
Nuclear Facility D&D-Pantex (VL-PX-0040)	
▪ The increase supports the completion of demolition of Building 12-24 Complex	+406
Subtotal Funding Change, 2012 Accelerated Completions	**-1,339**
2035 Accelerated Completions	
Soil and Water Remediation-Nevada Test Site (Excluding Offsites) (VL-NV-0030)	
▪ The decrease reflects a year of less intensive field efforts with more emphasis on modeling and data analysis, lab studies, and characterization	-1,282
Operate Waste Disposal Facility-Nevada (VL-NV-0080)	
▪ The increase supports planned activities in FY 2006	+108
Nuclear Facility D&D-Separations Process Research Unit (VL-SPRU-0040)	
▪ The increase supports increased soil remediation activities	+1,043
Subtotal Funding Change, 2035 Accelerated Completions	**-131**
Total Funding Change, Site Acceleration Completions	**-16,012**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Community and Regulatory Support	
NNSA Service Center Community and Regulatory Support (VL-FAO-0101)	
▪ FY 2006 does not reflect funding for the Consortium for Environmental Education and Technology Development, which was a Congressionally Directed Activity in FY 2005	-1,789
LLNL Community and Regulatory Support (VL-FOO-0100-D)	
▪ Provides for the FY 2006 level of planned activities	-210
Nevada Community and Regulatory Support (VL-NV-0100)	
▪ The increase will enable Nevada to continue proactive relationships with State regulators and stakeholders	+628
Total Funding Change, Community and Regulatory Support	**-1,371**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	0	0	0	0	0%
Capital Equipment	145	150	154	+ 4	+ 3%
Total, Capital Operating Expenses	145	150	154	+ 4	+ 3%

Environmental Projects and Operations – Program Direction

Funding Schedule by Category

(dollars in thousands/whole FTE's)

	FY 2004[a]	FY 2005[a]	FY 2006	$ Change	% Change
Headquarters					
Salaries and Benefits....................	1,926	1,782	2,138	+ 356	+ 20.0%
Travel...	74	72	63	- 9	- 12.5%
Support Services..........................	411	149	257	+ 108	+ 72.5%
Other Related Expenses...............	435	517	432	- 85	- 16.4%
Total, Headquarters......................	2,846	2,520	2,890	+ 370	+ 14.7%
Full-Time Equivalents..................	15	15	15	+ 0	+ 0.0%
Livermore Site Office					
Salaries and Benefits....................	1,717	1,883	2,258	+ 375	+ 19.9%
Travel...	40	43	45	+ 2	+ 4.7%
Support Services..........................	186	0	190	+ 190	+ 0.0%
Other Related Expenses...............	17	280	230	- 50	- 17.9%
Total, Livermore Site Office.........	1,960	2,206	2,723	+ 517	+ 23.4%
Full-Time Equivalents..................	16	16	16	+ 0	+ 0.0%
Los Alamos Site Office[b]					
Salaries and Benefits....................	763	706	903	+ 197	+ 27.9%
Travel...	18	18	30	+ 12	+ 66.7%
Support Services..........................	0	0	0	+ 0	+ 0.0%
Other Related Expenses...............	0	0	15	+ 15	+ 0.0%
Total, Los Alamos Site Office.......	781	724	948	+ 224	+ 30.9%
Full-Time Equivalents..................	6	6	6	+ 0	+ 0.0%
Nevade Site Office (excludes off-sites)					
Salaries and Benefits....................	3,577	3,200	3,859	+ 659	+ 20.6%
Travel...	177	117	118	+ 1	+ 0.9%
Support Services..........................	1,251	459	550	+ 91	+ 19.8%
Other Related Expenses...............	135	43	36	- 7	- 16.3%
Total, Nevada Site Office..............	5,140	3,819	4,563	+ 744	+ 19.5%
Full-Time Equivalents..................	31	30	30	+ 0	+ 0.0%

[a] FY 2006 funding reflects the realignment of environmental responsibilities from the Office of Environmental Management (EM) Defense Site Acceleration Completion and Defense Environmental Services (Community & Regulatory Support and Program Direction) to NNSA Environmental Projects and Operations. FY 2004 and FY 2005 reflect comparability adjustments of $19,209,000 and $18,313,000 respectively associated with the FY 2006 transfer.

[b] LANL FTE's and funding transferred in FY 2006 to facilitate the coordination and transition activities associated with the LANL EM scope of work scheduled to transfer from EM to NNSA in FY 2007.

	(dollars in thousands/whole FTE's)				
	FY 2004[a]	FY 2005 [a]	FY 2006	$ Change	% Change
Pantex Site Office					
Salaries and Benefits....................	109	101	121	+ 20	+ 19.8%
Travel..	8	11	12	+ 1	+ 9.1%
Support Services..........................	0	0	0	+ 0	+ 0.0%
Other Related Expenses...............	0	0	0	+ 0	+ 0.0%
Total, Pantex Site Office..............	117	112	133	+ 21	+ 18.8%
Full-Time Equivalents..................	1	1	1	+ 0	+ 0.0%
Sandia Site Office					
Salaries and Benefits....................	218	201	242	+ 41	+ 20.4%
Travel..	3	3	5	+ 2	+ 66.7%
Support Services..........................	6	0	0	+ 0	+ 0.0%
Other Related Expenses...............	0	0	9	+ 9	+ 0.0%
Total, Sandia Site Office..............	227	204	256	+ 52	+ 25.5%
Full-Time Equivalents..................	2	2	2	+ 0	+ 0.0%
NNSA Service Center					
Salaries and Benefits....................	5,852	5,990	4,183	- 1,807	- 30.2%
Travel..	256	281	180	- 101	- 35.9%
Support Services..........................	419	1,455	1,116	- 339	- 23.3%
Other Related Expenses...............	1,611	1,002	893	- 109	- 10.9%
Total, NNSA Service Center.........	8,138	8,728	6,372	- 2,356	- 27.0%
Full-Time Equivalents..................	50	52	30	- 22	- 42.3%
NNSA Total					
Salaries and Benefits....................	14,162	13,863	13,704	- 159	- 1.1%
Travel..	576	545	453	- 92	- 16.9%
Support Services..........................	2,273	2,063	2,113	+ 50	+ 2.4%
Other Related Expenses...............	2,198	1,842	1,615	- 227	- 12.3%
Total, Program Direction.............	19,209	18,313	17,885	- 428	- 2.3%
Full-Time Equivalents..................	121	122	100	- 22	- 18.0%

[a] FY 2006 funding reflects the realignment of environmental responsibilities from the Office of Environmental Management (EM) Defense Site Acceleration Completion and Defense Environmental Services (Community & Regulatory Support and Program Direction) to NNSA Environmental Projects and Operations. FY 2004 and FY 2005 reflect comparability adjustments of $19,209,000 and $18,313,000 respectively associated with the FY 2006 transfer.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Environmental Projects and Operations – Program Direction……….	17,885	18,568	15,566	14,381	14,946	81,346

Description

Environmental Projects and Operations – Program Direction provides funds for all Federal personnel and related expenses for the Environmental Projects and Operations Program at both NNSA Headquarters and the field. This Program will be centrally managed with responsibility and accountability for the environmental activities that will transfer from the Office of Environmental Management (EM) to the NNSA, beginning in FY 2006. The FY 2006 request provides for the transfer of 100 full time equivalents (FTE) from EM to the NNSA (85 Field and 15 Headquarters FTEs). NNSA will implement a human capital management strategy for integrating these EM employees into the *NNSA of the Future* model. Program Direction is comprised of the salaries and benefits, travel, support services, and other related expenses that support the efficient and effective operation of this Program.

The transition of environmental responsibilities from EM to the NNSA in FY 2006 will be undertaken consistent with the objectives of recent management reform initiatives and realignments undertaken by EM and NNSA. This is a zero sum transfer of funding and full time equivalents from EM to the NNSA.

Benefits to Program Goal 06.65.00.00 Environmental Projects and Operations

Environmental Projects and Operations – Program Direction contributes to the successful achievement of Program Goal 06.65.00.00 by providing the Federal personnel and resources necessary to plan, manage and oversee the environmental transfer activities, beginning in FY 2006. By transferring the responsibility, personnel and funding for the remaining environmental legacy of the Cold War at NNSA Sites from EM to NNSA and assigning the authority to manage this legacy to one organization within the NNSA, the Department expects to improve management efficiency and effectiveness. NNSA will eliminate a separate management layer from the process of assigning work to contractors and will clarify the lines of authority, accountability and responsibility at NNSA Sites, a long-standing issue within the Department. Successful implementation of the environmental transfers will streamline organizational reporting relationships and improve management, consistent with the tenets of the NNSA Act.

Annual Performance Results and Targets

EM will retain responsibility for FY 2005 performance execution. Metrics for FY 2006 and beyond will be reevaluated by NNSA and updated before program and budget execution.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Program Direction			
Salaries and Benefits	**14,162**	**13,863**	**13,704**

Program Direction will be centrally managed within the Environmental Projects and Operations Program to facilitate effective and efficient management of NNSA's new environmental responsibilities. Program Direction budget and full time equivalents (FTE) will transfer directly from EM to the NNSA in FY 2006. The functional transfer of EM federal employee full time equivalents to the NNSA will consist of a one for one match up of the same federal employees performing the same jobs. NNSA will implement a human capital management strategy for integrating these EM employees into the *NNSA of the Future* model. The FY 2006 request provides funding for 100 full-time equivalent employees (FTEs) a reduction of 22 FTEs from FY 2005, with responsibility for the overall direction and administrative support for NNSA's environmental activities at Headquarters, Site Offices, and NNSA Service Center. These federal employees will provide the following:

- Headquarters provides high-level guidance, sets requirements, defines policy and corporate processes, integrates overall program plans, develops and defends corporate budgets, assists the +-field in evaluating contractors, evaluates field oversight programs, and interfaces with other governmental customers and stakeholders.

- Site Offices are responsible for all oversight and contract administration for Site activities, acting as the risk acceptance agent for the NNSA. The Site Offices are responsible for: (1) coordinating all contract oversight; (2) the safe and secure operation of facilities under the purview of NNSA; and (3) supporting NNSA programs to ensure their success in accordance with their expectations.

- The Service Center supports Site Offices and Headquarters program offices in accomplishing mission activities by providing effective, efficient and standardized business and technical support services.

Travel	**576**	**545**	**453**

Includes all funding for the transportation of Federal employees, traveler subsistence, and all other per diem allowances in accordance with Federal travel regulations. Travel entails trips necessary to conduct NNSA business related to environmental activities.

Support Services...	**2,273**	**2,063**	**2,113**

Provides for technical and administrative support for cost effective short-term/intermittent requirements not available from within the Federal workforce.

	FY 2004	FY 2005	FY 2006
	(dollars in thousands)		
Other Related Expenses	**2,198**	**1,842**	**1,615**

Includes provision of funds for the Working Capital Fund, based on guideline estimates provided by the Working Capital Funds Manager. Funding will also support goods and services such as training and ADP maintenance. Expenses related to the storage of household goods in conjunction with directed permanent change of station are funded within this activity.

	FY 2004	FY 2005	FY 2006
Total, Program Direction	**19,209**	**18,313**	**17,885**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Salaries and Benefits	
Reflects cost reductions due to the reduction in full time equivalents from FY 2005 to FY 2006	-159
Travel	
Reflects planned travel requirements associated with reduced staffing in FY 2006	-92
Support Services	
Supports planned requirements in FY 2006	+50
Other Related Expenses	
Decrease is related to program specific transition costs (i.e., office equipment, supplies, use of space, printing) associated with reduced full-time equivalents.	-227
Total, Program Direction	**-428**

Support Services by Category

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Technical Support					
Economic and Environmental Analyses	1,040	945	950	+ 5	+ 0.5%
Test and Evaluation	0	0	0	+ 0	+ 0.0%
Total, Technical Support	1,040	945	950	+ 5	+ 0.5%
Management Support					
Directives Management Studies	318	292	297	+ 5	+ 1.7%
Training and Education	40	35	38	+ 3	+ 8.6%
Reports and Analyses Management and General Administrative Services	875	791	828	+ 37	+ 4.7%
Total, Management Support	1,233	1,118	1,163	+ 45	+ 4.0%
Total, Support Services	2,273	2,063	2,113	+ 50	+ 2.4%

Other Related Expenses by Category

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	$ Change	% Change
Other Related Expenses					
Training	176	147	129	- 18	- 12.2%
Working Capital Fund	22	18	16	- 2	- 11.1%
Printing and Reproduction	22	18	16	- 2	- 11.1%
Rent to GSA	118	100	87	- 13	- 13.0%
Communication, Utilities, Misc	22	18	16	- 2	- 11.1%
Other Services	1,838	1,541	1,351	- 190	- 12.3%
Total, Other Related Expenses	2,198	1,842	1,615	- 227	- 12.3%

Safeguards and Security

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Safeguards and Security					
Operations & Maintenance					
Physical Security....................................	544,897	615,973	621,651	+ 5,678	+ 0.9%
Cyber Security..	80,303	99,248	77,827	- 21,421	- 21.6%
Total, Operations & Maintenance.......................................	625,200	715,221	699,478	- 15,743	- 2.2%
Construction...	3,661	36,708	41,000	+ 4,292	+ 11.7%
Total, Safeguards and Security..	628,861	751,929	740,478	- 11,451	- 1.5%
Offset for S&S Work for Others.............	-28,985	-30,000	-32,000	- 2,000	+ 6.7%
Total, Safeguards and Security with Offset...	599,876	721,929	708,478	- 13,451	- 1.9%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Safeguards and Security						
Physical Security..................	621,651	595,380	670,849	720,540	734,808	3,343,228
Cyber Security......................	77,827	81,022	81,248	86,437	105,477	432,011
Subtotal, O&M.....................	699,478	676,402	752,097	806,977	840,285	3,775,239
Construction..........................	41,000	100,500	63,000	48,175	56,875	309,550
Subtotal, Safeguards and Security.........................	740,478	776,902	815,097	855,152	897,160	4,084,789
Offset, for S&S Work for Others.............................	-32,000	-33,000	-34,000	-35,000	-36,000	-170,000
Total Target, Safeguards Security with Offset............	708,478	743,902	781,097	820,152	861,160	3,914,789

Description

This program will protect 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 September 11, 2001.

Benefits to Program Goal 01.39.00.00 Safeguards and Security

Within the Safeguards and Security program, the Physical 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 primary front-line protection, consisting of armed and unarmed uniformed officers; (2) Physical Security Systems – provide intrusion detection and assessment barriers, access controls, tamper protection monitoring, and performance testing and maintenance of security systems; (3) Transportation – all security for intra-site transfers of special nuclear materials (including safe havens), weapons, and other classified material that is not funded through NNSA's Office of Secure Transportation Asset; (4) Information Security – provides protection for the classification and declassification of information, critical infrastructure, technical security 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 continuous accountability of special nuclear materials. Safeguards and Security also includes three construction projects: 05-D-170, PED, Security Improvements Project, Y-12, 05-D-701, PED, Security Perimeter Project, and 05-D-170-01, Nuclear Materials Safeguards and Security Upgrades Project, Phase II.

Program Assessment Rating Tool (PART)

The Department implemented a tool to evaluate selected programs. PART was developed by 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 Safeguards and Security program has incorporated feedback from OMB into the FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

For FY 2006, OMB re-assessed the Safeguards and Security Program. OMB rated the program 77 percent or "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 spent the past 2 years improving the meaningfulness and measurability of its performance measures. OMB was satisfied with both the programs new measures and the progress the program has made in achieving results against these new measures the past two years.

The FY 2006 OMB PART did result 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 which meet the new design basis threat; reducing classified removable electronic media (CREM) at the Los Alamos National Laboratory in a move toward classified diskless computing; and implementing solutions to reduce the time it takes to process Q-clearances for both contractor and federal employees.

Major FY 2004 Achievements

The Defense Nuclear Security Program took the following actions to improve the security posture across the weapons complex:

- Sites increased the explosive impact distances from publicly accessible points to protect critical facilities.
- Additional protective barriers were installed external to facilities and/or existing barriers were upgraded for increased strengthening.
- Facility access controls for employees and visitors were enhanced.
- Protective Forces training was enhanced to focus on tactical training skills.
- Additional Protective Forces weapons systems were procured.
- Perimeter alarm system upgrades/enhancements were completed.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	Provide technical support to the Counter-Terrorism Task Force strategic review of S&S DOE-wide, including cyber security. (MET GOAL) Develop a strategic framework for responsive and effective security methodology following the September 11, 2001 events. (MET GOAL) Complete the milestones listed in the corrective action plans for the Departmental Challenge of Security and Counterintelligence. (FMFIA) (MET GOAL).	Assess line management's progress in implementing Integrated Safeguards and Security Management. (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)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	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%	T: 65%	T: 70%	T: 75%	T: 80%	T: 85%	T: 90%	By 2010, achieve an effective rating on 90% of OA Physical Security reviews.
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%	T: 80%	T: 85%	T: 90%	T: 90%	T: 90%	T: 90%	By 2007, achieve an effective rating on 90% of OA Cyber Security reviews.
Annual percentage of Office of Independent Oversight and Performance Assurance (OA) findings that have an approved corrective action plans in place within 60 days from receipt of final report.	R: Four sites 100%, three sites 90%, and one site 27%	R: 100% T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	T: 90%	Annually, complete at least 90% of corrective action plans on time.
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 MEASURE)	*N/A*	*N/A*	*T: 85*	*T: 80*	*T: 75*	*T: 70*	*T: 70*	*T: 70*	*By 2008, reduce average number of days for Service Center to process Q Security Clearance to 70 days.*

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of pieces of accountable classified removable electronic media (CREM) at Los Alamos National Laboratories (LANL) destroyed.	N/A	N/A	T: 10%	T: 20%	T: 30%	T: 40%	T: 50%	T: 50%	By 2009, destroy 50% of LANL CREM.
Cumulative percentage of progress, measured in milestones completed, towards implementation of the May 2003 Design Basis Threat (DBT) policy at NNSA sites (does not include DOE Order 470.3, October 2004 revision to DBT).	N/A	N/A	T: 12.5%	T: 100%	N/A	N/A	N/A	N/A	By 2006, complete 100% milestones.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Physical Security	**544,897**	**615,973**	**621,651**

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 Safeguards and Security Site 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 S&S overhead costs and addressing life cycle equipment issues. The technology applications endeavor will work with DOE laboratories and parallel government efforts to evaluate technologies that demonstrate promise to improve S&S effectiveness and minimize cost growth.

Implementation of the new Design Basis Threat (DBT): The FY 2006 S&S Budget request supports implementation of the 2003 DBT to address expanded adversary threat capabilities and malicious intent. This DBT funding represents the third year of a three-year program for all NNSA sites to meet the Secretary's mandate to come into compliance with the new policy by the end of FY 2006. In FY 2004, a reprogramming of $47.2 million addressed DBT requirements and in FY 2005, $89.7 million of the total budget was for DBT related requirements. Additionally, the FY 2006 S&S budget request includes support to conduct Vulnerability Analyses necessary to develop DBT implementation plans to meet the latest DBT policy issues in October 2004, that requires NNSA sites compliance by the end of FY 2008.

Implementation of newly established DBT protection measures will enhance security across the nation's nuclear weapons complex and provide reasonable assurance for public health and safety. Analyses have identified several critical S&S enhancements needed at NNSA sites to meet the new level of protection supported by the FY 2006 funding request of $110.2M for DBT implementation and the continuation of activities already begun.

During FY 2006 the S&S 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, developed, and deployed to enhance detection and assessment, add delay and denial capabilities, and to improve perimeter defenses at several key sites. Vulnerability Analyses (VAs) and performance tests will be conducted to validate and demonstrate that the actions taken at each of our sites will result in the NNSA's ability to effectively and efficiently meet the new DBT policy.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

NNSA's activities will focus on full integration of Safeguards and Security with program/operational 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. All security upgrades will be validated utilizing formal VAs and performance tests to ensure our security posture is both satisfactory and cost effective.

Congressionally Directed Activity: The Conference Report accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447) includes the following:

- The conferees provide $30 million for the Y-12 National Security Complex to accelerate security infrastructure upgrades and consolidate the facility footprint.

	FY 2004	FY 2005	FY 2006
▪ **Protective Forces**	**345,624**	**370,135**	**371,812**

These forces are a site's primary front-line protection, consisting of armed and unarmed 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. 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) and protection strategies designed to ensure adequate protective force staffing levels, equipment, facilities, training, management and administrative support. In FY 2006, $39.8 million of protective force funding is for DBT related activities.

	FY 2004	FY 2005	FY 2006
▪ **Physical Security Systems**	**57,402**	**72,193**	**54,696**

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 begin to focus more 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 Safeguards and Security capital asset requirements into the NNSA site ten year planning process. In FY 2006, $30.8 million of physical security systems funding is for DBT related activities.

	FY 2004	FY 2005	FY 2006
▪ **Transportation**	**501**	**845**	**890**

Includes all security-related transportation budget estimates for intra-site transfers of special nuclear materials (including safe havens), weapons, and other classified material that is not funded in the Secure Transportation Asset Account (STA).

	FY 2004	FY 2005	FY 2006
▪ **Information Security**	**15,757**	**25,477**	**21,398**

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.

	FY 2004	FY 2005	FY 2006
	(dollars in thousands)		
▪ **Personnel Security**	**18,142**	**25,555**	**27,041**

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 at the NNSA. In accordance with the NNSA Reengineering effort, the NNSA Service Center is assuming the lead for NNSA personnel security initiatives.

▪ **Materials Control and Accountability** ..	**20,447**	**27,018**	**26,889**

Materials Control and Accountability (MC&A) provides for continuous accountability of special nuclear materials in accordance with approved site security plans. MC&A functions as a primary deterrent against unauthorized use or diversion of special nuclear material. One of MC&A's principal uses is for deterrence and detection of malevolent insider actions.

▪ **Program Management**............................	**35,967**	**86,750**	**110,925**

Program Management provides direction, oversight and administration, planning, training, and development for security programs. In FY 2005, S&S funding is being managed by NNSA to implement high priority S&S projects that emerged post September 11, 2001. Activities include the assessment of security implementation efforts through the review of updated security plans. Performance testing, review of vulnerability assessments, and revised threat and vulnerability analysis using the Iterative Site Analysis (ISA) process. To formalize the process, a detailed Program Management Plan, including the issuance of annual performance goals by Headquarters, and development of annual performance baselines for each site's S&S program has been established. In FY 2006, $4,500,000 of Program Management funding is for DBT related activities.

▪ **Technology Deployment, Physical Security**	**3,850**	**8,000**	**8,000**

This effort will identify and facilitate the deployment of S&S technology to address both short and long-term solutions to specific physical security needs at NNSA sites. The technology deployment effort will focus on promising, emerging technologies that will provide operational efficiencies for the NNSA S&S program. In FY 2006, specific technologies will be selected for deployment.

▪ **Security Enhancements/DBT**.................	**47,207**	**0**	**0**

The Design Basis Threat (DBT) implementation requires upgrades to equipment, personnel and facilities to enhance security throughout the nationwide nuclear weapons complex. A reprogramming approved in July 2004 provided $47.207 million to begin implementation of the May 2003 DBT.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Cyber Security...	**80,303**	**99,248**	**77,827**

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. An additional $20 million was provided in FY 2005 for expansion of the red network at Los Alamos National Laboratory to reduce the necessity for CREM. During FY 2006 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 2006 we will review and update, as needed, the Nuclear weapons information, 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 ICSI program will update identification of information assets and information flows of nuclear weapon information across the NNSA enterprise. The ICSI program will continue implementation of an enterprise-wide intrusion detection system.

Congressionally Directed Activity: The conferees provide an additional $20,000 for the expansion of the red network at Los Alamos National Laboratory to reduce the necessity for CREM.

	FY 2004	FY 2005	FY 2006
▪ **Infrastructure Program**.........................	**65,358**	**76,845**	**55,972**

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.

	FY 2004	FY 2005	FY 2006
▪ **Integrated Cyber Security**.....................	**14,703**	**20,403**	**19,855**

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

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

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.

	FY 2004	FY 2005	FY 2006
▪ **Technology Application, Cyber Security**	**242**	**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 S&S program. In FY 2006, additional specific technologies will be identified for further research and technology development.

	FY 2004	FY 2005	FY 2006
Construction	**3,661**	**36,708**	**41,000**

The Construction program includes the cost of new and ongoing line-item construction projects that support the safeguards and security mission within the nuclear weapons complex. FY 2006 funding is requested for line item 05-D-170, Project Engineering and Design, to continue design for two subprojects: Nuclear Material 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). In FY 2006, $35 million of the construction funding is to support DBT related requirements.

	FY 2004	FY 2005	FY 2006
Total, Safeguards and Security....................	**628,861**	**751,929**	**740,478**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
▪ **Physical Security**	
Protective Forces: The increase in protective force funding is needed primarily for FY 2004, FY 2005 and FY 2006 DBT-related requirements, some of which have been started and need recurring funding. Additional personnel will have been hired, weapons systems will have been upgraded, and new posts will have been added. Supporting recurring costs associated with these improvements will be required into the outyears	**+1,677**
Physical Security Systems: Ongoing upgrades to existing physical security systems will continue but will be reduced due to most DBT upgrades being completed in FY 2005 with the exception of those identified in the construction portion of the budget request. FY 2006 funding provides continued systems maintenance, upgrades as necessary and improvements to compensate for life-cycle concerns	**-17,497**
Transportation: A modest increase in transportation funding is added to facilitate the movement and relocation of special nuclear material inventories	**+45**
Information Security: The decrease in funding is mostly attributable to the completion of DBT activities during FY 2004 and FY 2005. The decrease will continue to provide necessary declassification of information no longer requiring protection	**-4,079**
Personnel Security: This small increase in funding is required to address continuing clearance backlog.	**+1,486**
Materials Control and Accountability: Decreases in funding for this S&S function are based on the stabilized maintenance of special nuclear materials inventories and materials measurement procedures	**-129**
Program Management: The increase is to meet other security management requirements of a higher priority and support the Secretary directed DBT requirements.	**+24,175**
Total, Physical Security	**+5,678**

	FY 2006 vs. FY 2005 ($000)
▪ **Cyber Security**	
Infrastructure Program: The decrease reflects the one-time FY 2005 Congressional appropriation of $20 million for the Los Alamos National Laboratory red network, and will continue to allow infrastructure upgrades, some of which have been completed during FY 2003 and FY 2004.	**-20,873**
Integrated Cyber Security: The decrease reflects the transition of the NNSA enterprise-wide network efforts from definition and design to deployment.	**-548**
Total, Cyber Security	**-21,421**
Construction	
The increase reflects planned continuation costs for two design subprojects in line item 05-D-170, Project Engineering and Design (Nuclear Material Safeguards and Security Upgrades, Phase II and Y-12 Security Improvements Project)	**+4,292**
Work for Others	
Reflects change in anticipated cost of work for others.	**-2,000**
Total Funding Change, Safeguards and Security	**-13,451**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(Dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	6,475	6,700	6,900	+ 200	+ 3%
Capital Equipment	9,614	9,900	10,200	+ 300	+ 3%
Total, Capital Operating Expenses	16,089	16,600	17,100	+ 500	+ 3%

Construction Projects

(Dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro- priations	FY 2004	FY 2005	FY 2006	Unappropriated Balance
05-D-170 Project Engineering and Design, (PED), VL..............	57,866	0	0	16,866	41,000	0
05-D-701, Security Perimeter Project, LANL	19,842	0	0	19,842	0	0
99-D-132, Nuclear Materials Safeguards and Security Upgrades Project, Phase I, LANL	61,121	57,460	3,661	0	0	0
Total, Construction			3,661	36,708	41,000	

05-D-170, Project Engineering and Design (PED) – Safeguards & Security, Various Locations

Significant Changes

- NNSA is reevaluating its safeguards and security and programmatic mission strategy for the Y-12 National Security Complex. This reevaluation is expected to lead to changes to the Security Improvements Project. This is a very recent development and the new concept is insufficiently developed to include in this budget submittal, therefore, PED funding profile was adjusted and the PED total estimated cost decreased to reflect the current conceptual design status. Specific changes will be identified in future budget submittals.
- The TEC was reduced by $134,000 because of the FY 2005 rescission. This reduction will have no impact on the subprojects completion.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2005 Budget Request *(A-E and technical design only)*..	2Q 2005	1Q 2007	2Q 2007	1Q 2012	88,000
FY 2006 Budget Request *(A-E and technical design only)*..	3Q 2005	1Q 2007	3Q 2006	2Q 2011	57,866

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2005	16,866 [b]	16,866	14,866
2006	41,000	41,000	35,000
2007	0	0	8,000

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

[b] The FY 2005 appropriation amount 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).

3. Project Description, Justification and Scope

This project provides for Architect-Engineering (A-E) services (Title I and Title II) for Safeguards and Security (S&S) 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.

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. 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		
3Q 2005	1Q 2007	2Q 2007	2Q 2011	45,000	125,000 - 228,000

Fiscal Year	Appropriations	Obligations	Costs
2005	10,000	10,000	8,000
2006	35,000	35,000	29,000
2007	0	0	8,000

This subproject provides for preliminary and final design of the proposed Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II. The objective of the NMSSUP is to upgrade and replace the existing physical security system at the Los Alamos National Laboratory in order to address the new protection strategy requirements and deteriorating physical security infrastructure.

NMMSUP Phase II will address the security system at TA-55, the Laboratory's key nuclear facility that houses and processes 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 Facility Replacement Project.

Phase II includes the upgrade or replacement of the existing exterior and interior intrusion detection, delay, access control and security communications equipment for TA-55. These systems will be integrated with the Argus security control system that has been installed under NMSSUP Phase I.

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		
4Q 2005	1Q 2007	3Q 2006	4Q 2010	12,866 [a]	200,000 - 300,000

Fiscal Year	Appropriations	Obligations	Costs
2005	6,866[a]	6,866	6,866
2006	6,000[b]	6,000	6,000

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 project will provide new detection, assessment, delay, response, and command and control capability for the Protected Area security perimeter of the Y-12 NSC plant.

The current security perimeter enclosing the Y-12 Protected Area, the PIDAS, was designed in 1984 and constructed between 1986 and 1990. Upgrades are needed to address the May, 2003 Design Basis Threat Policy. In addition, this system is aging, much of the instrumentation is now unsupported, and new security features are now required. This project will replace the existing PIDAS system with a modern, more robust design incorporating proven state-of-the-art security components and design features.

The project's objective is to reduce the 13,200 ft. of existing PIDAS system at Y-12 to approximately 6,000 ft. The project will utilize the existing PIDAS bed for the replacement to the extent possible and will reduce the area within the Protected Area of the plant by 50% to 60%. The project will interface with the Highly Enriched Uranium Materials Facility project, 01-D-124, and other Y-12 modernization activities defined in the Y-12 NSC 10 year site plan.

[a] The FY 2005 appropriated amount for this subproject of $7,000,000 was reduced by $134,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

[b] NNSA is reevaluating its safeguards and security and programmatic mission strategy for the Y-12 National Security Complex. This reevaluation is expected to lead to changes to the Security Improvements Project.

4. Details of Cost Estimate

	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	47,102	73,616
Design Management costs (4.1% of TEC)	2,394	3,419
Project Management costs (14.4% of TEC)	8,370	10,965
Total, Design Costs (100% of TEC)	57,866	88,000
Total, Line Item Costs (TEC, Design Only)	57,866	88,000

5. Method of Performance

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.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design	0	0	14,866	35,000	8,000	57,866
Total, Line Item TEC	0	0	14,866	35,000	8,000	57,866
Other Project Costs						
Conceptual design cost	0	2,675	700	0	0	3,375
Other project-related costs	1,900	8,225	9,800	5,300	7,200	32,425
Total Other Project Costs	1,900	10,900	10,500	5,300	7,200	35,800
Total Project Cost (TPC)	1,900	10,900	25,366	40,300	15,200	93,666

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, [$1,423,914,000] *$1,637,239,000*, to remain available until expended.

Explanation of Change

The only change from the language proposed in FY 2005 is the proposed funding amount.

Defense Nuclear Nonproliferation

Threat and Response: The convergence of heightened terrorist activities and the associated revelations regarding 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 2006 budget request for Defense Nuclear Nonproliferation represents an unprecedented effort to protect the homeland and U.S. allies from this threat.

Funding Schedule by Subprogram

(dollars in thousands)

	FY 2004 Comparable Appropriation [a]	FY 2005 Original Appropriation [b]	FY 2005 Adjustments [b]	FY 2005 Comparable Appropriation	FY 2006 Request
Defense Nuclear Nonproliferation					
Nonproliferation and Verification Research and Development...............	228,197	225,750	-1,787	223,963	272,218
Nonproliferation and International Security.........................	86,219	154,000	-62,682	91,318	80,173
International Nuclear Materials Protection and Cooperation...............	228,734	322,000	-27,349	294,651	343,435
Global Initiatives for Proliferation Prevention.....................	39,764	41,000	-325	40,675	37,890
HEU Transparency Implementation.....	17,894	20,950	-166	20,784	20,483
International Nuclear Safety and Cooperation................................	19,850	0	0	0	0
Elimination of Weapons-Grade Plutonium Production........................	81,835	40,097	3,872	43,969	132,000
Fissile Materials Disposition...............	644,693	624,000	-10,940	613,060	653,065
Offsite Source Recovery Project..........	0	7,600	-7,600	0	0
Global Threat Reduction Initiative.......	69,464	0	93,803	93,803	97,975
Subtotal, Defense Nuclear Nonproliferation..................	1,416,650	1,435,397	-13,174	1,422,223	1,637,239
Use of Prior Year Balances.................	-48,941	-15,000	14,880	-120	0
Total, Defense Nuclear Nonproliferation...............	1,367,709	1,420,397	1,706	1,422,103	1,637,239

[a] FY 2004 reflects distribution of the rescission of $7,832,911 from the Energy and Water Development Appropriations Act for FY 2004, approved reprogrammings, and comparability adjustments. Reference the "FY 2004 Execution" table for additional details on these adjustments.

[b] The FY 2005 adjustments column reflects distribution of the rescission of $11,363,176 from the Consolidated Appropriations Act, 2005 (P.L. 108-447), transfer of funds pursuant to a letter dated December 9, 2004, from the Chairmen of the Senate and House Appropriation Committees to the Secretary of Energy, and comparability adjustments. Reference the "FY 2005 Execution" table for additional details on these adjustments.

Public Law Authorization:
P.L. 108-375, National Defense Authorization Act, FY 2005
P.L. 108-447, The Consolidated Appropriations Act, 2005

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Defense Nuclear Nonproliferation						
Nonproliferation & Verification Research and Development	272,218	279,264	288,417	301,137	312,084	1,453,120
Nonproliferation and International Security	80,173	81,857	83,493	85,165	86,867	417,555
International Nuclear Materials Protection and Cooperation	343,435	350,647	358,011	365,529	373,205	1,790,827
Global Initiatives for Proliferation Prevention	37,890	38,686	39,460	40,249	41,054	197,339
HEU Transparency Implementation	20,483	20,913	21,331	21,758	22,193	106,678
Elimination Weapons Grade Plutonium Production	132,000	137,640	137,333	140,079	142,881	689,933
Fissile Material Disposition	653,065	666,779	680,115	693,117	707,592	3,400,668
Global Threat Reduction Initiative	97,975	97,655	102,334	101,387	101,368	500,719
Subtotal FYNSP, Defense Nuclear Nonproliferation	1,637,239	1,673,441	1,710,494	1,748,421	1,787,244	8,556,839

FY 2004 Execution

(dollars in thousands)

	FY 2004 Enacted Approp	General Reduction	Rescission	Supplemental	Reprogram-ming/ Transfers [a]	Comp Adjustment [b]	FY 2004 Comparable
Nonproliferation & Verification R&D....	233,373	0	-1,376	0	-3,800	0	228,197
Nonproliferation and International Security....................	110,734	0	-627	0	0	-23,888	86,219
International Nuclear Materials Protection and Cooperation	260,000	0	-1,513	0	0	-29,753	228,734
Global Initiatives for Proliferation Prevention...............	40,000	0	-236	0	0	0	39,764
HEU Transparency Implementation........	18,000	0	-106	0	0	0	17,894
International Nuclear Safety & Cooperation	4,000	0	-23	0	19,831	-3,958	19,850
Elimination of Weapons-Grade Plutonium Production	50,000	0	-265	0	32,100	0	81,835
Fissile Materials Disposition	656,505	0	-3,687	0	-2,125	-6,000	644,693
Global Threat Reduction Initiative .	0	0	0	0	0	69,464	69,464
Subtotal, Defense Nuclear Nonproliferation	1,372,612	0	-7,833	0	46,006	5,865	1,416,650
Use of Prior Year Balances	0	-45,000	0	0	-3,941	0	-48,941
Total, Defense Nuclear Nonproliferation	1,372,612	-45,000	-7,833	0	42,065	5,865	1,367,709

[a] Reflects $32,100,000 reappropriated to Elimination of Weapons-Grade Plutonium Production in FY 2004 from unobligated balances expiring in FY 2003 transferred from DoD in accordance with the National Defense Authorization Act of FY 2004; $19,850,000 transferred from Department of State Agency for International Development for International Nuclear Safety and Cooperation, and approved reprogrammings.

[b] Reflects a net comparability adjustment of +$5,865,000 (+$5,750,000 from Environmental Management for Off Site Source Recovery and $6,115,000 for U.S. Foreign Research Reactor Spent Nuclear Fuel Return, and -$6,000,000 to Defense Programs for the storage of surplus HEU).

FY 2005 Execution

	(dollars in thousands)				
	FY 2005 Enacted Approp	Rescission	Adjustments	Comp Adjustments	FY 2005 Comp
Nonproliferation & Verification R&D	225,750	-1,787	0	0	223,963
Nonproliferation and International Security	154,000	-1,219	0	-61,463	91,318
International Nuclear Materials Protection and Cooperation	322,000	-2,549	0	-24,800	294,651
Global Initiatives for Proliferation Prevention	41,000	-325	0	0	40,675
HEU Transparency Implementation	20,950	-166	0	0	20,784
Elimination of Weapons-Grade Plutonium Production	40,097	-317	+4,189	0	43,969
Fissile Materials Disposition	624,000	-4,940	0	-6,000	613,060
Offsite Source Recovery Project	7,600	-60	0	-7,540	0
Global Threat Reduction Initiative	0	0	0	93,803	93,803
Subtotal, Defense Nuclear Nonproliferation	1,435,397	-11,363	+4,189	-6,000	1,422,223
Use of Prior Year Balances	-15,000	0	+14,880	0	-120
Total, Defense Nuclear Nonproliferation	1,420,397	-11,363	+19,069	-6,000	1,422,103

Mission
The Defense Nuclear Nonproliferation mission is to 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.

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 Summitt 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 eight programs each of which makes unique contributions 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 testing worldwide.

The HEU Transparency program (Program Goal 02.41.00.00) contributes to General Goal 2 by developing and implementing transparency measures which increase confidence that low enriched uranium (LEU) purchased under the 1993 U.S./Russian HEU Purchase Agreement is derived from HEU extracted from dismantled Russian nuclear weapons and eliminated from Russian stockpiles.

The Elimination of Weapons-Grade Plutonium Production program (Program Goal 02.42.00.00) contributes to General Goal 2 by shutting down the three remaining weapons-grade plutonium production reactors in the Russian Federation through: (1) construction of a new fossil-fuel (coal) plant at Zheleznogorsk; (2) refurbishment of an existing fossil-fuel (coal) power plant at Seversk.

The Nonproliferation and International Security program (Program Goal 02.44.00.00) contributes to General Goal 2 by strengthening the global nuclear nonproliferation regime by (1) limiting sensitive exports; (2) supporting international safeguards; and (3) providing policy recommendations and technical and policy advice to develop and implement U.S. policy (treaties, agreements, and mutual inspections).

The Global Initiatives for Proliferation Prevention (GIPP) (formerly Russian Transition Initiatives) program (Program Goal 02.45.00.00) contributes to General Goal 2 by preventing adverse migration of weapons of mass destruction expertise by engaging weapons experts in commercially oriented, nonmilitary efforts and by helping to downsize the nuclear weapons infrastructure. The GIPP will engage WMD experts in cooperative projects involving the ten major Department of Energy (DOE)/National Nuclear Security Administration (NNSA) National Laboratories and U.S. industry.

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. Russian and 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 and equipment around the world that pose a potential threat to the United States and the international community.

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) while mitigating nuclear risk worldwide. 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 events of September 11, 2001, make 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. Customs issues, Nuclear Regulatory Commission actions, and other Department of Energy elements can also cause significant impacts to our ability to achieve program objectives.

We work 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, and Commerce. We continually leverage our considerable nuclear nonproliferation research and development base within the National Laboratory complex. In addition, NNSA coordinates with the Department of Commerce on export control policy and international agreements, and the Nuclear Regulatory Commission on fissile materials disposition programs as well as working with the International Atomic Energy Agency to further international safeguards. The United States Enrichment Corporation and the Tennessee Valley Authority are involved in the HEU purchase agreement and fissile materials disposition programs, and 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.

Validation and Verification

To validate and verify program performance, NNSA will conduct various internal and external reviews and audits. 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. 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 is monitored and progress is 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 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 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 2006 process, Elimination of Weapons-Grade Plutonium Production Program (EWGPP) and International Nuclear Material Protection and Cooperation participated in Phase I. NNSA leveraged the work done by the U.S. Army Corps of

Engineers for EWGPP for Phase II. These reviews found the overall process for developing the budgets for FY 2006 satisfactory and the cost estimates were found valid and reasonable.

In addition, the General Accounting 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 Department implemented the PART tool to evaluate selected programs. PART was developed by 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 Defense Nuclear Nonproliferation programs have incorporated feedback from OMB into the FY 2006 Budget Request and have taken or will take the necessary steps to continue to improve performance.

For FY 2004, OMB evaluated the MPC&A program using the PART tool. The MPC&A program achieved a perfect score on purpose and design because it has a clear purpose that addresses a specific need. It also achieved a perfect score in strategic planning because the Department has established specific, measurable goals and time frames. OMB has therefore assigned to this program 85 percent, its highest rating of "Effective". In addition, MPC&A provided OMB an FY 2005 update to its FY 2004 PART.

For FY 2005, OMB evaluated EWGPP, using the PART tool. OMB recognized the program for having very good, solid, and tangible performance measures to effectively guide and monitor program progress. However, because the EWGPP program was recently transferred to DOE/NNSA from DoD, it is relatively new for DOE/NNSA and has not had a chance to develop a track record of results. Therefore, OMB assigned a rating of "Results not demonstrated."

For FY 2006, OMB evaluated the Nonproliferation and International Security (NIS) program using the PART. The NIS program achieved a perfect score on purpose and design because it has a clear purpose that addresses a specific need. It also achieved a perfect score in strategic planning and program management sections because NNSA has established specific, measurable goals and time frames with appropriate federal oversight and controls. OMB rated this program 87 percent, its highest rating of "Effective".

Funding by General and Program Goal

(dollars in thousands)

	FY 2004 Comp Approp	FY 2005 Comp Approp	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
General Goal 2, Defense Nuclear Nonproliferation							
Program Goal 2.40, Nonproliferation and Verification Research and Development	228,197	223,963	272,218	279,264	288,417	301,137	312,084
Program Goal 2.44, Nonproliferation and International Security	86,219	91,318	80,173	81,857	83,493	85,165	86,867
Program Goal 2.46, International Nuclear Materials Protection and Cooperation	228,734	294,651	343,435	350,647	358,011	365,529	373,205
Program Goal 2.45, Global Initiatives for Proliferation Prevention	39,764	40,675	37,890	38,686	39,460	40,249	41,054
Program Goal 2.41, HEU Transparency Implementation	17,894	20,784	20,483	20,913	21,331	21,758	22,193
Program Goal 2.43, International Nuclear Safety and Cooperation	19,850	0	0	0	0	0	0
Program Goal 2.42, Elimination of Weapons Grade Plutonium Production	81,835	43,969	132,000	137,640	137,333	140,079	142,881
Program Goal 2.47, Fissile Materials Disposition	644,693	613,060	653,065	666,779	680,115	693,117	707,592
Program Goal 2.64, Global Threat Reduction Initiative	69,464	93,803	97,975	97,655	102,334	101,387	101,368
Subtotal, Defense Nuclear Nonproliferation	1,416,650	1,422,223	1,637,239	1,673,441	1,710,494	1,748,421	1,787,244
Use of Prior Year Balances .	-48,941	-120	0	0	0	0	0
Total, Defense Nuclear Nonproliferation	1,367,709	1,422,103	1,637,239	1,673,441	1,710,494	1,748,421	1,787,244

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 $368,611 for FY 2005 and $512,217 for FY 2006, to be paid from program funding.

Significant Program Shifts

Securing Nuclear Weapons and Material

For over a decade, the United States 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 2006 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 FY 2008—both two years ahead of the original schedule. Russian Strategic Rocket Forces sites will be complete in 2007, one year ahead of schedule. Additionally, cooperation will begin with the nuclear warhead storage sites of the Russian Ministry of Defense's 12th Main Directorate.

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 2006 budget supports the completion of five ports, which will increase to ten the number of ports participating in and equipped through the Megaports Initiative.

Expanding NNSA Radiation Detection Research and Development

This budget will provide a critical boost to important basic and applied research in radiation detection, significantly reducing detector size and increasing sensitivity. In addition, the funding provides for fundamental research for Homeland Security and Intelligence missions, providing significant synergy across multiple agencies and missions.

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 critical importance 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 Weapons-grade U.S. and Russian Fissile Material

The Fissile Materials Disposition program disposes of inventories of surplus U.S. weapons-grade plutonium and highly-enriched uranium (HEU) as well as supporting efforts to dispose of Russian surplus weapons-grade plutonium. The construction of the Pit Disassembly and Conversion Facility and the MOX Fuel Fabrication facility have been delayed due to a liability issue with Russia and level-funding of the budget in the outyears. The FY 2006 net increase is primarily for the Off-specification HEU Blend-Down Project with TVA and increased oversight to support major construction of the MOX Fuel Fabrication facility in FY 2006.

Global Threat Reduction Initiative

On February 11, 2004, the President stated in a speech at the National Defense University that the greatest risk to the United States or anywhere else in the world is the possibility of a terrorist attack using nuclear or radiological materials. The U.S. Department of Energy (DOE) has several ongoing efforts to combat this threat. In the latest step to increase effectiveness in preventing nuclear and radiological materials from falling into the hands of terrorists or other rogue actors, the Secretary of Energy announced the Global Threat Reduction Initiative (GTRI) in March 2004.

The mission of the GTRI is to identify, secure, remove and/or facilitate the disposition of high-risk, vulnerable nuclear and radiological materials and equipment around the world that pose a threat to the United States and to the international community. This initiative will comprehensively address all vulnerable nuclear and radiological materials throughout the world and secure and/or remove these materials and equipment of concern as expeditiously as possible.

A transfer of responsibility has also been made for the U.S. Foreign Research Reactor Spent Nuclear Fuel Return program from the Office of Environmental Management. This program eliminates the stockpiles of U.S.-origin spent nuclear fuel from foreign research reactors through repatriation to the U.S. This program is part of the GTRI decision unit and is funded at $14.3 million.

NNSA has established a GTRI office under the Deputy Administrator for Defense Nuclear Nonproliferation, to consolidate, accelerate, and expand under centralized management the Department's current programs related to nuclear materials removal and radioactive source security and recovery:

- <u>Reduced Enrichment for Research and Test Reactors (RERTR) Program</u>
  - Targets research reactors and medical isotope production processes worldwide for conversion to suitable LEU fuels and targets.

- <u>Russian Research Reactor Fuel Return (RRRFR) Program</u>
  - Eliminates stockpiles of Russian-origin HEU by repatriating such material to Russia.

- <u>U.S. Foreign Research Reactor Spent Nuclear Fuel Return (FRRSNF) Acceptance Program</u>
  - Eliminates stockpiles of U.S.-origin spent nuclear fuel in foreign research reactors through repatriation to the U.S.

- Kazakhstan Spent Fuel
  - Prevents proliferation of nuclear weapons by securing nearly three tons of weapons-grade plutonium in the BN-350 breeder reactor at Aktau, Kazakhstan.

- HEU Research Reactor Fuel Purchase
  - Purchase Russian HEU fuel for use in US research reactors

- Radiological Threat Reduction (RTR) Program
  - Identifies, recovers, and stores, on an interim-basis, certain domestic radioactive sealed sources, as well as other radiological materials that pose a security risk to the United States and/or world community.
  - Reduces the international threat posed by radiological materials that could be used in a radiological dispersal device (RDD) or 'dirty bomb.'

- Emerging Threats
  - Recover or disposition in place nuclear materials located throughout the world that are at risk of theft, illicit diversion, or other illegal use, and not addressed by other programs.

Budget Structure Change

NNSA has consolidated the Department's current programs related to nuclear materials removal and radioactive source security and recovery into one GPRA unit to support the new Global Threat Reduction Initiative (GTRI). This new GPRA unit, GTRI, includes the entire Off-site Source Recovery Program as requested in the FY 2005 Congressional Request, and includes activities transferred from the Office of Environmental Management and from the Nonproliferation and International Security and International Nuclear Materials Protection and Cooperation programs.

In FY 2006, NNSA requests changing the name of the Russian Transition Initiatives to the Global Initiatives for Proliferation Prevention (GIPP). GIPP will remain focused on the FSU, which poses the greatest potential threat of WMD expertise migration. However, new WMD scientist redirection and complex transition requirements in Libya, Iraq, and possibly elsewhere require that the program expand its activities to additional regions. The proposed name change reflects this expanded mission.

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 United States, 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.

U.S. Nonproliferation and Threat Reduction Assistance to Former Soviet States

(dollars in millions)

Summary by Country	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Russia	491.8	514.1	625.7	603.9	560.1	543.6
Kazakhstan	3.5	9.5	4.0	8.0	1.0	0.0
Ukraine	2.0	2.0	0.0	0.0	1.0	0.0
Uzbekistan					1.0	
Georgia	0.1	0.1	0.1	0.1	0.1	0.1
Total, Russia & FSU	497.4	525.7	629.8	612.0	563.2	543.7

Risk Based Analysis

The Defense Nuclear Nonproliferation programs have established a management risk-based approach to allocating program funding. All Assistant Deputy Administrators evaluate nonproliferation program activities under their purview against a series of eight standardized risk factors. Nonproliferation program activities are assigned a rating of high, medium, low or not applicable, as appropriate, together with a brief explanatory statement describing the basis for the rating. An assessment summarizing the overall program risk is also included. Nonproliferation risk factors include the following:

(1) budgetary risk;
(2) funding urgency;
(3) policy priority;
(4) likelihood of crisis;
(5) legal or moral obligation;
(6) opportunity to save money and/or time;
(7) unique political or technological opportunity, and;
(8) other party involvement.

The FY 2006-2010 budget request was developed taking into account these eight risk-based factors. These same factors are used by the Deputy Administrator in evaluating the allocation of funds across programs.

Nonproliferation and Verification Research and Development

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Nonproliferation and Verification R&D					
Operations and Maintenance (O&M)					
Proliferation Detection..	127,763	106,544	152,471	+ 45,927	+ 43.1%
Nuclear Explosion Monitoring............................	95,072	101,931	108,642	+ 6,711	+ 6.6%
Supporting Activities...	5,362	15,488	6,105	- 9,383	- 60.6%
Subtotal, O&M..	228,197	223,963	267,218	+ 43,255	+ 19.3%
Construction..	0	0	5,000	+ 5,000	+ 100.0%
Total, Nonproliferation and Verification R&D......	228,197	223,963	272,218	+ 48,255	+ 21.5%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Nonproliferation and Verification R&D.............	272,218	279,264	288,417	301,137	312,084	1,453,120

Description

This program develops new technologies to improve 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 the nonproliferation mission requirements as necessary to close the technology gaps identified through close interaction with other U.S government agencies and programs. This program satisfies an important and distinctive role by stimulating and integrating discoveries in basic science to classified nonproliferation and national security applications.

Benefits to Program Goal 02.40.00.00 Nonproliferation and Verification Research and Development

The Nonproliferation and Verification Research and Development program has two main subprograms that make unique contributions to Program Goal 02.40.00.00.

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 characterization of the facilities, materials, and processes of undeclared and proliferant Weapons of Mass Destruction (WMD) programs; and to prevent the diversion of special nuclear materials.

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 geological 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 Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs.

Major FY 2004 Achievements

- In the Proliferation Detection subprogram, a number of advanced radiation and remote sensing technologies were successfully field-tested against simulated, real-world proliferation targets. During flight tests, an airborne hyperspectral imaging system demonstrated real-time capability for detection and identification of gas plumes; and an ultraviolet lidar detector underwent extensive testing at the Dugway Proving Ground; Radiation detection, synthetic aperture radar, and persistent wide-area search technologies were positively evaluated against key proliferation signatures.

- The Nuclear Explosion Monitoring Subprogram improved the accuracy and sensitivity of U.S. capabilities to detect nuclear explosions. The program delivered first unit of the next-generation nuclear detonation sensor package addressing revalidated and more-demanding national security requirements to monitor the entire Earth from space with greater sensitivity. Support was provided for launch and initial checkout of three previously delivered operational nuclear detonation sensor packages, including one that contained a demonstration/validation experiment for a next generation optical sensor. The program also delivered regional seismic monitoring station calibration data sets and improved analysis tools for operational users to address emerging proliferation threats, keeping pace with the installation of monitoring stations.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Demonstrate systems to protect key infrastructure and special events from chemical and biological attacks. (MET GOAL)	Field a demonstrated, deployable prototype biological threat system at the Winter Olympics. (MET GOAL)	Demonstrate prototype commercial cargo inspection system to detect fissile materials and high explosives . (MET GOAL)
Conduct Critical Design Reviews for three new-generation nuclear explosion-monitoring sensors that are proposed for future satellite deployment. (MET GOAL)	Demonstrate a chemical agent detection system in a subway system. (MET GOAL)	Provide two assays for biological threat agents to the Center for Disease Control Laboratory Response Network. (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)	Demonstrate a fixed system to protect complex, key infrastructure facilities, components, and capabilities. (MET GOAL)
	Perform experiments of prototype, unmanned-aerial-vehicle-based Light Detection and Ranging (LIDAR) systems to detect proliferation. (MIXED RESULTS)	

Annual Performance Results and Targets

(R= Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Development of Advanced U.S. Capabilities to Detect Nuclear Weapons Proliferation:									
Annual number of advanced radiation and remote sensing technologies developed and evaluated through customized tests that challenge and characterize their operating parameters. These advanced technologies are intended to improve U.S. capability to detect the early stages of nuclear weapon programs.	R: 4	R: 9 T: 7	T: 8	T: 6	T: 7	T: 7	T: 9	T: 8	Annual targets advance the state of the art in advanced technology to provide future capabilities for U.S. monitoring agencies.
Development of Advanced U.S. Capabilities to Detect Nuclear Explosions:									
Annual number of advanced technologies and operational systems (e.g. satellite payloads and seismic stations calibration data sets) delivered to U.S. national security users which improves the accuracy and sensitivity of nuclear weapons test monitoring.	R: 4	R: 7 T: 6	T: 8	T: 6	T: 9	T: 9	T: 8	T: 9	Annual targets advance state of the art in concert with deployment schedule of user agencies.
Percentage of research projects for which an independent R&D merit assessment was completed during the second year of effort and again within each subsequent three year period to assess scientific quality and mission relevance. (EFFICIENCY MEASURE)	*R: 20%*	*R: 37%* *T: 40%*	*T: 70%*	*T: 100%*	*T: 100%*	*T: 100%*	*T: 100%*	*T: 100%*	*Subject all projects and proposals to merit review process.*
Advancement of Knowledge within the Nonproliferation R&D Community:									
Annual number of professional papers/exchanges presented-each representing Science and Technology knowledge and U.S. leadership in program areas.	R: 250	R: 202 T: 200	T: 200	T: 225	T: 225	T: 225	T: 225	T: 225	Maintain scientific underpinnings of advanced R&D program.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Nonproliferation and Verification R&D O&M			
Proliferation Detection	**127,763**	**106,544**	**152,471**

The Proliferation Detection program applies the unique skills and capabilities of the NNSA and DOE national laboratories and plants to meet the non proliferation research and development requirements necessary to close the technology gaps identified through close interaction with other U.S. government agencies program. The program develops the tools, technologies, techniques, and expertise to address the most challenging problems related to detection, location, and analysis of the global proliferation of weapon of mass destruction with special emphasis on nuclear weapon technology and the diversion of special nuclear materials. The program facilitates long-term scientific innovation through sustained commitment to mission focused technical areas that build "best-in-the-world" competence.

The increase in FY 2006 will provide a crucial boost to critical basic and applied research in radiation detection. This increase will also set new research in motion to significantly reduce detector size, while increasing sensitivity. This work supports not only the nonproliferation mission, but also supports fundamental research necessary for Homeland Security and Intelligence missions. As such, the program will provide significant synergy across multiple agencies and missions.

The Proliferation Detection program also plays a key role in filling the critical middle ground between fundamental research and near-term acquisition by using the unique skills of the national laboratories and plants as applied research integrators. Through the extensive relationships that the laboratories maintain with universities, basic science from academia and federal research programs are brought together to develop real-world system solutions based on classified insights into national security problems.

Additionally, the Proliferation Detection program hands off technical know-how that has been developed and validated to the U.S. industrial base and U.S. Government acquisition programs 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.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), included an increase of $6. 5 million for proliferation detection for high priority research requirements.

Nuclear Explosion Monitoring	**95,072**	**101,931**	**108,642**

The Nuclear Explosion Monitoring program builds the Nation's operational treaty monitoring space sensors, and produces and updates the regional geological datasets and analytical understanding to enable operation of the Nation's ground-based treaty monitoring networks.

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

	(dollars in thousands)	
FY 2004	FY 2005	FY 2006

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. The program conducts a limited amount of engineering and development to prepare the next generation sensors.

In FY 2006, the program will balance the multiyear production of GPS Block IIF satellite payloads, support for the remaining GPS Block IIR satellite payloads, and early design and development of GPS Block III satellite payloads to best meet delivery timelines and requirements as launch schedules and on-orbit satellite health dictate. Due to required design work and the stringent production schedules, efforts to develop new techniques or improved sensor technology will be constrained in FY 2006.

The Space and Atmospheric Burst Reporting System production efforts continue to ramp up in FY 2006. This provides a significant new effort to develop and produce the follow-on high altitude-monitoring payload that replaces the current aging DSP system due to retire in FY 2009. This payload effort will satisfy recently revalidated requirements for monitoring upper atmosphere and space detonations.

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 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 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. In FY 2006, the ground-based program baseline has been increased by $5 million specifically to accommodate funding of multiyear open competitive research through Broad Agency Announcement (BAA) contracts.

Congressionally Directed Activity: The Conference Report (108-792) accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447) included $20 million for ground-based systems for monitoring.

Supporting Activities	**5,362**	**15,488**	**6,105**

Supporting activities includes crosscutting support for the two subprograms. These activities include strategic initiatives such as technology roadmapping and assessment, nonproliferation analysis and studies, Small Business Innovative Research (SBIR), Small Business Technology Transfer (STTR) programs open competition. In addition, the conceptual design and regulatory and environmental activities for the replacement research facilities in Area 300 at the Pacific Northwest National Laboratory (PNNL) are included in FY 2005. Publication activities enhance communications between the technologists in the DOE community, policymakers, and the general public.

Total, Nonproliferation and Verification Research and Development O&M	**228,197**	**223,963**	**267,218**

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447), included an increase of $5 million for supporting activities to support the ongoing regulatory and environmental activities for 300 Area replacement at PNNL that will allow PED to occur on an accelerated schedule. Also provided from within available funds are: $2 million for testing of high-pressure xenon radiation detectors at the Brookhaven National Laboratory Rad-Tech facility for portal applications; $3.5 million for the University of Nevada-Reno for the development of state-of-the-art chemical, biological, and nuclear detection sensors; $2 million for the UNLV Research Foundation to continue to establish and operate within Institute for Security Studies an applied research and technology capability in support for the effort to combat terrorism; and $.5 million support nanomaterial research related to sensor applications.

Construction

	FY 2004	FY 2005	FY 2006
06-D-180, Defense Nuclear Nonproliferation (DNN) Project Engineering and Design (PED)........................	**0**	**0**	**5,000**

This project provides for Architect-Engineering (A-E) services (Title I and Title II) for the National Security Laboratory, the planned replacement for the existing research facilities at the Pacific Northwest National Laboratory (PNNL) that are being relocated to due the environmental cleanup activities at the Hanford Site 300 area. NNSA is working with the Office of Science to develop the most efficient approach to replace existing research facilities that are critical to the DNN nuclear nonproliferation mission.

	FY 2004	FY 2005	FY 2006
Total, Construction	**0**	**0**	**5,000**
Total, Nonproliferation and Verification Research and Development	**228,197**	**223,963**	**272,218**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
▪ **Proliferation Detection**	
The increase ($50 million) will provide a crucial boost to critical basic and applied research in radiation detection, particularly new research aimed at significantly reducing detector size, while increasing sensitivity. This increase is partially offset due to a realignment of funds ($5 million) to Nuclear Explosion Monitoring.	+45,927
▪ **Nuclear Explosion Monitoring**	
Increase is due to a realignment of funds from Proliferation Detection to support open competition for research for the Ground Nuclear Explosion Monitoring program and from Supporting Activities to continue build up for the new high-altitude monitoring payload for the Space and Atmospheric Burst Reporting System.	+6,711
▪ **Supporting Activities**	
Decrease is due to realignment of funds to Nuclear Explosion Monitoring subprogram and the completion of the conceptual design for the replacement research facilities in the Hanford Area 300 at the Pacific Northwest National Laboratory (PNNL).	-9,383
Subtotal Funding Change, Nonproliferation Verification R&D O&M	+43,255
▪ **Construction**	
Increase supports the Project Engineering and Design project for the National Security Laboratory at PNNL	+5,000
Total Funding Change, Nonproliferation Verification R&D	**+48,255**

Capital Operating Expenses & Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)				
	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	81	0	0	0	0%
Capital Equipment	46,082	45,000	50,000	+ 5,000	+ 11.1%
Total, Capital Operating Expenses	46,163	45,000	50,000	+ 5,000	+ 11.1%

Construction Projects

(dollars in thousands)

	Estimated Cost (TEC)	Year Appropriations	FY 2004	FY 2005	FY 2006	Unappropriated Balances
Nonproliferation and Verification R&D						
06-D-180, Defense Nuclear Nonproliferation, Plant Engineering and Design VL...	TBD	0	0	0	5,000	TBD
Total, Construction.................		0	0	0	5,000	TBD

[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 2005 and FY 2006 funding shown reflects estimates based on actual FY 2004 obligations.

06-D-180, National Nuclear Security Administration
Defense Nuclear Nonproliferation Program
Project Engineering and Design (PED),
National Security Laboratory, PPNL, Washington

Work on the project started in FY 2004 with the approval of Critical Decision (CD)-0, Justification of Mission Need. Because of the aggressive schedule associated with this project, we expect to receive a preliminary Architectural and Engineering (A&E) Report and approval of CD-1 in FY 2005. Once the A&E report has been reviewed and the best alternative(s) have been identified the start of engineering and design work will help facilitate the targeted CD-1 approval date.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000) [a]
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2006 Budget Request *(A-E and technical design only)*	4Q 2005	2Q 2006	3Q 2007	2Q 2009	40,000-60,000

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design			
2006	5,000	5,000	4,200
2007	0	0	800

3. Project Description, Justification and Scope

This project provides for Architect-Engineering (A-E) services (Title I and Title II) for Defense Nuclear Nonproliferation Program 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.

[a] The Total Estimated Cost and Total Project Cost estimates will be updated when the Project Performance Baseline is established at CD-2 in FY 2006.

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 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 Title I and II design and engineering efforts are provided, as well as very preliminary estimates of the Total Estimated Cost (including physical construction) of the subproject.

FY 2006 Proposed Design Project

06-01: National Security Laboratory, PNNL

Fiscal Quarter				Total Estimated Cost (Design Only ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
TBD	TBD	TBD	TBD	5,000	40,000 – 60,000

Fiscal Year	Appropriations	Obligations	Costs
2006	5,000	5,000	4,200
2007	0	0	800

NNSA is working with the Office of Science and Homeland Security to replace existing research facilities that must be relocated due to the environmental cleanup activities at the Hanford Site 300 area at the Pacific Northwest National Laboratory (PNNL). The National Security Laboratory will help accelerate replacement of the existing research capabilities. These capabilities are essential to the Defense Nuclear Nonproliferation mission. PNNL provides nuclear science and technology and information analytical capabilities 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 Hanford 300 Area is scheduled for complete demolition and cleanup by the DOE Environmental Management (EM) program over the next 8-10 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 Pacific Northwest National Laboratory from the 300 Area. This will require that PNNL vacate 35 buildings (19 main facilities and associated annexes) in the 300 Area within the next five years.

Evaluation of existing facilities and infrastructure in the Tri-Cities area over the past several years has determined that the type of laboratory facilities needed to support the mission needs are fully occupied and utilized. Excess space of the type required does not currently exist at or near the PNNL campus or in the wider local area. The options/alternatives were developed prior to the finalization of the Acquisition Strategy Plan and the final Architectural Engineering Report. Both of these documents should be finalized in FY 2005. At that time, a final decision will be made regarding which specific alternative(s) to pursue. The options/alternatives under consideration include:

- Construct new facilities at PNNL, either for the total mission or a subset thereof,
- Relocate the research capabilities to other national laboratories, or
- Terminate some of the current research programs dependent upon capabilities currently resident in the 300 Area.

Existing capabilities now housed in approximately 700,000 gross square feet of facilities in the existing 300 Area and requirements to meet future mission needs will be evaluated. Some capabilities may be strategically divested and others may be retained to meet current and future mission requirements. It is anticipated that there will be multiple facilities designed and constructed to house the capabilities to meet these needs. Although the facilities may have different sponsors, the scientific capabilities will be leveraged or shared to ensure efficient research operations. It is expected that the gross square footage will significantly decrease due to the modernization of the facilities over the existing Cold-War era ones, as well as the significant advances in architecture, engineering and technology that allow for more efficient use of space and instrumentation.

Failure to replace the lost 300 Area facilities will significantly affect the scientific community and in some cases the national security mission of the Department as well as the new mission of the Department of Homeland Security.

4. Details of Cost Estimate [a]

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	4,625	N/A
Design Management costs (4.5% of TEC)	225	N/A
Project Management costs (3.0% of TEC)	150	N/A
Total, Design Costs	5,000	N/A
Total, Line Item Costs (TEC, Design Only)	5,000	N/A

5. Method of Performance

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, etc. concerns.

[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 design.

6. Schedule of Project Funding

	(dollars in thousands)					
	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Project Engineering and Design	0	0	0	4,200	800	5,000
Total, Line Item TEC	0	0	0	4,200	800	5,000
Other Project Costs						
Conceptual design cost	0	0	2,500 [a]	0	0	2,500
Environmental activities	0	0	2,000 [a]	0	0	2,000
Other project-related costs	0	600 [b]	500 [a]	0	0	1,100
Total Other Project Costs	0	600	5,000	0	0	5,600
Total Project Cost (TPC)	0	600	5,000	4,200	800	10,600

[a] FY 2005 Conference Report H.R. 4818: The conferees provide an additional $5,000,000 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.

[b] Reference: Letter from Congress of the United States, House of Representatives, Committee on Appropriation, signed by Chairman and Ranking Minority Member, House Subcommittee on Energy and Water Development Appropriations, to the Secretary of Energy, Subject: Approval to reallocate appropriated funding in the National Nuclear Security Administration (NNSA). "….In addition, the Committee is aware of the pending loss of PNNL facilities presently located in the 300 Area of the Hanford site as a result of accelerated cleanup of that area. Given the need to prepare a facility to accommodate the

equipment and personnel soon to be displaced from the 300 Area, the Committee directs the NNSA to retain an additional $600,000 to support project engineering and design for replacement PNNL facilities…"

Nonproliferation and International Security

Funding Schedule by Activity

(dollars in thousands)

	FY 2004 [a]	FY 2005 [a]	FY 2006	$ Change	% Change
Nonproliferation and International Security					
Nonproliferation Policy	28,683	30,202	25,321	- 4,881	- 16.2%
Export Control	15,711	22,246	19,970	- 2,276	- 10.2%
International Safeguards	35,098	31,695	26,045	- 5,650	- 17.8%
Treaties and Agreements	2,769	3,208	2,000	- 1,208	- 37.7%
International Emergency Management and Cooperation	3,958	3,967	6,837	+ 2,870	+ 72.3%
Total, Nonproliferation and International Security	86,219	91,318	80,173	- 11,145	- 12.2%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Nonproliferation and International Security	80,173	81,857	83,493	85,165	86,867	417,555

Description

The program, as a complement to efforts under the Global Initiatives for Proliferation Prevention (previously named Russian Transition Initiatives) strengthens the global nuclear nonproliferation regime by limiting sensitive exports, supporting international safeguards, and providing policy recommendations and technical and policy advice to develop and implement U.S. policy regarding treaties, agreements, and mutual inspections.

The program efforts will control export of items and technology useful for weapons of mass destruction (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 rules; 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; develop and implement transparency measures to ensure that nuclear materials are secure; develop capabilities and administer programs to implement the U.S. highly enriched uranium (HEU) minimization policy; develop and implement innovative approaches to improve regional security, and conduct international emergency management and cooperation activities.

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[a] Reflects comparability adjustments of $-23,880,000 in FY 2004 and $-61,463,000 in FY 2005 for the transfer of the Reduced Enrichment Research and Test Reactor, Russian Research Reactor Fuel Return, Kazakhstan Spent Fuel, DPRK Spent Fuel Disposition, HEU Research Reactor Fuel Purchase programs to the Global Threat Reduction Initiative.

Benefits to Program Goal 02.44.00.00 Nonproliferation and International Security
The program provides technical and policy leadership for programs developed to limit or prevent the spread of weapons of mass destruction; advance the technologies to detect the proliferation of weapons of mass destruction worldwide; and strengthens the nonproliferation regime. Within the Nonproliferation and International Security program, five subprograms each make unique contributions to Program Goal 02.44.00.

The Nonproliferation Policy subprogram develops transparency and confidence-building measures in regions of high proliferation risk, and provides support for nonproliferation and arms control policy-making.

The Export Control subprogram secures technology by reviewing export license applications, providing assistance to multilateral supplier organizations and improving foreign export control practices.

The International Safeguards subprogram upgrades security of foreign materials, provides support to the International Atomic Energy Agency (IAEA), and ensures DOE compliance with IAEA safeguards.

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.

Program Assessment Rating Tool (PART)
The Department implemented the PART tool to evaluate selected programs. PART was developed by 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 Nonproliferation and International Security (NIS) program has incorporated feedback from OMB into the FY 2006 Budget Request and has taken or will take the necessary steps to continue to improve performance.

For FY 2006 the OMB evaluated the NIS program using the PART. The NIS program achieved a perfect score on purpose and design because it has a clear purpose that addresses a specific need. It also achieved a perfect score in strategic planning and program management sections because the Department has established specific, measurable goals and time frames with appropriate federal oversight and controls. OMB rated this program 87 percent, its highest category of "Effective."

Major FY 2004 Achievements
- The Nonproliferation Policy subprogram has played a critical role in the dismantlement of Libya's nuclear program and the removal of the Highly Enriched Uranium (HEU) fuel that was at the Tajura reactor in Libya. After this removal, planning has been initiated to convert the reactor to Low Enriched Uranium (LEU) fuel. In addition, the Cooperative Monitoring Center in Amman, Jordan, modeled after the Cooperative Monitoring Center (CMC) in Albuquerque, New Mexico was opened and is the first overseas organization dedicated to applying technical measures to regional security

and nonproliferation challenges. The program also negotiated the approval of 15 joint projects with Russia, representing over $5 million of work, in the area of technology development to combat nuclear terrorism and technology development for nuclear warhead safety, security, and transparency.

- The Export Control subprogram reviewed approximately 6,000 export licenses for proliferation concern, a more than 100 percent increase over prior year totals. NNSA led U.S. government efforts within the Nuclear Suppliers Group to develop and implement Presidential initiatives to strengthen nuclear export controls, and expanded its international assistance program to improve export control systems in emerging supplier and high-traffic transit states.

- The International Safeguards subprogram removed highly sensitive centrifuge enrichment components and other nuclear-related equipment from Libya and participated in several missions to Libya in furtherance of the objective of cooperatively dismantling the Libyan nuclear program. In cooperation with other Defense Nuclear Nonproliferation organizations and the Department of Defense, the program removed dangerous nuclear materials and radioactive sources from Iraq in June 2004. In addition, the program managed the implementation of IAEA safeguards at two DOE nuclear facilities, supported IAEA safeguards implementation at one Nuclear Regulatory Commission-licensed facility, and conducted physical protection assistance in five countries and at six facilities. NNSA also led preparations to implement the U.S.-IAEA Additional Protocol, on which the Senate, in March 2004, gave its advice and consent to ratification.

- The Treaties and Agreements subprogram supported unforeseen activities to fully exploit the nonproliferation objectives, such as the initiating investigation of inspectors and the removal of 1.77 metric tons of LEU from Iraq, in cooperation with the Office of International Safeguards, before the turnover of power in June.

Significant Program Shifts

In order to provide a consolidated effort to address all research reactor and spent fuel activities, the Reduced Enrichment for Research and Test Reactor (RERTR), the Russian Research Reactor Fuel Return (RRRFR), the Kazakhstan Spent Fuel, and the HEU Research Reactor Fuel Purchase programs were transferred to the new Global Threat Reduction Initiative (GTRI) in FY 2006.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Completed canning of BN-350 fast reactor spent fuel. (MET GOAL)	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)
Complete safety parameter display systems for Ukraine's South Ukraine nuclear plant unit 3, and Zaporizhya nuclear plant units 2 and 4. (MET GOAL)	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)
Complete implementation of symptom-based emergency operating instructions at the Ignalina plant in Lithuania. (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 WND 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)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual average cost per review of nuclear, chemical and biological export license applications. (EFFICIENCY MEASURE)	*R: $636*	*R: $450*	*T: $450*	*T: $430*	*T: $430*	*T: $430*	*T: $430*	*T: $420*	*By 2010, reduce costs to $420 per review (baseline $969 per review in FY 2002)*
Cumulative number of international and domestic experts trained in nuclear nonproliferation since 9/11 (e.g. IAEA inspectors, export control officers, etc.).	R: 3,095	R: 4,400	T: 5,500	T: 6,660	T: 7,990	T: 9,290	T: 10,620	T: 11,920	By 2011, train 13,000 experts (interim target)
Cumulative percentage of progress towards redirecting former Libyan WMD scientists and instituting conformance with Libya's international nonproliferation obligations.	N/A	N/A	N/A	T: 15%	T: 33%	T: 46%	T: 61%	T: 77%	By 2011, complete 100% of the activities to redirect Libyan's 150 WMD scientists and complete 14 technical exchanges to help Libya meet their nonproliferation obligation.
Cumulative percentage of progress in development of the next-generation Attribute Measurement System (AMS) to determine the mass and isotopics of a nuclear warhead, warhead component or fissile material without revealing classified information.	N/A	N/A	N/A	T: 25%	T: 45%	T: 70%	T: 90%	T: 100%	By 2010, complete development of the AMS and demonstration of the prototype to U.S. and partner country government representatives.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Nonproliferation Policy	**28,683**	**30,202**	**25,321**
▪ **Global Regimes**	**4,562**	**5,141**	**3,895**

Global Regimes supports policymaking, negotiations, and implementation regarding the following arms control and nonproliferation regimes: Nuclear Nonproliferation Treaty (NPT); Biological Weapons Convention (BWC); Chemical Weapons Convention (CWC); Threshold Test Ban Treaty (TTBT); Limited Test Ban Treaty (LTBT); fissile material production limits; and bilateral peaceful nuclear cooperation agreements. 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.

▪ **Regional Security**	**8,307**	**8,630**	**7,944**

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 security program also supports the Cooperative Monitoring Center (CMC) at Sandia National Laboratories.

▪ **Warhead and Fissile Material Transparency (WFMT)**	**15,814**	**16,431**	**13,482**

Warhead and Fissile Material Transparency (WFMT) reduces the global nuclear threat by promoting safe, secure nuclear reductions and transparent monitoring of nuclear warheads, fissile material and associated facilities through the development of technical measures, policy options, and the negotiation of agreements. The program evaluates initiatives and develops technologies, such as the Attribute Measurement System, to increase U.S. technological capability to monitor nuclear warhead dismantlement; to better achieve transparency in monitoring nuclear warheads and fissile materials; to analyze potential monitoring regimes to ensure U.S. national security interests are protected; and to consider the wider application of existing technologies, such as nuclear material detectors, to combat the global threat of nuclear terrorism. The WFMT program consists of the following:

- U.S.-Russian Federation Plutonium Production Reactor Agreement (PPRA) policy and monitoring implementation,
- U.S.-Russian Federation Highly Enriched Uranium (HEU) Purchase Agreement Transparency policy,
- START and Treaty of Moscow implementation and future arms control and nonproliferation initiatives, and
- U.S.-Russian Federation Warhead Safety and Security Exchange (WSSX) Agreement.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Export Control	**15,711**	**22,246**	**19,970**
▪ **Export Control Operations**	**12,269**	**15,341**	**14,097**

Export Control Operations includes domestic Licensing Operations and the Multilateral Programs.

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 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 (chemical and biological technologies). 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 U.S. Customs Service within the Department of Homeland Security, in the area of export control enforcement through export controlled technology workshops and technical review of suspicious shipments for proliferation risk. 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 range of activities to promote export control compliance across the DOE complex.

The Multilateral Program provides technical and policy support to U.S. Government diplomacy involving the Nuclear Suppliers Group (NSG), the Non-Proliferation Treaty Exporters’ (Zangger) Committee, and other regimes that formulate internationally-agreed upon conditions of supply for, and control lists of, nuclear export controlled materials, equipment, and technologies. 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-the-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, under the Proliferation Risk and Analysis Project, the program conducts technical proliferation assessments to identify export control vulnerabilities and critical technology needs of countries of proliferation concern.

▪ **International Nonproliferation Export Control Program**	**3,442**	**6,905**	**5,873**

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.

(dollars in thousands)

An underlying objective 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.

	FY 2004	FY 2005	FY 2006
International Safeguards	**35,098**	**31,695**	**26,045**
▪ **Safeguards Policy and Treaty Implementation**	**16,735**	**11,311**	**8,429**

The Safeguards Policy and Treaty Implementation program (previously, the IAEA Safeguards and Nonproliferation Policy Support) provides policy and technical leadership to strengthen the nuclear nonproliferation regime, particularly through efforts to strengthen International Atomic Energy Agency (IAEA) safeguards and to analyze and support the development of proliferation resistant fuel cycle technologies. The program's main elements include: (1) technical and analytical support for the development of international safeguards policy; (2) support for IAEA inspections at eligible DOE/NNSA facilities pursuant to the Voluntary Offer Agreement (VOA) for application of IAEA safeguards in the United States; (3) preparation for implementation of the U.S.-IAEA Additional Protocol (AP); (4) technical support to foreign countries to help them prepare for AP implementation; and (5) support for the development and implementation of advanced verification arrangements for fissile materials declared excess to national security needs. Beginning in FY 2006, this program also includes safeguards and nonproliferation assessments and proliferation resistant fuel cycle technology (PRFCT) policy and development. These assessments assist in the formulation of policy to minimize the use of weapons-usable materials and to identify opportunities to reduce proliferation risk in civil fuel cycle activities. PRFCT strengthens the nonproliferation regime through comparative analysis of existing and proposed fuel cycle technologies and relevant advanced safeguards concepts, and reduces the long-term threat to U.S. national security by providing state-of-the-art tools and advanced safeguards concepts to improve proliferation resistant technology.

	FY 2004	FY 2005	FY 2006
▪ **International Cooperation**	**5,196**	**5,500**	**5,096**

The International Cooperation program reduces the threat of nuclear proliferation through the negotiation and implementation of cooperative agreements and arrangements that support the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) goals. The program develops and transfers advanced technology applications and methodologies to the IAEA and international partners for strengthened safeguards and physical protection of nuclear materials. The program also promotes the peaceful application of nuclear technology through bilateral "Sister Laboratory" agreements in support of treaty obligations under NPT Article IV.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **Nuclear Noncompliance Verification**	**6,000**	**6,000**	**6,942**

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 Research and Development program. These verification activities must be done largely by the IAEA, but will require 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 IAEA to detect undeclared nuclear activities and safeguard declared nuclear material more effectively and efficiently. Other specially designed tools and technologies are also developed and transferred to address unique proliferation threats.

Verification activities must be done largely by the International Atomic Energy Agency (IAEA) and can be done only with specially designed tools and technologies that are still being developed. The FY 2006 funding will enable development of those tools, with emphasis on detection and verification of plutonium programs.

▪ **International Nuclear Security**	**7,167**	**8,884**	**5,578**

The International Nuclear Security program aims to improve nuclear security systems in all NPT States excluding the Russian Federation. The program works cooperatively with governments worldwide and the IAEA to strengthen the physical protection of nuclear materials at nuclear facilities. Primary areas of emphasis are: (1) support to IAEA nuclear material security activities including the IAEA's International Physical Protection Advisory Service (IPPAS); (2) bilateral consultations to evaluate physical protection of U.S.-origin nuclear material; and (3) training. These program activities complement the activities of the Global Threat Reduction Initiative (GTRI) and their implementation is closely coordinated with GTRI.

The International Nuclear Security program provides technical personnel to the IAEA to lead and/or support IPPAS missions. The IAEA established the IPPAS program in 1996 to assist Member States in the evaluation and improvement of their physical protection systems. Many of these missions lead to recommendations for, and implementation of, additional security upgrades. The International Nuclear Security program leads or supports approximately six IPPAS missions per year.

The program also conducts approximately five bilateral consultations per year to ensure that countries possessing U.S.-origin nuclear material are adequately protected against theft, sabotage and nuclear smuggling. As codified in the 1978 Nuclear Non-Proliferation Act, the U.S. must ensure that there is adequate security for U.S.-origin nuclear material provided to other countries for peaceful purposes. The International Nuclear Security program provides technical and material assistance for physical protection upgrades where a need for such upgrades is identified by IPPAS missions, U.S. bilateral visits, or studies. Countries in which upgrades have been made include Belarus, Czech Republic, Greece, Indonesia, Kazakhstan, Latvia, Lithuania, Poland, Portugal, Serbia, Ukraine, and Uzbekistan. Responsibility for sustaining upgraded security systems in the NIS and Baltics republics was being transitioned away from bilateral assistance to the states themselves upon completion of upgrades in those countries. In certain cases, the IAEA may be involved in sustaining security improvements.

(dollars in thousands)

The program is also actively engaged in training students from throughout the world in nuclear security topics. Training includes a biannual International Training Course held in the United States; Regional Training Courses for personnel in over two dozen countries such as the Czech Republic, China, Brazil, Australia and Mexico, and other international courses on specific topics including Security System Design and Analysis, Design Basis Threat, Insider Analysis, and Vital Area Identification. The program sponsors six to ten training courses with approximately 200 international students per year.

The program will provide $2.0 million in FY 2005 and $2.0 million in FY 2006 for the Ukraine nuclear power plant security upgrades. This work will be managed by the Office of Nonproliferation and International Security and coordinated with the Office of Nuclear Energy, Science and Technology (NE).

	FY 2004	FY 2005	FY 2006
Treaties and Agreements	**2,769**	**3,208**	**2,000**

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.

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: 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, to support chemical and biological technologies, and to create an export control end-user/end-use directory to speed up and systematize license reviews; resources for a trade show to showcase technologies developed by re-directed WMD scientists to encourage partnerships with U.S. business and foster sustainable scientist re-direction; and funds for emerging nonproliferation priorities such as dismantlement and removal of nuclear materials from newly discovered clandestine WMD programs.

	FY 2004	FY 2005	FY 2006
International Emergency Management and Cooperation..	**3,958**	**3,967**	**6,837**
▪ **Kazakhstan BN-350 Reactor Shutdown**	**1,491**	**1,487**	**1,455**

This subprogram provides technical support for the multinational effort to permanently shutdown the BN-350 breeder reactor in Kazakhstan. The deactivation of this facility, which will be completed in fiscal year 2006, 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 will be made available to the Office of Nuclear Energy, Science and Technology (NE) for management and completion of this project.

	(dollars in thousands)	
FY 2004	FY 2005	FY 2006

FY 2004 efforts completed the sodium draining process and the final design of the Sodium Processing Facility (SPF), and initiated construction. In FY 2005, the SPF construction proceeded to process tanks and piping installation. FY 2006 efforts will support completion of the SPF and initiation of sodium processing into a stable form.

	FY 2004	FY 2005	FY 2006
▪ **International Emergency Management**	**2,467**	**2,480**	**5,382**

The International Emergency Management subprogram conducts information sharing and coordination with other foreign governments regarding emergency management cooperation. Current ongoing cooperation is predominately with Japan, France, S. Korea, Finland, Armenia, Sweden, Norway, Russia, and Ukraine. NNSA will continue liaison with, and participation in, international organizations (IAEA, EU, NATO, G8, 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 Federation 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.

Congressionally Directed Activity: The Conference Report, 108-792, accompanying the Consolidated Appropriations Act, 2005 (P.L. 108-447) included, from within available funds, $150,000 to continue the collaboration between Texas A&M and Russian universities on nuclear facilities safety and decontamination and decommissioning technologies.

	FY 2004	FY 2005	FY 2006
Total, Nonproliferation and International Security ...	**86,219**	**91,318**	**80,173**

Explanation of Funding Change

	FY 2006 vs. FY 2005 ($000)
▪ **Nonproliferation Policy**	
The decrease reflects acceptable reductions and the transfer of the proliferation resistant fuel cycle technology development in Fuel Cycle Analysis to International Safeguards; policy and technical support provided to the USG with respect to the NPT, BWC, CWC, FMCT and nuclear test limitations related negotiations and meetings in Global Regimes. In Warhead and Fissile Material Transparency (WFMT), supports the limited initiation of new WSSX projects and limited completion of WSSX deliverables, and supports HEU Purchase Transparency Review Committee	-4,881
▪ **Export Control**	
The decrease will reduce support for the Proliferation Trade Control Directory developed for the U.S. export control community and allow for more focused INECP engagement with the highest priority transit countries in Asia such as Singapore and Thailand, and emerging suppliers such as South Africa	-2,276
▪ **International Safeguards**	
The decrease reflects a reduction in effort as Additional Protocol preparations are completed; management efficiencies gained in advanced safeguards technology applications; completion of a number of physical protection activities, including upgrades in the NIS/Baltics; reduction of international safeguards technical collaboration projects; combining of technology applications in the Nuclear Noncompliance Verification program; consolidation of activities in the Safeguards Policy and Treaty Implementation program; and refocused work on development of an attribute verification system with information barrier (AVNG)	-5,650
▪ **Treaties and Agreements**	
Support for emerging nonproliferation issues and development of future treaties and agreements will be reduced	-1,208
▪ **International Emergency Management and Cooperation**	
The increase will strengthen emergency management cooperation and technical assistance with foreign partners through enhanced emergency communications, notification, networking, technologies, systems and expertise	+2,870
Total Funding Change, Nonproliferation and International Security	**-11,145**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Capital Equipment	894	921	948	+ 27	+ 3.0%
Total, Capital Operating Expenses	894	921	948	+ 27	+ 3.0%

International Nuclear Materials Protection and Cooperation

Funding Schedule by Activity

	(dollars in thousands)				
	FY 2004[a]	FY 2005[a]	FY 2006	$ Change	% Change
International Nuclear Materials Protection and Cooperation					
Navy Complex	36,105	15,000	6,500	- 8,500	- 56.7%
Strategic Rocket Forces	56,542	62,000	47,500	- 14,500	- 23.4%
Rosatom Weapons Complex	18,690	88,000	86,185	- 1,815	- 2.1%
Civilian Nuclear Sites	18,089	14,651	47,320	+ 32,669	+ 223.0%
Material Consolidation and Conversion	17,727	30,000	28,001	- 1,999	- 6.7%
National Programs and Sustainability	35,232	41,000	30,000	- 11,000	- 26.8%
Second Line of Defense	46,349	44,000	97,929	+ 53,929	+ 122.6%
Total, International Nuclear Materials Protection and Cooperation	228,734	294,651	343,435	+ 48,784	+ 16.6%

[a] Reflects comparability adjustments of $29,753 in FY 2004 and $24,800 in FY 2005 to reflect the transfer of the Radiological Dispersal Devices (RDD) program to the new Global Threat Reduction Initiative (GTRI) in FY 2006.

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Total
International Nuclear Materials Protection and Cooperation......	343,435	350,647	358,011	365,529	373,205	1,790,827

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 to Program Goal 02.46.00.00 International Nuclear Materials Protection and Cooperation
Within the International Nuclear Materials Protection and Cooperation program, seven subprograms each make unique contributions to Program Goal 02.46.00.00.

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) 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 19 SRF sites at 11 bases have been approved by the U.S. Government for MPC&A upgrades. Discussions are underway to include additional sites.

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. These sites account for approximately 500 MTs of highly attractive weapons-usable nuclear materials.

The Civilian Nuclear Sites program element installs MPC&A systems at 31 civilian nuclear sites (18 Russian and 13 Non-Russian). The civilian sites contain approximately 40 MTs of the vulnerable material of proliferation concern.

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 and plutonium into fewer, more secure locations and converting highly enriched uranium into low enriched uranium.

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 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) 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 of nuclear and other radioactive materials. NNSA 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.

Program Assessment Rating Tool (PART)
The Department implemented the PART tool to evaluate selected programs. PART was developed by 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 International Nuclear Materials Protection and Cooperation program has incorporated feedback from OMB into the FY 2006 Budget Request and has taken the necessary steps to continue to improve performance.

For FY 2004, OMB evaluated the MPC&A program using the PART tool. OMB assigned its highest rating of "Effective". In addition, MPC&A provided OMB an FY 2005 update to its FY 2004 PART.

Major FY 2004 Achievements

- Signed contracts for all remaining MPC&A upgrades to Russian Navy warhead sites.
- Completed MPC&A upgrades to the first two Russian Strategic Rocket Forces (SRF) sites, and signed rapid MPC&A upgrades contracts for all remaining approved sites.
- Signed comprehensive MPC&A upgrade contracts for five Russian SRF sites.
- Completed MPC&A upgrades at the first two Rosatom Weapons Complex sites.
- Commissioned a second large Rosatom Civilian fuel site.
- Completed installations at 20 additional sites in Russia and at 4 sites in Greece.
- Began negotiations with Kazakhstan, Ukraine, Turkey, and Solvenia regarding implementation of the SLD program.
- Completed installation of radiation detection at the first two Megaports in two countries.
- Began installation in one additional port and initiated discussions with over 20 additional countries regarding the Megaports Initiative.

Major Program Shift

In order to provide a consolidated effort to address all vulnerable nuclear and radiological materials throughout the world, the Radiological Dispersal Devices (RDD) program will be moved from the International Nuclear Materials Protection and Cooperation program to the new Global Threat Reduction Initiative (GTRI) in FY 2006.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative number of Russian Navy warhead sites secured.	R: 30	R: 34 T: 33	T: 37	T: 39	N/A	N/A	N/A	N/A	Secure 39 Russian Navy warhead sites by the end of 2006.
Cumulative number of Russian Strategic Rocket Forces and 12 Main Directorate sites secured.	N/A	R: 2 T: 2	T: 10	T: 14	T: 19	T: 20	T : 24	T: 25	Secure 19 Russian Strategic Rocket Forces sites by the end of 2007 and 12 Main Directorate sites by the end of 2012.
Cumulative percentage of 600 MTs of weapons-usable nuclear material secured.	R: 22%	R: 26% T: 26%	T: 37%	T: 50%	T: 73%	T: 100%	N/A	N/A	Secure 100% of the 600MTs of weapons-usable nuclear material by the end of 2008.
Cumulative metric tons of HEU converted to LEU.	R: 4.3	R: 5.4 T: 6.0	T: 7.5	T: 9.3	T: 11.1	T: 12.9	T: 14.5	T: 15.1	Convert 17 MTs of HEU to LEU by the end of 2012.
Cumulative number of Second Line of Defense (SLD) sites with nuclear detection equipment installed. (Cumulative number of Megaports completed)	R: 39	R: 66 (2) T: 74 (3)	T: 98 (5)	T: 115 (10)	T: 139 (11)	T: 182 (14)	T: 226 (19)	T: 278 (24)	Install radiation detection equipment at approximately 330 border crossing sites and 24 Mega-Ports (assuming no expansion of program sites) by the end of 2012.
Cumulative cost in millions of dollars per metric ton to complete rapid security upgrades on Russian weapons usable nuclear material. (EFFICIENCY MEASURE)	*N/A*	*N/A*	*T: $5.3*	*T: $5.5*	*T: $ 4.5*	*T: $3.5*	*N/A*	*N/A*	*By the end of FY 2008, reduce the cumulative cost of rapid upgrades per metric ton of material secured to $3.5M/MT.*

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Navy Complex	**36,105**	**15,000**	**6,500**

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. These sites account for approximately 60 MTs of highly attractive weapons-usable nuclear materials and numerous at-risk RF Navy nuclear warheads. 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.

In FY 2006, NNSA plans to complete MPC&A upgrades at the final 2 Russian Navy nuclear warhead sites (increasing the total warhead sites secured with either completed rapid and/or comprehensive upgrades) to 39 sites. These upgrades will include physical protection and material control enhancements to Russian Navy sites that store or handle nuclear warheads. Upon completion of these upgrades, sustainability activities will begin at these sites.

MPC&A 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 to ensure that equipment provided is effective in protecting the material.

Strategic Rocket Forces...............................	**56,542**	**62,000**	**47,500**

The Strategic Rocket Forces (SRF) 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. Nineteen SRF sites at 11 bases have been approved by the U.S. Government for MPC&A upgrades. Discussions are underway to include additional sites. For planning purposes, NNSA is assuming that approximately 19 SRF and 12 12th Main Directorate nuclear warhead sites will require 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 phase is often completed within six-eight months, a comprehensive upgrades phase, and a sustainability program, which assures the systems will remain effective after the installation of upgrades is complete.

In FY 2006, NNSA plans to: complete MPC&A upgrades at an additional 4 SRF sites of the approximately 19 SRF (increasing the total SRF sites secured (with either completed rapid and/or comprehensive upgrades) to 14 sites), and initiate MPC&A upgrades at two 12th Main Directorate nuclear warhead sites.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Rosatom Weapons Complex	**18,690**	**88,000**	**86,185**

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. These sites account for approximately 500 MTs of highly attractive weapons-usable nuclear materials. 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 2006, the program will:

Complete MPC&A rapid upgrades on an additional 3 percent of nuclear material (increasing the total amount of nuclear material rapid upgrades to 42 percent) and complete MPC&A comprehensive upgrades on an additional 15 percent of nuclear material (increasing the total amount of nuclear material under comprehensive upgrades to 40 percent).

At Mayak, continue MPC&A upgrades at the RT-1 fuel reprocessing plant and several sensitive areas within Plant 20; complete comprehensive physical protection and material control and accounting upgrades at Building 190; and continue upgrades and sustainability for Protective Force and secure transportation.

At Tomsk-7, complete comprehensive physical protection and material control and accounting upgrades at the Conversion Plant and the Uranium Enrichment Plant; and continue comprehensive physical protection upgrades and material control and accounting upgrades at the Chemical Metallurgical Plant.

At Krasnoyarsk-26, complete construction of the new Plutonium storage facility; continue upgrades to the new Central Alarm Station; continue upgrades to the Plutonium Storage Facility expansion project; and begin implementation of the new physical protection and material accounting systems.

At Arzamas-16, expand on-going activities to include upgrades in Areas 1 and 2; complete rapid physical protection and material accounting upgrades in Area 8 and initiate comprehensive upgrades; and complete comprehensive MPC&A upgrades in Area 11. Continue construction of a new central storage facility with upgraded physical protection and material accounting system to consolidate weapons usable nuclear material.

At Chelyabinsk-70, expand on-going activities to include initiation of physical protection comprehensive upgrades for Site 8, buildings 1 thru 12; complete comprehensive Protective Force upgrades at Building 723 in Site 20; and complete MPC&A upgrades at Site 8, buildings 8 thru 12. Continue construction of a new central storage facility with upgraded physical protection and material accounting system to consolidate weapons usable nuclear material.

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.

(dollars in thousands)

Civilian Nuclear Sites	**18,089**	**14,651**	**47,320**

The Civilian Nuclear Sites program element installs MPC&A systems at 31 civilian nuclear sites (18 Russian and 13 Non-Russian). The civilian sites contain approximately 40 MTs of vulnerable, material of proliferation concern. The basic MPC&A upgrade objective is to employ a cost-effective, graded approach with an initial focus on installing MPC&A 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 2006, NNSA plans to complete MPC&A comprehensive upgrades on the final 5 percent of nuclear material (increasing the total amount of nuclear material under comprehensive upgrades to 100 percent); complete MPC&A upgrades at the Elektrostal Machine Building Plant; and provide support for training, procedures, maintenance, equipment repair, critical spare parts, and performance testing to the sites with completed MPC&A upgrades in order to ensure the sustainability of installed MPC&A upgrades.

In addition, in FY 2006, NNSA plans to expand MPC&A cooperation with countries outside of Russia and the former Soviet States to provide assistance to protect weapons usable materials. Planned activities include technical exchanges and rapid MPC&A 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	**17,727**	**30,000**	**28,001**

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 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 FY 2012, it is planned that the MCC project will convert ~17 MTs of HEU to LEU. Based on its consolidation and conversion activity, the MPC&A program plans to have removed all material of proliferation concern from 55 buildings.

In FY 2006, NNSA plans to continue to implement the MPC&A strategy to simplify the nuclear security situation in Russia by consolidating material to fewer sites and fewer buildings, and converting much of this material to less proliferant attractive form (i.e. HEU to LEU). The program will also convert an additional 1.9 MTs of the total 17 MTs of weapon-grade highly enriched uranium to be converted to non-weapons grade low enriched uranium, (for a cumulative total converted of 9.3 MTs).

(dollars in thousands)

National Programs and Sustainability	**35,232**	**41,000**	**30,000**

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 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, 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 2006, the program will continue to assist the RF in establishing the necessary MPC&A support infrastructure to sustain effective MPC&A operations in the long term. Infrastructure projects include development of (1) the necessary regulations and inspection capabilities to establish performance parameters and oversee MPC&A operations; (2) secure transportation and protective force capabilities, by providing protective force equipment and secure truck and railcars to reduce the risk posed to nuclear material in transit; (3) a training and regional infrastructure to train physical protection, material control and accountability, and protective force personnel, and to establish maintenance capabilities at regional centers, and (4) sustainability measures to improve Russian Federation capabilities to manage MPC&A operations and track their nuclear inventories.

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.

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. This also includes manufacture of 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. At this time, it is estimated that a total of 434 transportation overpacks will be manufactured, 281 trucks will be hardened, and 91 railcars will be hardened. In FY 2006, an additional 4 secure transportation overpacks will be produced, and an additional 3 railcars will be hardened.

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.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Second Line of Defense	**46,349**	**44,000**	**97,929**
▪ **Core Program**	**33,349**	**29,000**	**24,000**

The Second Line of Defense (SLD) 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, Eurasia, the Middle East and the Caucuses, such as Kazakhstan, Ukraine, Turkey and Georgia. Sites to be addressed are selected through a site prioritization and selection methodology established to effectively plan and utilize program resources. In FY 2006, radiation detection equipment will be installed at an additional 12 foreign sites, increasing the total non-Megaport sites with completed installations to 105. Additionally, the program will continue to maintain previously deployed Department of State equipment in 22 countries.

▪ **Megaports**	**13,000**	**15,000**	**73,929**

NNSA is pursuing cooperation with international partners to deploy and equip key ports with radiation detection equipment and to provide training to appropriate law enforcement officials, in order to provide them the technical means to detect, deter and interdict illicit trafficking in nuclear and other radioactive materials. 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, we 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 24 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. We will continue to aggressively engage with governments and commercial terminal operators in those countries where we hope to implement the Megaports Initiative.

In FY 2006, the increase will enable the completion of five additional Megaports (increasing the number of completed ports to ten). This involves providing site surveys, vulnerability assessments, radiation detection equipment design and procurement and installation."

Total, International Nuclear Materials Protection and Cooperation	**228,734**	**294,651**	**343,435**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Navy Complex	
Decrease due to the completion of either rapid or comprehensive upgrades at a vast majority (95 percent) of Russian Navy warhead sites in FY 2005 and the transition to sustainability activities.	-8,500
Strategic Rocket Forces	
Decrease due to the ability to accelerate SRF security upgrades in FY 2005 by initiating comprehensive upgrades at 5 sites.	-14,500
Rosatom Weapons Complex	
Decrease due to the completion of building 101 sections 6 and 17 at the RT-1 fuel reprocessing plant at Mayak.	-1,815
Civilian Nuclear Sites	
Increase due to an expansion of MPC&A assistance to protect weapons usable materials outside of the FSU offset by a decrease due to the completion of comprehensive MPC&A upgrades at the civilian nuclear sites within the Former Soviet Union (31 of 31 sites)	+32,669
Material Consolidation and Conversion	
Decrease due to a lower projected availability of excess HEU to be downblended to LEU.	-1,999
National Programs and Sustainability	
Decrease due to the ability to accelerate the procurement of 10 new railcars in FY 2005 for the Rosatom Weapons Complex.	-11,000
Second Line of Defense	
Increase will enable the completion of five additional Megaports (increasing the number of completed ports to ten); offset by a decrease in the Core program due to the ramp down of radiation detection equipment installations at new sites in Russia.	+53,929
Total Funding Change, International Nuclear Materials Protection and Cooperation	+48,784

Global Initiatives for Proliferation Prevention

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Global Initiatives for Proliferation Prevention					
Global Initiatives for Proliferation Prevention.............	39,764	40,675	37,890	- 2,785	- 6.8%
Total, Global Initiatives for Proliferation Prevention...	39,764	40,675	37,890	- 2,785	- 6.8%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Global Initiatives for Proliferation Prevention..........................	37,890	38,686	39,460	40,249	41,054	197,339

Description

This program will prevent adverse migration of weapons of mass destruction expertise by engaging weapons experts in peaceful efforts and by helping to downsize the nuclear weapons complex.

In FY 2006, the former Russian Transition Initiative (RTI) program is requesting a name change to Global Initiatives for Proliferation Prevention (GIPP). The purpose of the name change reflects the expansion of the work to include retraining and redirection of scientists and technicians from countries other than the Former Soviet Union (FSU) with which the U.S. has weapons of mass destruction (WMD) proliferation concerns. GIPP's main focus will remain in the countries of the FSU.

Benefits to Program Goal 02.45.00.00 Global Initiatives for Proliferation Prevention (GIPP)

This program contributes to Program Goal 02.45.00.00 by preventing adverse migration of weapons of mass destruction expertise by engaging weapons experts in commercially oriented, nonmilitary efforts and by helping to downsize the nuclear weapons infrastructure. The GIPP will engage WMD experts in cooperative projects involving the ten major Department of Energy (DOE)/National Nuclear Security Administration (NNSA) National Laboratories and U.S. industry.

Major FY 2004 Achievements

- Engaged 8,200 FSU weapons scientists, engineers, and technicians.

- 36 technologies were commercialized or businesses created/expanded.

- Obtained $24,000,000 of non-USG funding contributions, which is equivalent to 60 percent of GIPP project funding. These funds are in addition to appropriated funding and support complementary activities that cannot be performed by the USG such as private sector commercialization, infusions of venture capital, and expenditures by the Russian government in concert with U.S. project objectives.

- GIPP held a trade show in FY 2004 that showcased the work of world-class scientists and engineers from Russia, Ukraine and Kazakhstan, unveiling innovative technologies previously inaccessible to U.S. companies.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Engaged approximately 2,000 scientists, engineers, and technicians at nuclear NIS institutes, and approximately 800 scientists, engineers and technicians at NIS chemical/biological institutes in 40 projects to provide long-term commercial employment. (MET GOAL)	Engaged 2,500 former WMD scientists on cooperative commercial projects. (MET GOAL) Sign an Agreement with the Russian Ministry of Atomic Energy for access to closed nuclear sites. (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)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual number of former Soviet weapons scientists, engineers, and technicians engaged.	R : 7,600	R : 8,200 T : 7,900	T : 8,200	T : 8,200	T : 8,200	T : 8,200	T : 8,200	T: 8,200	9,000 by 2015.
Cumulative number of technologies commercialized or businesses created/expanded.	R : 20	R : 36 T : 21	T : 42	T : 44	T : 46	T : 48	T : 50	T : 52	60 by 2015.
Annual percentage of non-USG project funding contributions obtained. (EFFICIENCY MEASURE)	*R : 50%*	*R : 100%* *T : 60%*	*T : 65%*	*T : 70%*	*T : 75%*	*T : 80%*	*T : 85%*	*T : 85%*	*85% by 2009.*

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Global Initiatives for Proliferation Prevention	**39,764**	**40,675**	**37,890**

The former Soviet weapons complex is oversized and in need of resources, making it a dangerous target for terrorists. For example, only about half of the 75,000 scientists currently employed by Russia, are needed for stewardship work. The remaining 35,000 under-employed nuclear experts possess a knowledge base that terrorist groups and proliferant countries could target for clandestine nuclear programs. Moreover, if left in place within the complex, these personnel create a surge capacity that would allow Russia to resume weapons work at any moment. The GIPP complements Russian efforts to reduce its WMD complex and enables it to reduce its workforce through technology commercialization and support for commercial development. GIPP is also working closely with the Elimination for Weapons Grade Plutonium Production (EWGPP) program to address the worker transition problems that will result as Russia shuts down and decommissions in Seversk and Zheleznogorsk. Although the program's main focus will remain the FSU, GIPP will henceforth work in other countries as well.

The extent to which the risk of adverse migration of WMD expertise has been mitigated can be measured in four ways. The cumulative number of former Soviet weapons scientists, engineers and technicians that GIPP engages in projects indicates an immediate reduction in that portion of the WMD workforce that would be at risk of recruitment by proliferant states or terrorist groups. Second, the extent scientists have been helped to transition to non-USG support and long-term employment. The goal is to engage 9,000 weapons scientists, engineers and technicians outside the WMD complex annually by 2015. Third, the cumulative number of technologies commercialized or businesses created is an indicator of the self-sustainability of those civilian jobs after GIPP exits. GIPP has an intermediate goal of creating 60 new technologies or businesses by 2015 to support sustainable job creation targets. Fourth is the extent GIPP meets its near term goal of obtaining non-USG contributions equal to 60 percent of GIPP's project funding, and long-term goal of obtaining contributions equal to 85 percent of GIPP's project funding by 2009. This metric further demonstrates the sustainability of GIPP's projects through investments by outside partners in these ventures.

Total, Global Initiatives for Proliferation Prevention	**39,764**	**40,675**	**37,890**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
Global Initiatives for Proliferation Prevention	
▪ Decrease is due to the phase-out of work in Snezhinsk during FY 2005 and draw down in Sarov as nonproliferation objectives are met in those cities. Work continues in synergy with the Elimination of Weapons Grade Plutonium Production (EWGPP) program to accelerate shutdown of the operating reactors in Seversk and Zheleznogorsk.	-2,785
Total Funding Change, Global Initiatives for Proliferation Prevention	**-2,785**

Highly Enriched Uranium (HEU) Transparency Implementation

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
HEU Transparency Implementation					
HEU Transparency Implementation.........................	17,894	20,784	20,483	- 301	- 1.4%
Total, HEU Transparency Implementation................	17,894	20,784	20,483	- 301	- 1.4%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
HEU Transparency Implementation...	20,483	20,913	21,331	21,758	22,193	106,678

Description

The Highly Enriched Uranium (HEU) Transparency Implementation goal is to develop and implement transparency measures which increase confidence that Low Enriched Uranium (LEU) purchased under the 1993 U.S./Russian HEU Purchase Agreement is derived from HEU extracted from dismantled Russian nuclear weapons and eliminated from Russian stockpiles.

Benefits to Program Goal 02.41.00.00 HEU Transparency

The HEU Transparency program annually monitors the conversion and processing of 30 metric tons (MT) of weapons-grade HEU into about 900 MT of LEU at four Russian processing facilities. This LEU is then delivered to the U.S. Enrichment Corporation for sale to U.S. fuel fabricators that convert it into commercial power reactor fuel. These transparency operations should continue through FY 2013 when the 500 MT of HEU will be completely converted and eliminated from Russian inventory.

Major FY 2004 Achievements

- Monitored the conversion of 30 metric tons of HEU with 24 Special Monitoring Visits (SMVs) to four Russian uranium processing facilities and ten months onsite coverage at the Transparency Monitoring Office in Novouralsk. This HEU is equivalent to 1,200 nuclear weapons permanently eliminated.

- Completed exchange on portable non-destructive assay equipment at four Russian uranium processing facilities with new systems for improved monitoring and assurance of 90 percent U-235 assay material being processed in Purchase Agreement.

- Blend Down Monitoring System (BDMS) – completed successful installation of BDMS equipment at the Siberian Chemical Enterprise. Trained Russian facility staff on equipment operation and installation procedures.

- Retrieved BDMS data from two uranium processing sites (Ural Electrochemical Integrated Plant in Novouralsk and Electrochemical Plant in Zheleznogorsk). This data covers 75 percent of the HEU material that was blended down this year. Maintained BDMS equipment in operational status.

- Maintained BDMS equipment in operational status.

- Achieved the annual program performance targets related to onsite monitoring by U.S. experts and by use of BDMS monitoring equipment.

- Achieved and analyzed all transparency data acquired to provide confidence that the non-proliferation objective of the Purchase Agreement were met.

- Conducted the annual verification inventory of natural uranium material returned to Russia.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Annual percentage of operation of the Blend-Down Monitoring Systems (BDMS) during the HEU blend-down process. (Numbers in ( ) indicate number of sites with BDMS)	R: 92% (1)	R: 96% (2) T: 94% (2)	T: 95% (3)	T: 95% (3)	T: 95% (3)	T: 95% (3)	T: 95% (3)	T: 95% (3)	Annually operate BDMS at least 95% of the time at 3 sites until 2013.
Annual percentage completed of the 24 annually allowed Special Monitoring Visits (SMVs) to the four Russian HEU-to-LEU processing facilities to monitor conversion of 30 MT per year of HEU to LEU.	R: 92%	R: 100% T: 92%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	T: 100%	Annually complete 100% of 24 SMVs at 4 sites until 2013.
Percentage of the year that the on-site Transparency Monitoring Office (TMO) is staffed at the Ural Electrochemical Integrated Plant. (EFFICIENCY MEASURE)	*R: 70%*	*R: 80%* *T: 75%*	*T: 76%*	*T: 77%*	*T: 78%*	*T: 79%*	*T: 80%*	*T: 81%*	*By 2010, increase time TMO is staffed to 81%.*

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
HEU Transparency Implementation..........	**17,894**	**20,784**	**20,483**

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 2006, NNSA plans to complete 24 visits to the four Russian facilities, requiring about 180 technical monitors. Provide close monitoring and daily 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 with pairs of technical experts performing 30-day to 60-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, SChE and Electrochemical Plant, ECP). Complete installation and calibration of BDMS equipment at the Siberian Chemical Enterprise (SChE) in FY 2005 and maintain all systems in FY 2006. 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.

Plan and fabricate replacement hardware units and associated computer software for the BDMS systems at the UEIP in FY 2005, for replacement in FY 2006. Begin comparable tasks for ECP application in 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.

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. Train monitors in technical and procedural requirements and health and safety procedures. Compile, archive and analyze all transparency monitoring data, especially BDMS output reports. Prepare monthly, annual, and ad hoc reports on HEU processing and HEU to LEU conversion rates and quantities. Support safety of U.S. monitors working in Russia by implementing the program health and safety plan, including radiation dosimetry, bioassay program and medical supplies.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

Accommodate Russian monitoring in the U.S. by maintaining a Permanent Presence Office 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.

Total, HEU Transparency Implementation	**17,894**	**20,784**	**20,483**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
HEU Transparency Implementation	
Minor decrease reflects the completion of the installation of the Blend Down Monitoring System (BDMS) at the third site, offset by the need to replace and upgrade equipment at the Ural Electrochemical Integrated Plant in Novouralsk and the Electrochemical Plant in Zheleznogorsk.	**-301**
Total Funding Change, HEU Transparency Implementation	**-301**

Elimination of Weapons Grade Plutonium Production

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Elimination of Weapons Grade Plutonium Production (EWGPP)					
Seversk Pu Production Elimination.........	40,600	34,183	127,500	+ 93,317	+ 273.0%
Zheleznogorsk Pu Production Elimination...	7,400	5,000	2,500	- 2,500	- 50.0%
Crosscutting and Technical Support Activities..............................	1,735	597	2,000	+ 1,403	+ 235.0%
DoD Funding Reappropriated.................	32,100 [a]	4,189 [b]	0	- 4,189	- 100.0%
Total, EWGPP...	81,835	43,969	132,000	+ 88,031	+ 200.2%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Elimination of Weapons Grade Plutonium Production......	132,000	137,640	137,333	140,079	142,881	689,933

Description

The EWGPP program assists the Russian Federation to cease its production of weapons-grade plutonium by replacing plutonium-producing nuclear reactors with fossil-fueled power plants to provide alternative supplies of heat and electricity and shutdown of the reactors.

Benefits to Program Goal 02.42.00.00 Elimination of Weapons-Grade Plutonium Production

Within the Elimination of Weapons-Grade Plutonium Production program, three subprograms each make unique contributions to Program Goal 02.42.00.00.

The Seversk Plutonium Production Elimination Project subprogram shuts down two weapons-grade plutonium production reactors by refurbishing an existing 1950s fossil-fueled facility.

[a] Of the $74.0 million transferred from DoD in FY 2003 with the program, $32,100,000 was reappropriated in FY 2004 from unobligated balances expiring at the end of FY 2003 in accordance with the National Defense Authorization Act of 2003.

[b] 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 in accordance with the National Defense Authorization Act of 2003.

The Zheleznogorsk Plutonium Production Elimination Project subprogram shuts down one weapons-grade plutonium production reactor by providing a replacement fossil-fueled facility.

The Crosscutting and Technical Support Activities subprogram provides resources for crosscutting efforts, such as planning and reactor shutdown, project reviews reporting, contract administration, intergovernmental contract negotiation support, general laboratory technical support, quality assurance, foreign logistical support, and other communications products and services.

Program Assessment Rating Tool (PART)
The Department implemented the PART tool to evaluate selected programs. PART was developed by 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 Elimination of Weapons Grade Plutonium Production program has incorporated feedback from the FY 2005 OMB PART review into the FY 2006 Budget Request and has taken the necessary steps to continue to improve performance.

In the FY2005 OMB PART review of Elimination of Weapons-Grade Plutonium Production program, OMB recognized the program for having very good, solid, and tangible performance measures to effectively guide and monitor program progress. However, because the EWGPP program had recently been transferred to DOE/NNSA from DoD, it was relatively new for DOE/NNSA and had not had a chance to develop a track record of results. Therefore, OMB assigned a rating of "Results not demonstrated."

Major FY 2004 Achievements
Seversk

- Preliminary designs completed for Turbine Number 13, Boiler Number 21, retubing of two boilers and coal handling system - January 2004.
- Site walkdowns completed in December 2003 and June 2004.
- Long-lead procurement (CD1/3a) approved for Turbine Number 13, Boiler Number 21, retubing of two boilers, coal handling system - June 2004.
- Contract awarded for Turbine Number 13 - July 2004.
- Contracts awarded for Boiler Number 21 - August 2004.
- Contract awarded for Boilers Numbers 10 and 18 Tubing - October 2004.
- Critical Decisions 2 (Performance Baseline) and 3 (Start of Construction) approved – November 2004.

Zheleznogorsk

- Raytheon Technical Services (RTSC) on board in Moscow - October 2003.
- Brownfield site for Zheleznogorsk facility selected - February 2004.

- Brownfield site access granted - February 2004.
- Russian Federation procured Brownfield site - February 2004.
- Conceptual design completed - April 2004.
- Critical Decision-1 (Preliminary Baseline Range) approved - November 2004.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of progress towards refurbishing a fossil plant in Seversk facilitating shut down of two weapons-grade plutonium production reactors.	R: 1%	R: 12.9% T: 16%	T: 32%	T: 61%	T: 85%	T: 98%	T: 100%	N/A	By December 2008, complete refurbishment of fossil plant at Seversk.
Cumulative actual costs per budgeted cost of work performed at Seversk (DOE 413 Seversk Cost Performance Index) (EFFICIENCY MEASURE)	*N/A*	*N/A*	*T: 1.0*	*T: 1.0*	*T: 1.0*	*T: 1.0*	*N/A*	*N/A*	*Annually, complete work at or below budgeted cost (1.0 or below)*
Cumulative percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating shut down of one weapons-grade plutonium production reactor. (Funding from International sources will be required for 2011 completion.)	R: 0.5%	R: 5% T: 3%	T: 4.8%*	T: 5.5%	T: 13.8%	T: 32.1%	T: 55.6%	T: 80.2%	By 2011, complete construction of fossil plant at Zheleznogorsk.
Amount of Russian weapons-grade plutonium production capability eliminated (FY 2003 baseline – 1.2 MTs per year)	N/A	R: 0 T: 0	T: 0	T: 0	T: 0	T: 0	T: 0.8	T: 0.8	By 2012, eliminate current Russian capability to produce 1.2MT of weapons-grade plutonium per year.

* 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 FY 2005 cumulative completion percentage Target, 4.8%, is lower than the FY 2004 non-comparable Result amount of 5%. Final TPC estimates will be established with the CD-2 Approved Performance Baseline, planned for June 2005.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Seversk Plutonium Production Elimination	**40,600**	**34,183**	**127,500**

The Seversk Plutonium Production Elimination Project will provide for the shutdown of two weapons-grade plutonium production reactors by refurbishing an existing 1950s fossil-fueled facility. The Russian Federation began upgrades in 1978 to the fossil fuel facility, and the U.S. plans to build on those efforts.

In March 2003, the program revised the master United States/Russian Federation (U.S./R.F.) agreement from the previous reactor core-conversion approach to the fossil-fueled power plant replacement approach. An intergovernmental EWGPP Implementation Agreement and site access arrangements were also completed. Conditional approval of Critical Decision 0 Justification of Mission Need, occurred in December 2002 and final approval occurred in March 2003. The Acquisition Strategy led to selecting an U.S. integrating contractor through the Defense Threat Reduction Agency, Cooperative Threat Reduction Integrating Contract (CTRIC) to interface with the R.F. Integrating Contractor that subcontracts to the Russian performance contractors. The U.S. Integrating Contractor also verifies the work performed and provides payment for work so verified. In August 2003, Washington Group International was awarded Phase One of the U.S. Integrating Contractor role to perform the site survey and assessment, initiate a detailed cost and schedule baseline, and negotiate the statement of work, costs, and schedule with the R. F. Integrating Contractor.

In FY 2004, Critical Decision (CD) reviews for CD-1 (Preliminary Baseline) and CD-3A (Long-lead Time Procurements) occurred in July 2004. CD-2 (Performance Baseline) was approved in November 2004 and allows for final design (CD-3B) and additional Long-lead Procurement. CD-3, Approval for the Start of Construction, also occurred in November 2004 and allows for commencement of the refurbishment of the Seversk Thermal Heat and Electricity Plant (TETs) beginning with tasks adding a new boiler unit, replacing turbine generator, providing a new fuel conveying system, and two existing boiler units. Specific tasks include: begin the working design of the new boiler unit; begin acquisition of equipment for the new boiler unit; begin the working design of the larger turbine generator, begin acquisition of equipment for the larger turbine generator; begin installation of the new fuel conveying system; and begin refurbishment of two boiler units. Boiler demolition and site preparation activities also commenced.

Also, in the first half of FY 2004, validation of the original 2001 Russian unvalidated cost estimates occurred in conjunction with initial site visits of the U.S. integrating contractors. It was found that the initial cost estimates did not provide for Russian inflation, escalation of costs to the mid-point of construction, and the costs of the U.S. and Russian integrating contractors. The inclusion of these factors resulted in the revised cost estimates increasing substantially. An Independent Cost and Schedule Review Team was engaged to review the revised cost estimates, which were found to be reasonable. The program then initiated cost reduction studies in conjunction with the Russian counterparts. Cost reduction options were developed and later reviewed during an EWGPP-sponsored Cost Reduction meeting. As a result, approximately $100 million in cost reductions largely driven by reduction of the number of boilers from 13 to 10 (plans include 1 new and 7 replacement and

	(dollars in thousands)	
FY 2004	FY 2005	FY 2006

2 refurbished boilers), were identified, while still achieving the necessary replacement energy capacity needs for the project.

In FY 2005, to meet the 2008 reactor shutdown schedule, work will continue on the new boiler unit, the first larger turbine generator, the new fuel conveying system, and two boiler units; and work will be initiated at the second smaller turbine generator, at two more boiler units, on the auxiliary equipment, and the auxiliary structures. For the new boiler unit, specific tasks will include: complete the working design; complete acquisition of equipment and materials; and begin construction and installation. For the first turbine generator, specific tasks will include: complete working design; complete acquisition of equipment and materials; begin construction and installation; and begin and complete dismantling of existing equipment. For the second turbine generator, specific tasks will include: begin working design; begin acquisition of equipment and materials; and begin dismantling of existing equipment. Installation of the fuel conveying system will continue, as will refurbishment of the first two boiler units. Work will begin on replacement of the second two boiler units. For the auxiliary equipment (such as turbine cooling water pumps) specific tasks will include: begin and complete working design; begin acquisition of equipment and materials; begin construction; and begin auxiliary structures for the Fuel and Lubrication Storage Depot.

The FY 2006 request support equipment fabrication and installation activities in this phase of construction to meet a 2008 completion schedule. Specifically FY 2006 efforts will include: completion of the first larger and the second smaller turbine generator, and the start of preparation and construction on the remaining five boilers. Work on auxiliary systems will include: preparation and installation of water treatment system upgrades; extensive work on preparation and construction of the coal-handling facilities which have begun in FY 2005 and are scheduled for completion at the end of calendar year 2006; site preparation, construction, and installation of six electrical transformers also to be largely completed at the end of calendar year 2006; and substantial installation work on the Plant Distributed Controls System (DCS).

	FY 2004	FY 2005	FY 2006
Zheleznogorsk Plutonium Production Elimination	**7,400**	**5,000**	**2,500**

The Zheleznogorsk Plutonium Production Elimination Project will shutdown the last remaining weapons-grade plutonium production reactor by providing a replacement fossil-fueled facility.

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. An intergovernmental EWGPP Implementation Agreement and site access arrangements were also completed. Conditional approval of Critical Decision 0, mission need, occurred on December 2002 and final approval occurred in March 2003. The Acquisition Strategy led to selecting an U.S. integrating contractor through the Defense Threat Reduction Agency, Cooperative Threat Reduction Integrating Contract (CTRIC) to interface with the R.F. Integrating Contractor that subcontracts to the Russian performance contractors. The U.S. Integrating Contractor also verifies the work performed. In August 2003, Raytheon Technical Services Company was awarded phase one of the U.S. Integrating Contractor roles to provide construction management services and project integration during the preliminary design phase of the project.

In FY 2004, the site was evaluated to determine usefulness of existing buildings and structures. The project is completing the preliminary design and preliminary site details, and will obtain Russian regulatory approval, and initiate preliminary design activities for the Zheleznogorsk Thermal Heat and Electricity Plant (TETs). Critical Decision 1, Preliminary Baseline, approval occurred November 2004 and Critical Decision 2, Performance Baseline, approval is scheduled for June 2005.

Also, in the first half of FY 2004, validation of the original 2001 Russian unvalidated cost estimates occurred in conjunction with initial site visits of the U.S. integrating contractors. It was found that the initial cost estimates did not provide for Russian inflation, escalation of costs to mid-point construction, and the costs of U.S. and Russian integrating contractors. As in the case of the Seversk portion of the program, the inclusion of these factors caused the revised cost estimates to increase substantially. An Independent Review Team was engaged to review the revised cost estimates, which were found to be reasonable. The program then initiated cost reduction studies in conjunction with the Russian counterparts. Cost reduction options were developed and later reviewed during an EWGPP-sponsored Cost Reduction meeting, these reduction options are being further developed and pursued. Cost reductions in the range of approximately $100 million are anticipated, largely driven by the Russian Federation assumption of the project risk.

The EWGPP program priority is to maintain the Seversk Plutonium Production Elimination completion schedule, which offers more plutonium production elimination for less cost than that for Zheleznogorsk. Consequently, as first proposed in the FY 2003 National Defense Authorization Act legislation that transferred the EWGPP from Department of Defense (DoD) to Department of Energy (DOE), the EWGPP is pursuing International Participation in the Zheleznogorsk program as an additional funding resource.

In FY 2005, the project will initiate detailed design. The U.S. integrating contractor will provide 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 will be 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 will release a series of competitive tenders to pre-qualified Russian general contractors, material and equipment suppliers. The subcontract selection process will be based on both technical competence and overall cost. A thorough cost analysis will be performed to ensure best value practices. A formalized risk mitigation plan will be finalized and implemented during FY 2005.

If additional funds are available in FY 2005 through International Participation, construction-related activities will commence. The construction includes site preparation, foundations, buildings, structures, and plant infrastructure. Long lead procurements will start including boilers and other large equipment. A detailed plan will be developed to provide linkage between construction milestones for the power plant and the shutdown of the reactor.

The FY 2006 decrease in the Zheleznogorsk portion of the program reflects expected contributions through International Participation as a funding source for the Zheleznogorsk project. Specifically FY 2006 efforts at $2.5 million include continued support for the U.S. Integrating contractor under an International Participation approach and the continued design and development of work packages.

(dollars in thousands)	FY 2004	FY 2005	FY 2006
Crosscutting and Technical Support Activities	**1,735**	**597**	**2,000**

The crosscutting and technical funding supports project reviews and reports 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 On-Site Construction Manager.

In addition, the FY 2006 request includes crosscutting efforts for the Reactor Shutdown Plan and International Participation efforts utilizing foreign contributions for the Zheleznogorsk project.

DoD Funding Reappropriated	**32,100**	**4,189**	**0**

Of the $74.0 million transferred from DoD in FY 2003 with the program, $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, $32.1 million of the prior-year funding was reappropriated in FY 2004 upon expiration at the end of FY 2003. Similarly in FY 2005, $4.189 million was reappropriated from unobligated balances expiring at the end of FY 2004.

Total, Elimination of Weapons-Grade Plutonium Production	**81,835**	**43,969**	**132,000**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
▪ **Seversk Plutonium Production Elimination**	
Increase reflects construction ramp-up including increased equipment fabrication and installation activities in this phase of construction to meet the 2008 completion schedule; specifically, includes the start of construction on the remaining five boilers, turbine generators, and auxiliary systems..	+93,317
▪ **Zheleznogorsk Plutonium Production Elimination**	
Decrease reflects the higher funding priority of Seversk project, which has a shorter overall schedule and where two of the three plutonium reactors can be shut down. Zheleznogorsk efforts support a 2011 shutdown schedule, but does rely on an International Participation approach, with funding contributions from other countries, for program success...	-2,500
▪ **Crosscutting and Technical Support Activities**	
Increase provides for crosscutting efforts, such as those related to the Reactor Shutdown Plan, International Participation efforts utilizing foreign contributions for the Zheleznogorsk project, various reporting requirements, and support to the Moscow office for the On-Site Construction Manager.	+1,403
DoD Funding Reappropriated	
Decrease reflects an FY 2005 adjustment to unobligated prior-year balances transferred from DoD in FY 2003 that were reappropriated upon expiration of their original 3-year period of availability for obligation.	-4,189
Total Funding Change, Elimination of Weapons-Grade Plutonium Production	+88,031

Fissile Materials Disposition

Funding Schedule by Activity

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Fissile Materials Disposition					
U.S. Surplus Fissile Materials Disposition (FMD)					
Operations and Maintenance (O&M) [a]					
U.S. Plutonium Disposition..................	70,100	52,636	103,500	+ 50,864	+ 96.6%
U.S. Uranium Disposition......................	92,640	85,500	103,000	+ 17,500	+ 20.5%
Supporting Activities.............................	23,942	14,300	20,000	+ 5,700	+ 39.9%
Subtotal, O&M..	186,682	152,436	226,500	+ 74,064	+ 48.6%
Construction	402,793	397,131	362,565	- 34,566	- 8.7%
Total, U.S. Surplus FMD...........................	589,475	549,567	589,065	+ 39,498	+ 7.2%
Russian Surplus Fissile Materials Disposition (FMD)					
Russian Materials Disposition...............	55,218	63,493	64,000	+ 507	+ 0.8%
Total, Russian Surplus FMD.....................	55,218	63,493	64,000	+ 507	+ 0.8%
Total, Fissile Materials Disposition.........	644,693	613,060	653,065	+ 40,005	+ 6.5%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Fissile Materials Disposition						
U.S. Surplus Fissile Materials Disposition..	226,500	235,653	225,766	233,579	261,093	1,182,591
Construction..	362,565	367,126	390,349	395,538	382,499	1,898,077
Russian Surplus Fissile Materials Disposition..	64,000	64,000	64,000	64,000	64,000	320,000
Total, Fissile Materials Disposition...............	653,065	666,779	680,115	693,117	707,592	3,400,668

Description

The program goal is to eliminate surplus Russian plutonium and surplus U.S. plutonium and HEU.

[a] Reflects comparability adjustments of -$6,000,000 in FY 2004 and -$6,000,000 in FY 2005 from Support Activities for transfer of Surplus HEU Storage to NNSA, Office of Defense Programs.

Benefits to Program Goal 02.47.00.00 Fissile Materials Disposition
Within the Fissile Materials Disposition program, four key areas each make unique contributions to Program Goal 02.47.00.00.

Two of the four areas, U.S. Plutonium Disposition and Russian Materials Disposition, are coordinated efforts to eliminate 68 metric tons (MT) of U.S. and Russian surplus weapons-grade plutonium, in accordance with a September 2000 U.S.-Russian Plutonium Management and Disposition Agreement and Congressional direction to conduct both disposition programs in parallel.

The third key area, U.S. Uranium disposition, makes U.S. highly enriched uranium (HEU) that has been declared surplus non-weapons-usable, primarily by downblending 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 reactor fuel. Three separate disposition projects (Off-Specification HEU Blend-down, Transfer to United States Environment Corporation (USEC), and Research Reactor Fuels) are currently being implemented, and additional projects are being planned.

The Construction subprogram, the final key area, is responsible for building the facilities needed to accomplish the U.S. Plutonium Disposition mission. These facilities include the U.S. Pit Disassembly and Conversion Facility and the U.S. Mixed Oxide (MOX) Fuel Fabrication Facility.

Major FY 2004 Achievements

- Downblended or shipped for downblending approximately 20 MTs of surplus U.S. HEU.
- Added an additional 6 MTs of surplus HEU to the Off-Specification HEU Blend Down Project.
- Identified and implemented actions necessary to ensure completion of a licensable MOX facility design by the end of 2004.
- Shipped plutonium to France to make MOX fuel lead assemblies for the U.S. plutonium disposition program, saving time and money relative to startup of a U.S. capability.
- Worked with Russia to develop a licensing approach for the Russian MOX facility that is similar to the U.S. Nuclear Regulatory Commission’s process for the U.S. MOX facility.
- Began site characterization work for the Russian MOX facility.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
There were no related targets.	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. weapons-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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative percentage of the design, construction, and start-up activities completed for the Pit Disassembly and Conversion Facility (PDCF)	R: 60% of the detailed design	R: 83% of the detailed design T: 85%	T: *100% of the detailed design, 25% of site preparation	T: *100% of training module design	T: *Award construction management contract	T: *50% of training module construction	T: *100% of training module construction	T: *20% of PDCF construction	TBD
Cumulative percentage of the design, construction, and start-up activities completed for the Mixed Oxide (MOX) Fuel Fabrication Facility	R: 75% of the detailed design	R: 90% of the detailed design T: 100%	T: *100% of the detailed design, begin site preparation and procurement	T: *10% of construction	T: *30% of construction	T: *60% of construction	T: *80% of construction	T: *90% of construction and initiate startup activities	TBD
Cumulative amount of surplus U.S. highly enriched uranium (HEU) downblended or shipped for downblending (EFFICIENCY MEASURE)	*R: 45 MT*	*R: 65 MT*	*T: 82 MT*	*T: 93 MT*	*T: 103 MT*	*T: 107 MT*	*T : 109 MT*	*T: 110 MT*	*TBD*
Cumulative percentage of design, construction, and startup activities completed for the Russian MOX Fuel Fabrication Facility.	R: 10% of the detailed design	R: 15% of the detailed design T: 60%	T: *100% of the detailed design, begin site preparation, and procurement	T: *10% of construction	T: *30% of construction	T: *60% of construction	T: *80% of construction	T: *90% of construction and initiate startup activities	TBD

*These targets assume that the U.S. and Russia have resolved liability protections for U.S. work in Russia and that international funding arrangements are formalized. Schedules to be confirmed when a Project Performance Baseline is established in FY 2005.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
U.S. Surplus Fissile Materials Disposition (O&M)	**186,682**	**152,436**	**226,500**
▪ **U.S. Plutonium Disposition**	**70,100**	**52,636**	**103,500**

NNSA will dispose of 34 metric tons of U.S. surplus weapons-grade plutonium, in accordance the September 2000 U.S.-Russian Plutonium Management and Disposition Agreement (PMDA). Two key U.S. facilities will be built at the Savannah River Site (SRS), South Carolina: a Pit Disassembly and Conversion Facility, to disassemble nuclear weapons pits and convert the resulting plutonium metal to an oxide form, and a Mixed Oxide (MOX) Fuel Fabrication Facility, to mix the plutonium oxide resulting in MOX fuel for irradiation in domestic reactors.

Significant progress has been made to date in the technical work on the design and licensing of the U.S. plutonium disposition facilities. However, since both the U.S. and Russian programs are to proceed in parallel, both by agreement and Congressional direction, failure to resolve the liability issue with Russia has resulted in a delay in the construction schedule (see Russian Fissile Materials Disposition section). NNSA is working to revise its construction schedule due to this delay and to accommodate a reduced level-funding profile in the outyears. The revised schedule, to be completed this summer, will show starting site preparation activities in the U.S. and Russia in May 2005, with full construction of MOX facilities to begin in FY 2006.

• **Reactor-Based Technologies**	**36,750**	**23,300**	**60,000**

Reactor-Based Technologies funding supports work necessary to convert weapons-grade plutonium oxide into finished MOX fuel assemblies and other project costs associated with the disposition of plutonium.

As part of fuel qualification activities, the program will continue fuel transportation and packaging activities, including submitting certification documents to the Nuclear Regulatory Commission (NRC); develop information and responses to NRC questions to assure approval of the operating license for the MOX facility; continue modifications to designated commercial nuclear reactors; continue irradiation of MOX fuel lead assemblies, and complete the preparation of facilities for post-irradiation lead assembly testing. FY 2006 funding includes increased management oversight to support construction, and continued planning for startup and operation of the MOX facility.

• **Pit Disassembly and Conversion**	**33,350**	**29,336**	**43,500**

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.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **U.S. Uranium Disposition**.......................	**92,640**	**85,500**	**103,000**

This program disposes of U.S. HEU that has been declared surplus non-weapons usable, primarily by down-blending it to LEU. It seeks to recover the economic value of the material by using the resulting LEU as reactor fuel, to the extent practical. It manages three separate disposition projects (Off-Specification HEU Blend-down, USEC 50 MT Transfer, and Research Reactor Fuels), and additional projects are being planned. These efforts include:

- Off-Specification HEU Blend-Down Project: Continue final 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.
- USEC 50 MT Transfer Project: Complete shipment of the surplus HEU.
- Program Management, Inventory Management, Technical Support and Special Studies: Continue surplus HEU planning, project management, HEU disposition technical support, special studies, and inventory management.
- Continue preparations for other material projects. Program activities include the planning, processing, characterization, and packaging work necessary to prepare this category of surplus HEU material for processing, down-blending, and ultimate disposition. The material is located at various sites in the DOE complex, including Y-12 National Security Complex (Y-12), Los Alamos National Laboratory, Idaho National Engineering and Environmental Laboratory, and Lawrence Livermore National Laboratory. Continue procurement of ES-3100 containers for shipment of surplus HEU.

▪ **Supporting Activities**...............................	**23,942**	**14,300**	**20,000**
• **Surplus Plutonium Storage**.............	**17,292**	**8,900**	**15,500**

Surplus Plutonium Storage provides safe storage configurations for surplus plutonium at the Pantex Plant and LANL until the materials are moved to SRS for disposition. Activities include surveillance and maintenance operations, radiation safety support and training, and thermal monitoring.

The program will continue to store surplus plutonium at the Pantex Plant and LANL; 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 to certify new surplus pit shipping containers.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
• **NEPA**	**750**	**1,500**	**1,500**

NEPA activities include preparing and reviewing Environmental Assessments and Environmental Impact Statements for fissile material storage and disposition activities. In addition, NEPA efforts include preparing Supplement Analyses and amended Record of Decisions required to support changes to the U.S. program. As needed, the existing environmental documents will be updated to reflect significant advances in the detailed designs for the plutonium facilities.

• **Common Technologies and Integration**	**5,900**	**3,900**	**3,000**

The September 2000 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 MTs of weapon-grade plutonium withdrawn from its defense programs. Reaching such an agreement requires detailed technical analysis and policy-level negotiations among the U.S., Russia, and the International Atomic Energy Agency.

FY 2006 funding will provide, technical support for U.S.-Russian negotiations regarding a monitoring and inspection regime, which will be implemented at plutonium disposition facilities in both countries; development of guidance to U.S. design engineers on monitoring and inspection specifications, which need to be included in the design of the two plutonium facilities, and other efforts common to both the MOX facility and the PDCF, such as program-level engineering and analysis.

Construction	**402,793**	**397,131**	**362,565**
▪ **99-D-141, Pit Disassembly and Conversion Facility**	**42,520**	**32,044**	**24,000**

The Pit Disassembly and Conversion Facility (PDCF) will provide the U.S. with the capability to disassemble surplus nuclear weapons pits and convert the resulting plutonium metal to plutonium oxide. The PDCF is a complex consisting of a hardened building that will contain the plutonium processes and conventional buildings and structures that will house support personnel, systems, and equipment. The plutonium processing building will contain the following key systems: pit shipping, receiving, assay and storage; pit 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, Aiken, South Carolina.

In FY 2006, complete site preparation activities at SRS for the PDCF; complete 100 percent of the training module design to be built at SRS; and begin procuring equipment for the training module.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **99-D-143, MOX Fuel Fabrication Facility**	**360,273**	**365,087**	**338,565**

A MOX Fuel Fabrication Facility will provide the U.S. with the capability to convert plutonium oxide derived from surplus weapons-grade plutonium to MOX fuel suitable for use in the U.S. commercial nuclear reactors. Subsequent disposal of the spent fuel will be carried out in accordance with the Nuclear Waste Policy Act. In 1999, a contract was awarded to a private consortium, Duke Engineering Services, COGEMA, Inc. and Stone & Webster (DCS). The contract requires DCS to design a MOX facility to be built at SRS and to be licensed by the Nuclear Regulatory Commission. Options built into the contract allow for construction and operation of the MOX facility.

In FY 2006, complete site preparation activities and excavation of the foundation of the U.S. MOX facility. Construct concrete batch plant and begin concrete pouring. Procure initial construction materials.

Russian Surplus Fissile Materials Disposition	**55,218**	**63,493**	**64,000**

Licensing and construction of plutonium disposition facilities has been delayed due to an inability to resolve disagreements regarding liability protections for U.S. work performed in Russia. Despite this delay, the Administration remains committed to this important nonproliferation program and expects the liability issue to be resolved in FY 2005 to enable critical activities to proceed. Both the United States and Russia are planning to begin plutonium disposition site preparation activities in May 2005, with the start of full construction planned for FY 2006.

The Russian program will be funded by the U.S. and its international partners, including the United Kingdom, France, Japan, Italy, and Canada. The U.S. and its partners have committed the approximately $1 billion needed for construction of the Russian MOX facility and are finalizing arrangements for management of these funds.

▪ **Russian Plutonium Disposition (spent on Russian program not entirely in Russia)**	**24,500**	**33,469**	**36,100**
• **VVER-1000 Reactors**	**2,500**	**2,969**	**3,500**

This activity includes modifying Russian VVER-1000 nuclear reactors to use MOX fuel.

In FY 2006, continue preparation of a Balakovo Nuclear Station reactor for insertion of MOX fuel lead assemblies, develop detailed designs to support reactor modifications, and finalize the schedule to support insertion of lead assemblies.

• **BN-600 Reactor**	**2,500**	**3,500**	**3,500**

This effort involves converting the Russian BN-600 fast neutron breeder reactor into a net burner of plutonium.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

In FY 2006, continue reactor modifications needed to support replacement of the radial breeding blanket; complete design of the uranium core with a reflector/boron shield; complete physics characteristics of the core, and procure equipment to fabricate the stainless steel and boron shield that will replace the radial breeding blanket.

	FY 2004	FY 2005	FY 2006
• **Licensing, Regulation, & Other Program Support**...............................	**3,000**	**5,900**	**5,400**

The U.S. is assisting the Russian nuclear regulatory agency in developing a licensing process for the Russian MOX facility similar to that used by the NRC for the U.S. MOX facility. In addition, DOE is involved in the development of the plutonium fueled Gas Turbine – Modular Helium Reactor (GT-MHR) in Russia as a potential option for expanding the surplus weapons-grade plutonium disposition capacity above the initial 34 MT.

The FY 2006 request will continue support for licensing activities with the Russian nuclear regulatory agency for the insertion of lead assemblies into VVER-1000 reactors, for MOX fuel modifications for the BN-600, and for GT-MHR work in Russia, including fabrication and irradiation of fuel samples and fabrication of plutonium fuel samples.

	FY 2004	FY 2005	FY 2006
• **Packaging, Transportation, and Storage**...	**1,500**	**2,100**	**1,700**

This effort includes assessing the existing Russian infrastructure and defining needs for packaging, storage and transportation of plutonium-containing materials and spent MOX fuel, and support for waste treatment and disposal activities required to implement plutonium disposition in Russia.

The FY 2006 request will complete upgrades and re-certification of the VVER-1000 shipping cask, complete the first new BN-600 MOX fuel shipping cask and modify plutonium shipping containers to new Russian and International Atomic Energy Agency standards.

	FY 2004	FY 2005	FY 2006
• **Implementation of MOX Fuel Fabrication Facility Design**..............	**15,000**	**19,000**	**22,000**

This activity involves adapting the detailed design of the U.S. MOX facility for use in Russia and to support construction of the Russian MOX facility.

In FY 2006, funding will support development of design documentation required for licensing of the Russian MOX facility and begin construction.

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
▪ **U.S. Design, Engineering, and Support (funds spent in the U.S.)**	**30,718**	**30,024**	**27,900**
• **U.S. Technical Support**	**8,722**	**9,500**	**9,500**

This activity is for U.S. support to adapt the detailed design of the U.S. MOX facility for use in Russia and to begin construction of the Russian MOX facility.

The FY 2006 request will provide technical support for obtaining Russian regulatory permits and licenses to support the Russian MOX facility and to modify the Russian VVER-1000 and BN-600 reactors to irradiate MOX fuel; provide technical support for reactor modifications; assist in modifying and re-certifying plutonium shipping containers and MOX fuel shipping casks; complete the post irradiation examination of the last MOX fuel test bundle at the Canadian Chalk River research reactor, which was postponed one year due to operational problems at the reactor, and provide support for GT-MHR fuel development activities.

	FY 2004	FY 2005	FY 2006
• **Implementation of MOX Fuel Fabrication Facility Design**	**21,996**	**20,524**	**18,400**

The U.S. is assisting Russia in adapting the U.S. MOX facility design for use in Russia and constructing the Russian MOX facility.

In FY 2006, funding will support the development of design documentation required for licensing of the Russian MOX facility and will provide technical support for construction.

	FY 2004	FY 2005	FY 2006
Total, Fissile Materials Disposition	**644,693**	**613,060**	**653,065**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
U.S. Surplus Fissile Materials Disposition	
▪ **U.S. Plutonium Disposition**	
Reactor-Based Technologies: The increase is due to providing increased management oversight to support construction, and continuation of the planning for startup and operations of U.S. MOX facility.	+36,700
Pit Disassembly and Conversion: The increase is primarily due to continuing and expanding demonstration activities at Los Alamos National Laboratory and supporting waste management planning activities.	+14,164
▪ **U.S. Uranium Disposition**	
Highly Enriched Uranium: The increase is primarily due to additional work-scope in the Off-specification HEU Blend-Down Project. Specifically, preparation for shipments, TVA vendor receipt and storage, and TVA preparation for the processing of additional material (6 MT) that has been added to the project. Also contributing are increased costs for TVA uranium/aluminum ingot processing and planning for several other HEU disposition projects.	+17,500
▪ **Supporting Activities**	
Surplus Plutonium Storage: The increase is due to upgrading plutonium storage facilities at the Pantex Plant.	+6,600
Common Technologies: The decrease is due to reduced programmatic efforts in the development and technical analysis of monitoring and inspection procedures.	-900
Total, U.S. Fissile Materials Disposition (O&M)	+74,064
Construction	
99-D-141, Pit Disassembly and Conversion Facility: The decrease is due to construction delays caused by the liability issue with Russia and on level-funding of the Fissile Materials Disposition budget in the outyears.	-8,044
99-D-143, MOX Fuel Fabrication Facility: The decrease is due to construction delays caused by the liability issue with Russia and on level-funding of the Fissile Materials Disposition budget in the outyears.	-26,522
Total, Construction	-34,566

	FY 2006 vs. FY 2005 ($000)
Russian Surplus Fissile Materials Disposition	
▪ **Russian Fissile Materials Disposition**	
VEIR-1000 Reactors: The increase is due to developing the detailed designs to support reactor modifications to irradiate MOX fuel.	+531
Licensing, Regulation, & Other Program Support: The decrease is due to reduced workshops and training seminars for the Russian nuclear regulatory agency as the licensing process moves forward.	-500
Packaging, Storage and Transportation: The decrease is due to completing the upgrades and recertification of the VVER-1000 shipping cask.	-400
Implementation of MOX Fuel Fabrication Facility Design: The increase is due to the planned completion of adapting of the U.S. MOX facility design for use in Russia and transition to the construction phase in Russia. (Total funding for the construction will be predominantly provided by international contributors and from the FY 1999 Supplemental Appropriation for the Russian plutonium disposition program)...	+3,000
▪ **U.S. Design, Engineering, and Support (funds spent in the U.S.)**	
Implementation of MOX Fuel Fabrication Facility Design: The decrease is due to the planned transition from detailed design activities to follow-on activities related to the construction phase	-2,124
Total, Russian Fissile Materials Disposition...	+507
Total Funding Change, Fissile Materials Disposition..	**+40,005**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	5,542	5,708	5,879	+ 171	+ 3.0%
Capital Equipment	2,886	2,973	3,062	+ 89	+ 3.0%
Total, Capital Operating Expenses	8,428	8,681	8,941	+ 260	+ 3.0%

Construction Projects

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2004	FY 2005	FY 2006	Unappropriated Balance
99-D-141, Pit Disassembly Conversion Facility	TBD	104,364	42,520 [a]	32,044[b]	24,000	TBD
99-D-143, MOX Fabrication Facility	TBD	132,311	360,273 [c]	365,087 [d]	338,565	TBD
Total, Construction		236,675	402,793	397,131	362,565	TBD

[a] $29,000,000 was reprogrammed into 99-D-141 in FY 2004 increasing the appropriation from $13,520,000 to $42,520,000.

[b] The FY 2004 appropriation was reduced from $402,000,000 to $360,273,000 because of a reprogramming, and an Omnibus reprogramming, and general rescission in FY 2004.

[c] The FY 2005 appropriated amount of $32,300,000 was reduced by $256,000 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 $368,000,000 was reduced by $2,913,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

99-D-141, Pit Disassembly and Conversion Facility
Savannah River Site, Aiken, South Carolina

Significant Changes

- Delays over the issue of liability protection for United States (U.S.) work performed in Russia, coupled with the likelihood of levelized funding in the outyears, have caused NNSA to restructure the construction schedule for the Pit Disassembly and Conversion Facility (PDCF). As a result, construction of the PDCF is now scheduled to being 3rd quarter FY 2010. The revised construction schedule will be completed in FY 2005, followed by the completion of Project Performance Baseline.

- The Waste Solidification Building (WSB) detailed design is on hold pending evaluation of cost-effective alternatives involving the use of existing facilities to provide radioactive waste treatment capabilities at the Savannah River Site.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2000 Budget Request *(A-E and technical design only)*..............	2Q 1999	4Q 2001	2Q 2001	4Q 2004	[a]	[a]
FY 2001 Budget Request *(Preliminary Estimate)*..................	3Q 1999	1Q 2002	1Q 2002	3Q 2005	[a]	[a]
FY 2002 Budget Request *(Preliminary Estimate)*..................	3Q 1999	TBD	TBD	TBD	[a]	[a]
FY 2003 Budget Request *(Preliminary Estimate)*..................	3Q 1999	1Q 2004	TBD	TBD	[a]	[a]
FY 2004 Budget Request *(Preliminary Estimate)*..................	3Q 1999	2Q 2004	TBD	TBD	TBD [a]	TBD [a]
FY 2005 Budget Request *(Preliminary Estimate)*	3Q 1999	4Q 2005	2Q 2005	TBD [a]	TBD [a]	TBD [a]
FY 2006 Budget Request *(Preliminary Estimate)*	3Q 1999	4Q 2005	3Q 2010 [a]	TBD [a]	TBD [a]	TBD [a]

[a] Total Estimated Cost, Total Project Cost, and the schedule will be determined when a Project Performance Baseline is established in FY 2005.

2. Financial Schedule [a]

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	20,000	20,000	211
2000	18,751	18,751	13,449
2001	19,956	19,956	17,834
2002	11,000	11,000	22,377
2003	34,657[b]	34,657[b]	42,518
2004	13,520[c]	13,520	N/A
2004	29,000[d]	29,000	35,140
2005	32,044[e]	32,044	33,368
2006	24,000	24,000	24,000
2007	58,000	TBD	TBD
2008	60,000	TBD	TBD
2009	58,500	TBD	TBD
2010	148,500	TBD	TBD
2011	213,000	TBD	TBD
2012	220,100	TBD	TBD
2013	79,000	TBD	TBD

3. Project Description, Justification and Scope

Pit Disassembly and Conversion Facility (PDCF):

This project supports the NNSA strategic goal to detect, prevent, and reverse the proliferation of weapons of mass destruction and implements the NNSA strategy to protect or eliminate weapon-usable nuclear material. This project is comprised of two subprojects: 99-D-141-01, Pit Disassembly and Conversion Facility and 99-D-141-02, Waste Solidification Building. The PDCF provides the capability to disassemble surplus nuclear weapons pits and convert weapons-grade surplus plutonium metal to a form that can be fabricated into MOX fuel for irradiation in U.S.

[a] The out-year numbers are preliminary estimates. A Project Performance Baseline will be established in FY 2005.

[b] The original appropriation of $35,000,000 was reduced by $118,000 for use of prior year for the FY 2004 rescission included in P.L. 108-7 and $225,000 for the FY 2004 rescission included in P.L. 108-7.

[c] The FY 2004 appropriated amount has been adjusted for the FY 2004 Congressional Omnibus Appropriations Bill rescission of .59 percent.

[d] $29,000,000 was reprogrammed to the PDCF project, which increases the FY 2004 amount from $13,520,000 to $42,520,000.

[e] The FY 2005 appropriated amount of $32,300,000 was reduced by $256,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

commercial nuclear reactors. Once irradiated, the plutonium can no longer be readily used in nuclear weapons. The Waste Solidification Building provides the capability to treat waste from the PDCF and the MOX Fuel Fabrication Facility for ultimate disposal. Details of each subproject are provided.

Subproject 01-Pit Disassembly and Conversion Facility

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 be a material access area of approximately 115,000 square feet and contain the following key systems: pit receiving, assay and storage; pit plutonium metal extraction and conversion to oxide; and plutonium oxide packaging, assay, storage, and shipment. Also included are facilities for recovery, decontamination, and declassification of other special nuclear material and non-special nuclear material resulting from pit disassembly. The conventional buildings and structures, which do not contain any radioactive materials, requiring approximately 50,000 square feet, will contain offices, change rooms, a central control station, non-radioactive waste treatment, packaging, storage, and shipment systems. The Plutonium Processing Building (PPB) is equipped with storage for incoming pit materials and storage for finished oxide. The facility is planned to be operational for 7 1/2 years, after which it will be decontaminated and decommissioned over three to four years.

The subproject consists of the following: design and construction of the buildings and structures, including a training module for PDCF operators; design, procurement, installation, testing, and start-up of equipment to disassemble pits and convert the plutonium from pits to oxide form; and associated supporting equipment, components, and systems. The facility will meet Nuclear Regulatory Commission (NRC) licensing standards, but will not be licensed by the NRC.

Project Milestones:

FY 1999:	Initiate Design	3Q
FY 2005:	Complete Design	4Q
FY 2010	Initiate Physical Construction	3Q[a]
TBD:	Complete Physical Construction	TBD[a]

Subproject 02-aste Solidification Building (WSB) (on hold):

The Waste Solidification Building (WSB) scope consists of design, construction, procurement, installation, and startup testing of structures and equipment. The WSB is a non-reactor nuclear facility that will process radioactive liquid waste streams from the PDCF and MOX FFF 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 that is removed from the plutonium oxide during purification in the MOX FFF.

The WSB is to be constructed adjacent to the PDCF on the PDCF project site. The building is a 45,800 sq. foot, single story structure with a high bay made up of a combination of hardened (concrete) and conventional steel structures. A concrete-cell configuration is provided to process the high activity

[a] Schedules to be confirmed when the Project Performance Baseline is established.

waste stream through the building. The conventional steel structure is composed of steel siding on structural steel members houses the low activity processes and support services. In addition, a material handling/storage pad is provided to store solid wastes produced in the WSB pending shipment. The complete facility consists of 3,600 sq. feet of hardened structure, 23,000 sq. feet of conventional structure and a 23,000 sq. foot material handling/storage pad. The major pieces of process equipment are tanks, evaporators, and cementation equipment.

The detailed design is on hold pending evaluation of cost-effective alternatives, involving the use of existing facilities to provide radioactive waste treatment capabilities at the Savannah River Site. A decision is expected later in FY 2005.

Project Milestones: (on hold)

FY 2005: Initiate Final Design
TBD: Initiate Physical Construction
TBD: Complete Design
TBD: Complete Physical Construction

4. Details of Cost Estimate[a]

(dollars in thousands)

Subproject 01-Pit Disassembly and Conversion	Current Estimate	Previous Estimate
Preliminary and Final Design Costs (Design, Drawing, and Specification)	121,900	107,300
Design Management Cost	33,300	33,300
Total Design Phase	155,200	140,600
Contingencies	12,000	19,600
Design Phase	160,200	160,200
Construction and Procurement	TBD	TBD
Total Agency Requirement	TBD	TBD
Total Design Costs	TBD	160,200
Total Agency Requirement	TBD	160,200
Subproject 02-Waste Solidification Building (on hold)		
Preliminary and Final Design Costs (Design, Drawing, and Specification)	TBD	18,300
Design Management Cost	TBD	1,800
Project Management Cost	TBD	2,600
Total, Design Phase	TBD	22,700
Contingencies	TBD	3,000
Design Phase	TBD	25,700
Total Agency Requirement	TBD	25,700
Construction Management	TBD	TBD
Total Agency Requirement	TBD	25,700

[a] Amounts and schedules to be determined when the performance baseline is established.

5. Method of Performance

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 start of construction.

The WSB design service was procured through the Savannah River M&O contract. A purchase order for procurement of long-lead equipment for the WSB would be issued approximately one year prior to start of construction, if DOE decides to pursue this alternative.

It is anticipated that fixed-price construction contracts for the PDCF and the WSB will be awarded on the basis of competitive bidding.

6. Schedule of Project Funding [a]

PDCF Project Costs

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Design Costs						
Design	90,289	46,227	33,368	TBD	TBD	TBD
Total Design (Federal and Non-Federal)	90,289	46,227	33,368	TBD	TBD	TBD
Construction and Procurement	0	0	TBD	24,000	TBD	TBD
PDCF Total TEC	90,289	46,227	TBD	TBD	TBD	TBD
Other Project Costs	161,900	33,500	TBD	TBD	TBD	TBD
Total Project Costs	252,189	79,727	TBD	TBD	TBD	TBD

WSB Project Costs

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Design Costs						
Design	6,100	3,200	TBD	TBD	TBD	TBD
Total Design (Federal and Non-Federal)	6,100	3,200	TBD	TBD	TBD	TBD
Construction Management	0	0	TBD	TBD	TBD	TBD
Construction and Procurement	0	0	TBD	TBD	TBD	TBD
WSB Total TEC	6,100	3,200	TBD	TBD	TBD	TBD
Total, Other Project Costs	0	1,150	TBD	TBD	TBD	TBD
Total Project Costs	6,100	4,350	TBD	TBD	TBD	TBD
Total, Line Item Summary	161,900	34,650	TBD	TBD	TBD	TBD
Total, Other Project Costs	96,389	49,427	TBD	TBD	TBD	TBD
Total Project Costs (TEC)	258,289	84,077	TBD	TBD	TBD	TBD

[a] Amounts to be determined when the performance baseline is established.

7. Related Annual Funding Requirements [a]

	(FY 2009 dollars in thousands)	
	Current Estimate	Previous Estimate
Annual facility operating costs	TBD	TBD
Annual facility maintenance/repair costs	TBD	TBD
Programmatic operating expenses directly related to this facility	TBD	TBD
Utility costs	TBD	TBD
Total related annual funding (operating from FY 2009 through FY 2035)	TBD	TBD

[a] These figures will be determined when a Project Baseline is established.

99-D-143, Mixed Oxide Fuel Fabrication Facility, Savannah River Site, Aiken, South Carolina

Significant Changes

- The licensable design of the United States (U.S.) Mixed Oxide Fuel Fabrication (MOX FFF) was completed in 1Q FY 2005. However, delays over the issue of liability protection for U.S. work performed in Russia, coupled with the likelihood of levelized funding in the outyears, have caused NNSA to restructure the construction schedule. As a result, site preparation activities for MOX FFF will begin in 3Q FY 2005, with full construction to start in 3Q FY 2006. After the full revised schedule is completed in FY 2005, a Project Performance Baseline will be established.

- The costs for the MOX FFF have increased due to delays in construction as noted above and inadequate contractor performance for the design phase. Completion of 100% of the design of the MOX FFF prior to the start of construction is expected to minimize the number of costly changes later on in the project.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2000 Budget Request *(A-E and technical design only)*	2Q 1999	4Q 2001	1Q 2002	4Q 2005	[a]	[a]
FY 2001 Budget Request (*Preliminary Estimate*)............	2Q 1999	3Q 2002	4Q 2002	1Q 2006	[a]	[a]
FY 2002 Budget Request (*Preliminary Estimate*)............	2Q 1999	4Q 2002	2Q 2003	1Q 2007	[a]	[a]
FY 2003 Budget Request (*Preliminary Estimate*)............	2Q 1999	4Q 2003	2Q 2004	4Q 2007	[a]	[a]
FY 2004 Budget Request (*Preliminary Estimate)*............	2Q 1999	1Q 2004	2Q 2004	4Q 2007	1,622,000[a]	1,842,000[a]
FY 2005 Budget Request *(Preliminary Estimate)*............	2Q 1999	3Q 2004	3Q 2005	2Q 2009	TBD[a]	TBD[a]
FY 2006 Budget Request *(Current Estimate)*..................	2Q 1999	1Q 2005	3Q 2005[b]	TBD	TBD[a]	TBD[a]

[a] Total Estimated Cost and Total Project Cost estimates will be updated when Project Performance Baseline is established at Critical Decision 2 in FY 2005.

[b] The start of physical construction in 3Q FY 2005 refers to beginning site preparation activities for the MOX FFF. Full construction will begin in 3Q FY 2006.

2. Financial Schedule [a]

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
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[b]	92,088	81,709
2004	371,678[c]	371,678	93,457
2004	(11,405)[d]	(11,405)	(11,405)
2005	365,087[e]	220,000	145,000
2006	338,565	483,000	270,000
2007	309,126	TBD	TBD
2008	330,349	TBD	TBD
2009	337,038	TBD	TBD
2010	233,999	TBD	TBD

3. Project Description, Justification and Scope

Description and Scope

The MOX FFF will provide the U.S. with the capability to convert plutonium oxide derived from surplus weapons-grade plutonium stocks to MOX fuel suitable for use in U.S. commercial nuclear reactors. Subsequent disposal of the spent fuel will be carried out in accordance with the Nuclear Waste Policy Act. A contract was awarded to a private consortium, Duke Engineering Services, COGEMA, Inc. and Stone & Webster (DCS) on March 22, 1999, for the design of a MOX FFF to be built at the NNSA Savannah River Site (SRS) and licensed by the Nuclear Regulatory Commission (NRC).

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[a] All out-year numbers are preliminary estimates. A Project Performance Baseline will be established in FY 2005.

[b] The original appropriation of $92,687,000 was reduced by FY 2003 Rescission amount of $599,000 to $92,088,000.

[c] The original appropriation of $402,000,000 was reduced by FY 2004 Rescission amount of $2,206,000 and use of prior-year balance reduction of $28,116,000 to $371,678,000.

[d] A total of $11,405,000 was reprogrammed to project 99-D-141, Pit Disassembly and Conversion Facility, Savannah River Site, Aiken, South Carolina, for a total of $360,273,000 new budget authority.

[e] The FY 2005 appropriated amount of $368,000,000 was reduced by $2,913,000 by a rescission of 0.8 percent included in the Consolidated Appropriations Act, 2005 (P.L. 108-447).

The MOX FFF will produce completed MOX fuel assemblies for use in existing domestic, commercial nuclear power reactors. The MOX FFF will be designed to receive and process 3.5 metric tons (MT) per year of plutonium oxide powder from the Pit Disassembly and Conversion Facility (PDCF) and other selected inventories of weapons-grade plutonium oxide available within the NNSA complex and to accommodate storage for the incoming plutonium powder for two years. The MOX FFF is capable of expanding throughput to 4 MT per year to meet provisions in the U.S.-Russian agreement. The facility's operating life is expected to be approximately 12 years.

Design of the MOX FFF is based on processes and facilities currently being successfully operated in France, specifically the MELOX and La Hague facilities. The MOX fuel fabrication design will replicate the automated MELOX equipment and facility design and will incorporate lessons learned from operations and maintenance experiences. The MOX FFF will be designed and built to meet U.S. conventions, codes, standards, and regulatory requirements. After completing its mission, the facility will be deactivated, decontaminated, and decommissioned over three to four years.

The MOX FFF will require approximately 441,000 square feet to perform all material processing and fabrication operations to produce MOX fuel. Specific MOX FFF operations include the following: aqueous polishing (to purify plutonium before fabrication into fuel); blending and milling; pelletizing; sintering; grinding; fuel rod fabrication; fuel bundle assembly; storage of feed material, pellets, and fuel assemblies; a laboratory; and space for use by a monitoring and inspection team. The facility also requires 140,000 square feet of structures adjacent to the MOX process areas for secure shipping and receiving, material receipt, utilities, and technical support.

Cost and Schedule

The costs for the MOX Fuel Fabrication Facility design have increased beyond the current estimate of $171 million. The increase is the result of several factors. Principal among these has been a delay in the start of construction caused by the difficulty in resolving the liability issue with Russia. In order to avoid the significant cost and schedule penalties associated with laying off design engineers and rehiring them later, NNSA replanned the project by directing the completion of 100% of the licensable design for the MOX facility prior to the start of construction. Completing 100% of the licensable design prior to construction significantly exceeds normal commercial practice (~30%), but is expected to minimize the number of costly changes later on in the project, as well as increasing the confidence level associated with cost and schedule estimates.

Further adding to the increased costs has been unsatisfactory performance on the part of the contractor for the design phase. A comprehensive inspection by NNSA of the actual design revealed less progress than had been reported by the contractor.

To address the deficiency, NNSA instituted a more stringent change control process, froze all hiring without specific NNSA approval, and established a federal on-site task force to monitor project progress on a daily basis and to identify, prioritize and implement remedial actions. In addition, NNSA began carefully monitoring and controlling the contractor effort in order to complete the individual design packages and bring the design effort to closure.

FY 2005 and FY 2006 Description of Activities

FY 2005 activities include completion of the licensable design, which was accomplished in 1Q FY 2005, which supports submittal of the license application to the NRC in 3Q FY 2005. Initial site preparation activities to begin in 3Q FY 2005 include land clearing and grading, temporary road construction, site support utilities, establishment of temporary construction services, and excavation of the foundation. Equipment procurement will begin and design efforts for equipment and software will continue. The MOX FFF structural subcontract will be awarded by 4Q FY 2005.

In FY 2006, site preparation activities will be completed and full construction will begin. The concrete batch plant will be completed and pouring of the concrete foundation will begin, as will installation of the mechanical and electrical systems. Initial equipment and materials will be delivered to the site and equipment procurement and design efforts for equipment and software will continue. In addition, the budget request will support staffing to meet increasing project and construction management requirement, and to continue Title III engineering services to support construction.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	TBD	163,300
Contingencies TBD of TEC)	TBD	8,000
Total, Design Phase (TBD% of TEC)	242,939	171,300
Construction Phase		
Improvements to Land	TBD	TBD
Buildings	TBD	TBD
Other Structures	TBD	TBD
Utilities	TBD	TBD
Standard Equipment	TBD	TBD
Procurement Engineering	TBD	TBD
Removal less salvage	TBD	TBD
Inspection, design and project liaison, testing, checkout and acceptance (0% of TEC)	TBD	TBD
Construction Management (0.0% of TEC)	TBD	TBD
Project Management (0.0x% of TEC)	TBD	TBD
Total, Construction Costs (0.0% of TEC)	TBD	TBD
Contingencies	TBD	TBD
Design Phase (0.0% of TEC)	TBD	TBD
Construction Phase (0.0x% of TEC)	TBD	TBD
Total, Contingencies (0.0% of TEC)	TBD	TBD
Total, Line Item Costs (TEC)	TBD	TBD

5. Method of Performance

The procurement strategy for the MOX FFF involves awarding a base contract for the design and licensing together with three subsequent contract options for construction, operations and deactivation. The base contract was awarded on March 22, 1999 to the DCS consortium. This base contract also includes fuel qualification activities and reactor license modifications required to use MOX fuel.

In FY 2002, DOE modified its contracting 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 includes construction of the MOX FFF and covers all procurement, equipment fabrication, actual construction and 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 FFF.

It is expected that an incentive contract with DCS will be the most appropriate and cost beneficial instrument for the construction work. Actual physical construction will be through fixed-price subcontracts to the extent practical, with a cost-type contract for construction management services. The MOX FFF will be Government-owned and contractor-operated under an incentivized prime contract. It is expected that during the facility operating phase of the contract, operating costs will be partially offset by the value of the MOX fuel, which will displace the low-enriched uranium (LEU) fuel that the utility would have otherwise purchased.

6. Schedule of Project Funding [a] [b]

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Licensable Design Cost						
Design	127,199	93,457	TBD	TBD	TBD	TBD
Total licensable design (Federal and Non-Federal)	127,199	93,457	TBD	TBD	TBD	TBD
Equipment procurement/engineering and site preparation	97,200	0	TBD	TBD	TBD	TBD
Construction, procurement, and cold startup	0	0	TBD	TBD	TBD	TBD
Total Facility Costs	224,399	93,457	145,000	270,000	TBD	TBD
Other Project Cost						
Other project related costs (licensing and technical support)	50,200	18,200	TBD	TBD	TBD	TBD
Total other project cost	50,200	18,200	TBD	TBD	TBD	TBD
Total project cost	274,400	114,200	TBD	TBD	TBD	TBD

[a] All out-year numbers are preliminary estimates. A Project Performance Baseline will be established in FY 2005.

[b] The future amounts are projections and will be determined when a Project Performance Baseline is established in FY 2005.

7. Related Annual Funding Requirements

	(Dollars in thousands)	
	Current Estimate	Previous Estimate
Annual facility operating costs	100,500 [a]	N/A

[a] 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 2004	FY 2005	FY 2006	$ Change	% Change
Global Threat Reduction Initiative [a]					
Reduced Enrichment for Research and Test Reactors (RERTR)	8,860	18,813	24,732	+ 5,919	+ 31.5%
Russian Research Reactor Fuel Return (RRRFR)	9,691	15,246	14,703	- 543	- 3.6%
Kazakhstan Spent Fuel	8,270	1,984	8,000	+ 6,016	+ 303.2%
DPRK Spent Fuel	25	0	0	+ 0	+ 0.0%
HEU Research Reactor Fuel Purchase	1,000	9,920	0	- 9,920	- 100.0%
U. S. Foreign Research Reactor Spent Nuclear Fuel Return (FRRSNF)	6,115	4,500	8,712	+ 4,212	+ 93.6%
US Radiological Threat Reduction (USRTR)	5,750	7,540	12,750	+ 5,210	+ 69.1%
International Radiological Threat Reduction (IRTR)	29,753	24,800	24,078	- 722	- 2.9%
Emerging Threats	0	11,000	5,000	- 6,000	- 54.5%
Total, Global Threat Reduction Initiative	69,464	93,803	97,975	+ 4,172	+ 4.4%

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Global Threat Reduction Initiative	97,975	97,655	102,334	101,387	101,368	500,719

Description

The Global Threat Reduction Initiative (GTRI) mission is to identify, secure, remove and/or facilitate the disposition of high-risk, vulnerable nuclear and radiological materials and equipment around the world that pose a potential threat to the United States and the international community.

[a] Includes comparability adjustments of +$69,464,000 in FY 2004 (+$23,8888,000 from Nonproliferation and International Security; +$29,753,000 from International Nuclear Materials Protection and Cooperation; +$3,958,000 from International Nuclear Safety and Cooperation; +$5,750,000 from Off-Site Source Recovery Program; and +$6,115,000 from Environmental Management for U.S. Foreign Research Reactor Spent Nuclear Fuel Return) and +$93,803,000 in FY 2005 (+$61,463,000 from Nonproliferation and International Security; +$24,800,000 from International Nuclear Materials Protection and Cooperation; and +$7,540,000 from Off-Site Source Recovery Project).

Benefits to Program Goal 02.64.00.00 Global Threat Reduction Initiative
Within the Global Threat Reduction Initiative (GTRI) program, 8 subprograms each make unique contributions to Program Goal 02.64.00.00.

The Reduced Enrichment for Research and Test Reactors (RERTR) subprogram prevents the proliferation of nuclear weapons by minimizing the use of high-enriched uranium (HEU) in civil commerce worldwide. It develops technologies needed to substitute low enriched uranium for HEU in research and test reactors, and provides assistance in reactor conversion activities.

The Russian Research Reactor Fuel Return (RRRFR) subprogram prevents proliferation of nuclear weapons by repatriating to Russia HEU fuel from Soviet-/Russian-supplied research reactors throughout the world.

The Kazakhstan Spent Fuel subprogram prevents the proliferation of nuclear weapons by securing and safely storing the nearly three tons of weapons-grade plutonium in the BN-350 spent fuel, enough material for hundreds of nuclear weapons.

The HEU Research Reactor Fuel Purchase subprogram purchases about 160 kilograms per year of 93 percent U-235 material to be used to manufacture fuel for four U.S. HEU-fueled research reactors.

The U.S. Foreign Research Reactor Spent Fuel Return (FRRSNF) subprogram supports the implementation of the U.S. HEU minimization policy by accepting certain types of U.S.-origin spent nuclear fuel and target material containing both high-enriched and low-enriched uranium.

The United States Radiological Threat Reduction (USRTR) subprogram (previously the Off-site Source Recovery Project) recovers and stores excess and unwanted sealed sources to reduce the threat of such sources being used in radiological dispersal devices.

The International Radiological Threat Reduction (IRTR) subprogram, formerly the Radiological Dispersion Devices (RDD), identifies and pursues actions that can be taken to reduce the threat of a radiological attack against the United States.

The Emerging Threats subprogram identifies, recovers, and secures significant vulnerable nuclear materials, not covered by existing programs. Highest priority is given to special nuclear material located in countries of proliferation concern.

Major FY 2004 Achievements
Reduced Enrichment for Research and Test Reactors

- Accelerated work to develop higher-density LEU fuels in order to enable conversion of remaining targeted research reactors.

- Completed feasibility study for conversion of reactors in Libya, Vietnam, and Texas A&M.

Russian Research Reactor Fuel Return

- Completed shipments of 17 kilograms of fresh HEU fuel from Bulgaria and about 17 kilograms of fresh HEU from Libya and 3 kilograms of fresh HEU from Uzbekistan to the Russian Federation.
- Signed U.S./Russian Federation Government-to-Government Agreement concerning cooperation for the return of Soviet- or Russian- origin research reactor fuel to Russia.
- Signed U.S./Romania implementation agreement for spent fuel return.

U.S. Foreign Research Reactor Spent Nuclear Fuel Return

- Repatriated to the United States 307 fuel assemblies from Japan, 293 fuel assemblies from Indonesia, and 126 fuel assemblies from Germany.

U.S. Radiological Threat Reduction

- Recovered over 10,000 sources since 1997.
- Exceeded Congressional goal of recovering 5,000 sources in 18 months from October 2002 to March 2004.

International Radiological Threat Reduction

- Disposed of 38 Civilian radioisotope thermoelectric generators (RTGs).
- Security upgrades are currently in-progress at 149 facilities.
- Completed security enhancements at 69 facilities (61 were completed in FY 2004).

Budget Structure Change

All of the NNSA and DOE programs related to nuclear materials removal and radioactive source security and recovery have been consolidated into one GPRA unit to support the new Global Threat Reduction Initiative (GTRI) recently announced by the Secretary of Energy. GTRI includes activities transferred from the Office of Environmental Management, the Nonproliferation and International Security and International Nuclear Materials Protection and Cooperation programs, and the Off-site Source Recovery Project.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Results	FY 2003 Results
Completed canning of BN-350 fast reactor spent fuel. (MET GOAL)	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)

Annual Performance Results and Targets

(R = Results; T = Targets)

Performance Indicators	FY 2003 Results	FY 2004 Results	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative number of targeted research/test reactors converted from HEU to LEU fuel	R: 39	R: 39 T: 41	T: 44	T: 48	T: 53	T: 58	T: 62	T: 68	BY 2014, convert 91 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	N/A	R: 99	T: 175	T: 305	T: 465	T: 700	T: 1,200	T: 1,370	By 2010, repatriate 1,370 kilograms of HEU.
Cumulative number of fuel assemblies containing U.S.-origin spent fuel returned from foreign research reactors	N/A	R: 6,334	T: 6,693	T: 7,165	T: 8,047	T: 8,839	T: 9,396	TBD	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 MEASURE)	R: 7,322	*R: 10,022* *T: 8,500*	*T: 11,500*	*T: 13,750*	*T: 16,000*	*T: 18,250*	*T: 21,250*	*T: 24,750*	*By 2010, recover 24,750 sources (interim target).*
Cumulative number of high priority sites with vulnerable radiological material secured.	R: 8	R: 69 T: 35	T: 174	T: 299	T: 424	T: 549	T: 674	T: 799	By 2014, secure 1,175 high-priority sites with vulnerable radiological material (interim target).

* DNN is responsible for the international portion of the RERTR program. DNN will convert all international research reactors. FY 2006 funding will provide for the conversion of four international research reactors.

** This program was originally scheduled to end in 2009. On November 22, 2004, the Department extended the fuel acceptance deadline by 10 years. The program has not yet developed targets for 2010 and beyond.

Detailed Justification

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006
Reduced Enrichment for Research and Test Reactors (RERTR)	**8,860**	**18,813**	**24,732**

The Reduced Enrichment Research and Test Reactor (RERTR) program develops the technologies needed to substitute low enriched uranium for HEU in research and test reactors, which use nearly all of the HEU in civil programs, without significant penalties in performance, economy, or safety. The base program will concentrate on development of new fuel types. In FY 2006, the program will continue to accelerate the development of LEU fuel for HEU-fueled research reactors and convert four international research reactors. Each reactor will be converted as soon as appropriate, as LEU fuel becomes available. In addition, there are 28 Russian-supplied research reactors targeted for conversion by the program. RERTR funding is being provided for the development of appropriate LEU fuels to assist conversion of foreign HEU-fueled research reactors to LEU fuel. Included in the base, the program develops LEU replacement fuel for HEU-fueled research reactors and purchase LEU core-loads to provide incentives for reactor conversion packages.

Defense Nuclear Nonproliferation (DNN) is responsible for the international portion of the RERTR program. DNN will convert all international research reactors. FY 2006 funding will provide for the conversion of four international research reactors.

Russian Research Reactor Fuel Return (RRRFR)	**9,691**	**15,246**	**14,703**

The RRRFR program eliminates stockpiles of Russian-origin HEU by repatriating Russion-origin HEU from Soviet-/Russian-supplied research reactors throughout the world and by assisting eligible countries to convert their research reactors from HEU to LEU fuel upon availability and qualification. In FY 2006, the program will continue to repatriate Russion-origin HEU, accelerate the procurement of additional high-capacity spent fuel casks, and introduce air shipment spent fuel operations.

Kazakhstan Spent Fuel Disposition	**8,270**	**1,984**	**8,000**

Under the Kazakhstan Spent Fuel Disposition program, the spent fuel assemblies have been stabilized, packaged in theft resistant canisters, and placed under IAEA safeguards. The program also seeks to provide long-term storage of the spent fuel in dual-use cask dry storage and provide physical protection support for all operations. The United States 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 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 completion date for the storage of material will be accelerated by two years from 2011 to 2009.

Democratic People's Republic of Korea (DPRK)	**25**	**0**	**0**

Until 2002, the Democratic People's Republic of Korea (DPRK) Spent Fuel Disposition program supported the disposition of weapons-grade plutonium-bearing spent fuel in stabilization canisters under continuous International Atomic Energy Agency monitoring in North Korea. This program worked for eight years to reverse and prevent further proliferation, and to reduce the immediate threat to U.S. national security interests posed by plutonium generated in DPRK nuclear weapons material production facilities. However, due to North Korea's revelation in October 2002 of a covert enrichment program, and its decision to quit the Non-Proliferation Treaty and to abandon IAEA safeguards, all work under this program has stopped.

(dollars in thousands)

	FY 2004	FY 2005	FY 2006
HEU Research Reactor Fuel Purchase	**1,000**	**9,920**	**0**

The HEU Research Reactor Fuel Purchase program will purchase about 160 kilograms per year of Russian HEU (93 percent U-235) to be used to manufacture fuel for four U.S. HEU-fueled research reactors (one DOE, one NIST, and two university reactors). The Russian HEU would be shipped to the Y-12 National Security Complex (Y-12) for interim storage pending shipment to the U.S. fuel manufacturer. The majority of the program funds will be provided to the Russian Federation for HEU purchase. Project management will be supported through Oak Ridge, Y-12, and BWXT contractor. While it is U.S. policy to minimize civil HEU use, HEU fuel is required for about the next 10 years, until LEU fuel is developed for these research reactors under the DOE Reduced Enrichment for Research and Test Reactors (RERTR) program. HEU purchases for research reactor fuel will be coordinated with the RERTR program and discontinued once reactors are converted. The program will seek Russian agreement on price and transportation in FY 2005, followed by initial purchase and delivery late in FY 2005.

	FY 2004	FY 2005	FY 2006
U.S. Foreign Research Reactor Spent Nuclear Fuel Return (FRRSNF)	**6,115**	**4,500**	**8,712**

The U.S. Foreign Research Reactor Spent Nuclear Fuel Return (FRRSNF) program prevents proliferation of nuclear material by repatriating U.S.-origin spent highly enriched uranium (HEU) fuel from foreign research reactors around the world. This program works to eliminate stockpiles of U.S.-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 (MTs) of material is eligible for acceptance, about 5MTs of which contain HEU. To date, 31 shipments of material containing nearly 6,445 spent nuclear fuel assemblies have been returned safely to the United States where they will be stored. The accelerated schedule will allow for the return of U.S.-origin spent nuclear fuel from research reactors faster than originally planned.

	FY 2004	FY 2005	FY 2006
U.S. Radiological Threat Reduction.............................	**5,750**	**7,540**	**12,750**

The U.S. Radiological Threat Reduction (USRTR) (previously the Off-site Source Recovery Project) recovers and stores excess and unwanted sealed sources, primarily domestic U.S. sources in the possession of licensees, where such sources are of concern for use in a radiological dispersal device and excess to the licensees' needs. In addition, the program also addresses sources that exceed the limits for commercial disposal. Sources that exceed the limits for commercial disposal are considered Greater Than Class C (GTCC) and are a Department of Energy responsibility under P.L. 99-240.

The program recovers excess and unwanted sources possessed by state and U.S. Nuclear Regulatory

(dollars in thousands)

Commission licensees. It has worked closely with the U.S. Nuclear Regulatory Commission (NRC) to develop a source recovery prioritization system. The USRTR 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, and the conditions under which sources must be recovered all vary with each recovery. The USRTR also recovers Department of Energy-owned sources in the possession of domestic U.S. 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 U.S., including on-site support for recovery, equipment, packaging, transportation, and receipt and acceptance of sources for long-term management by USRTR.

	FY 2004	FY 2005	FY 2006
International Radiological Threat Reduction	**29,753**	**24,800**	**24,078**

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 United States. 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; additional response force upgrades if necessary; and the consolidation and securing of radioisotope thermoelectric generators (RTGs). In FY 2006, the IRTR program plans to complete the installation of equipment to secure radiological materials at an additional 125 IRTR sites (increasing the total number of sites secured to 299).

Working with the IAEA's Office of Nuclear Security, IRTR will support a globalization initiative between the U.S., the IAEA, and other member states to secure vulnerable high-risk radioactive sources. These efforts will focus on developing countries worldwide where the security of radioactive sources needs improvement or is non-existent. The IAEA's Office of Nuclear Security will be tasked to provide the NNSA with the necessary technical, management and administrative assistance to locate, consolidate, transport, secure in storage, or securely dispose of these high risk sources to reduce the risk of them being used to perpetrate malicious acts. In addition to security enhancement support, the IAEA will support the Program through regulatory infrastructure development efforts and will assist the Program in finding abandoned sources outside regulatory control.

	FY 2004	FY 2005	FY 2006
Emerging Threats...	**0**	**11,000**	**5,000**

The Emerging Threats program identifies, secures, recovers, or facilitates disposal of high risk, vulnerable nuclear material (primarily those not included in any existing U.S. take-back or MPC&A

	(dollars in thousands)		
	FY 2004	FY 2005	FY 2006

programs), located in 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 and nuclear equipment will be accorded a lower priority. Materials under consideration include, but are not limited to, that located at enrichment plants, conversion facilities, reprocessing plants, research reactor sites, fuel fabrication plants, nuclear power plants, and temporary storage facilities. This also includes plutonium and HEU at hot cells previously used for both research reactor and power reactor fuel research and testing, but that are now in excess of requirements. In FY 2006, the program will continue ongoing preparation and begin operations to identify, secure, recover, or facilitate the disposal of high-risk, vulnerable nuclear and other radiological material and equipment which are not addressed in other sections of the budget. The GTRI must be positioned to act immediately should the situation arise where nuclear materials need to be secured/recovered (example is Libya materials).

Total, Global Threat Reduction Initiative	**69,464**	**93,803**	**97,975**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
▪ **Reduced Enrichment for Research and Test Reactors**	+ 5,919
Increase is due to the accelerated development of LEU replacement fuel for HEU-fueled research reactors and for purchase of LEU core-loads to provide incentives for reactor conversion packages**.**	
▪ .. **Russian Research Reactor Fuel Return**	- 543
Decrease is due to efficiencies gained in the acceleration of RRRFR by procuring additional high capacity spent fuel casks for shipment of Russian-origin spent fuel to Russia; and introducing air shipment spent fuel operations.	
▪ **Kazakhstan Spent Fuel**..	+ 6,016
Increase enables the program to accelerate the completion of storage of material by two years from 2011 to 2009.	
▪ **HEU Research Reactor Fuel Purchase**	- 9,920
Decrease reflects delays in reaching agreement with Russia on price and transportation of HEU and delivery of initial material purchased.	
▪ **U.S. Foreign Research Reactor Spent Nuclear Fuel (FRRSNF)**.........................	+ 4,212
Increase reflects the estimated cost of returning 472 spent fuel assemblies, funding of base program operations, and funding for other than-high-income shipments.	
▪ **U.S. Radiological Threat Reduction**	+ 5,210
Increase is due to expanding the scope of the program up to ten isotopes of concern, adding Cobalt-60, Iridium-192, Radium-226, and Californium-252, and increasing the program capabilities for a broader range of Cesium-137 and Strontium-90 sources. For these isotopes, the increased funding provides for assessing recovery risks and needs and developing necessary infrastructure to recover sources. Provides for responding to emerging critical national security recovery actions identified by other agencies. Provides for integrating U.S. Radiological Threat Reduction efforts with International Radiological Threat Reduction efforts to ensure global coverage and ensure there are no gaps.	
Additionally, beginning in FY 2006, funding is provided to support, in cooperation with appropriate Federal agencies, technical assistance for security enhancements to in-use high risk sources in the United States.	

	FY 2006 vs. FY 2005 ($000)
▪ **International Radiological Threat Reduction**	- 722
Decrease is due to lower cost to complete the installation of equipment to secure radiological materials at an additional 50 IRTR sites.	
▪ **Emerging Threats**	- 6,000
Decrease reflects the completion of the initial advanced planning and preparatory work in FY 2005 (some of which is nonrecurring) and the continuation of planning and operational efforts in FY 2006 to support the removal of nuclear weapons-usable material from several vulnerable sites around the world.	
Total Funding Change, Global Threat Reduction Initiatives	**+ 4,172**

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 [$801,436,800] $786,000,000, to remain available until expended.

Explanation of Change

Change from the language proposed in FY 2005 consists of a change to the requested funding amount.

Naval Reactors

Funding Profile by Activity

(dollars in thousands)

	FY 2004 [a] Comparable Appropriation	FY 2005 Original Appropriation	FY 2005 [b] Adjustments	FY 2005 Comparable Appropriation	FY 2006 Request
Naval Reactors Development (NRD)					
Operations and Maintenance..........................	718,836	771,211	- 6,170	765,041	738,800
Program Direction..	26,552	29,500	- 236	29,264	30,300
Construction..	18,490	7,189	- 57	7,132	16,900
Subtotal, Naval Reactors Development...........	763,878	807,900	- 6,463	801,437	786,000
Less Use of prior year balances.....................	- 2,006	0	0	0	0
Subtotal Adjustments......................................	0	0	0	0	0
Total, Naval Reactors....................................	761,872	807,900	- 6,463	801,437	786,000

FYNSP Schedule

(dollars in thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FYNSP Total
Naval Reactors.................	786,000	803,165	820,722	838,681	857,052	4,105,620

Public Law Authorization:
Pub. L. 83-703, “Atomic Energy Act of 1954”
"Executive Order 12344 (42 U.S.C. 7158), “Naval Nuclear Propulsion Program”
Pub. 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

[a] Reflects rescission of $4,522,000 as directed in the Energy and Water Development Appropriation Act, (Public Law 108-137).

[b] Reflects 0.8 percent rescission of $6,463,000 as directed in the Consolidated Appropriations Act (Public Law 108-447).

FY 2004 Execution

(dollars in thousands)

	FY 2004 Approp	Use of Prior Year Balances	Rescission	Reprogramming	Comp Adjustment	Current FY 2004 Comparable
Naval Reactors						
NR O&M................................	723,100	0	- 4,264	0	0	718,836
NR Program Direction............	26,700	0	- 148	0	0	26,552
Construction...........................	18,600	0	- 110	0	0	18,490
Subtotal, Naval Reactors........	768,400	0	- 4,522	0	0	763,878
Use of Prior Year Balances....	0	-2,000	0	-6	0	-2,006
Total, Naval Reactors.............	768,400	-2,000	-4,522	-6	0	761,872

FY 2005 Execution

(dollars in thousands)

	FY 2005 Enacted Approp	Use of Prior Year Balance	Rescission	Reprogramming	Comp Adjustments	Current FY 2005 Comp
Naval Reactors O&M.........................	771,211	0	-6,170	0	0	765,041
Construction......................................	7,189	0	-57	0	0	7,132
NR Program Direction	29,500	0	-236	0	0	29,264
Subtotal, Naval Reactors....................	807,900	0	-6,463	0	0	801,437
Use of prior year balances	0	0	0	0	0	0
Total, Naval Reactors.........................	807,900	0	-6,463	0	0	801,437

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.

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 103 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 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 warfighting 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 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 do one or more of the following: extend ship life by as much as 30 percent; increase operating hours per operating year; or allow operation at a higher average power during ship operations. 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 2009.

Annual Performance Results and Targets

FY 2001 Results	**FY 2002 Results**	FY 2003 Results
Ensure the safety, performance, reliability, and service-life of operating reactors for uninterrupted support of fleet demands, including maintaining utilization factors of at least 90 percent for test reactor plants, and 121 million miles steamed for nuclear-powered ships. (MET GOAL)	Naval Reactors safely steamed over two million miles in nuclear–powered ships. (MET GOAL) Naval Reactors exceeded a 90% utilization factor for operation of test reactor plants. (MET GOAL)	Completed safe steaming of approximately two million miles in nuclear-powered ships. (MET GOAL) Achieved a utilization factor of at least 90% for operation of test reactor plants. (MET GOAL)
Develop new technologies, methods and materials to support reactor plant design, including the next generation submarine reactor, which will be 93 percent complete by the end of FY 2001 and initiate detailed design efforts on a reactor plant for the next generation aircraft carrier. (MET GOAL)	Next-generation submarine reactor design 96% complete. (MET GOAL) Next-generation aircraft carrier reactor design 40% complete. (MET GOAL)	Next-generation submarine reactor design 99% complete. (MET GOAL) Next-generation aircraft carrier reactor plant design 55% complete. (MET GOAL)
Maintain outstanding environmental performance by ensuring that no personnel exceed Federal limits for radiation exposure, and no significant findings result from environmental inspections by State and Federal regulators. (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)	No personnel exceeded 5 REM/year. (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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	Endpoint Target
Cumulative miles, in millions, of safe reactor plant operation supporting National security requirements.	R: 128	R: 130 T: 130	T: 132	T: 134	T: 136	T: 138	T: 140	T: 142	By 2015, complete safe steaming of approximately 150 million miles in nuclear-powered ships. (Interim Target)
Annual utilization factor for operation of test reactor plants. (EFFICIENCY MEASURE)	R: 93.2%	R: 96.7% 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.
Cumulative percentage of completion on the Transformational Technology Core (TTC) reactor plant design.	N/A	R: 10%	T: 23%	T: 37%	T: 46%	T: 59%	T: 70%	T: 75%	By 2015, deliver the first TTC core.
Cumulative percentage of completion on the next-generation aircraft carrier reactor plant design.	R: 55%	R: 60% T: 60%	T: 70%	T: 75%	T: 80%	T: 85%	T: 90%	T: 93%	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.	R: 99%	R: 100% T: 100%	N/A	N/A	N/A	N/A	N/A	N/A	By 2004, the next-generation submarine will go to sea.
Annual percentage of Program operations that have no adverse impact on human health or the quality of the environment.	R: 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.

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.

Funding by General and Program Goal

(dollars in thousands)

	FY 2004 Approp	FY 2005 Approp.	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
General Goal 3: NAVAL REACTORS							
Total, Program Goal 3-49-00-00............................	761,872	801,437	786,000	803,165	820,722	838,681	857,052

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 $704,900 in FY 2005 and $712,700 in FY 2006.

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.

Naval Reactors Development – Operations and Maintenance

Funding Schedule by Activity

Naval Reactors Development	FY 2004 [a]	FY 2005 [b]	FY 2006	$ Change	% Change
	(dollars in thousands)				
Plant Technology	130,625	154,256	143,800	-10,456	-6.8%
Reactor Technology & Analysis	233,615	230,243	213,900	-16,343	-7.1%
Materials Development & Verification	136,888	154,256	145,100	-9,156	-5.9%
Evaluation and Servicing	169,693	172,906	183,400	+10,494	+6.1%
Facility Operations	48,015	53,380	52,600	-780	-1.5%
Total, Naval Reactors Development O&M	718,836	765,041	738,800	-26,241	-3.4%

[a] Reflects rescission of $4,264,000 as directed in the Energy and Water Development Appropriation Act, (Public Law 108-137).

[b] Reflects 0.8 percent rescission of $6,170,000 as directed in the Consolidated Appropriations Act (Public Law 108-447).

Detailed Justification

Plant Technology

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.

Funding Schedule

	FY 2004	FY 2005	FY 2006
Plant Technology	130,625	154,256	143,800

Verifiable Supporting Activities:

FY 2004 Implement use of advanced reactor coolant chemistry analysis methods in OHIO- and NIMITZ-class ships to improve the quality of data and reduce operator training and operational requirements.

Pursue steam generator improvements required to meet the increased energy performance of TTC.

Perform additional evaluations and testing of emergent alternate energy conversion concepts and demonstrate larger scale advanced energy conversion systems achieving the higher efficiencies required to support future cores.

Perform development work on improvements to plant components to enable performance enhancements commensurate with the increased energy performance of the TTC.

Pursue alternate steam generator concepts for future submarine applications.

Design, develop and qualify field changes to address emergent needs for instrumentation and control (I&C) equipment changes and parts obsolescence in order to improve reliability of existing hardware in operating plants.

Continue to monitor and evaluate LOS ANGELES- and OHIO-class steam generators through the use of corrosion testing to reduce cost and frequency of inspections and cleaning, as well as to prolong steam generator service life.

Continue design, testing, and qualification of power conversion technology and solid state motor drives with advanced control techniques to improve efficiency, maintenance, and performance.

Complete design of the CVN 21 main coolant pump so that it incorporates the latest technologies and is affordable.

Complete design of the CVN 21 steam generator and pressurizer incorporating the latest technologies while remaining affordable. Initiate shipset fabrication.

Plant Technology

FY 2005 Initiate design concepts for a replacement solid state or vacuum circuit breaker technology providing circuit breakers with no moving parts and improved reliability.

Initiate OHIO-class generic instrumentation and control preproduction equipment fabrication. Start evaluation testing to identify potential problems before design finalization and minimize development costs

Initiate preliminary design activities necessary to increase VIRGINIA plant components to support TTC performance.

Initiate and complete design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Develop larger scale integrated thermophotovoltaic system with high energy conversion efficiency and power density.

Develop modifications to I&C systems to support TTC goals for an extended core life.

Evaluate, develop, and test new features and materials in various VIRGINIA reactor coolant pump components to improve motor and hydraulic efficiency.

Continue to monitor and evaluate 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.

Continue engineering qualification testing of the CVN 21 reactor coolant pump that will maximize pump reliability and efficiency at the plant operating conditions.

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 to pursue alternate steam generator concepts for future submarine applications.

Complete design validation work to improve the S9G new concept steam generator design necessary to support a longer lifetime associated with TTC.

Plant Technology

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.

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 to evaluate I&C requirements supporting TTC concepts for extended core life.

Continue work on high performance thermophotovoltaic power conversion integrated systems and 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.

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.

Detailed Justification

Reactor Technology and Analysis

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.

Funding Schedule

	FY 2004	FY 2005	FY 2006
Reactor Technology and Analysis	233,615	230,243	213,900

Verifiable Supporting Activities:

FY 2004 Initiate hydraulic, flow-induced vibration and shock test programs for the A1B fuel cell that validate the design and improve hydraulic and structural design methods.

Initiate thermal/structural analysis for the TTC pressure vessel.

Initiate development of an A1B core design utilizing lower enriched fuel for use in CVN 21 follow ship.

Develop physics data required to support the conceptual design phase for TTC.

Pursue integration of core performance analysis codes to be applied to development of the TTC.

Perform core thermal-hydraulic analysis evaluations to extend high power capability to the longer lifetimes and higher power gradients demanded by TTC.

Perform penetration shield design studies and support validation of the shipyard CVN 21 penetration shield analysis.

Conduct life and shock and vibration tests on the A1B Control Drive Mechanism (CDM) Lead Units and resolve design issues experienced during CDM prototype fabrication.

Extend thermal-hydraulic analysis methodology to apply advanced codes to flow oscillation thermal-hydraulic analyses of A1B that are needed to enable a simplified, lower cost plant concept.

Continue to construct additional fuel models, test specimens, and core structural components with new reactor manufacturing techniques to reduce fuel costs and evaluate new inspection technologies to improve inspection efficiency and reduce reliance on destructive tests.

Continue detailed A1B reactor engineering analyses and design reviews and complete closure head and core basket final engineering certification.

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.

Complete initial TTC fuel element manufacturing development utilizing advanced clad and fuel materials to determine whether to commit to a full-scale demonstration core in a VIRGINIA-class ship.

Complete the VIRGINIA critical test program ensuring that the design is adequate for normal, abnormal, and casualty modes of operation.

FY 2005 Initiate 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.

Initiate and complete design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Develop and test advanced thermophotovoltaic (TPV) power conversion modules with improved performance characteristics under prototypic conditions.

Conduct TTC manufacturing development utilizing advanced clad and fuel materials to support qualification efforts for use in the first VIRGINIA-class lower-enrichment core.

Continue A1B hydraulic and mechanical fuel cell testing to validate the design.

Continue fabrication of fuel model elements and core structural components to qualify new reactor materials, designs, and manufacturing and inspection technologies for future core technologies.

Continue to develop physics data required to support the reference design phase for TTC.

Complete penetration shield design studies and validation of shipyard analysis for CVN 21.

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.

Evaluate core vendor test procedures for discriminating between 93 percent and 97 percent enriched fuel and qualify lower-enriched fuel for S9G fuel element use.

Complete TTC fuel manufacturing development in advance of transition to production support of full-scale manufacturing efforts.

Complete thermal/structural analyses for the TTC pressure vessel. Initiate thermal/structural analysis of the TTC closure head and core basket.

Complete TTC core conceptual design and begin the reference core design. Continue to provide technical support for TTC advanced material manufacturing development efforts.

Complete design analyses on A1B to support core certification. Additionally, provide structural and thermal-hydraulic analyses and assessments to resolve unforeseen manufacturing developments encountered with A1B core production.

Complete development of an A1B core design utilizing lower enriched fuel for use in the CVN 21 follow ship.

Complete engineering certification for the A1B CDM and A1B reactor heavy equipment.

FY 2006 Initiate qualification of lower-enriched fuel for CVN 21 and NIMITZ fuel elements.

Begin development of larger scale integrated systems incorporating coolant heat transfer, high temperature radiator and high performing thermophotovoltaic (TPV) power conversion 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.

Transition into qualification of manufacturing processes utilizing advanced clad materials to support efforts for incorporating these advanced materials into the first lower-enrichment production VIRGINIA core.

Initiate TTC hydraulic flow studies, continue final core design, and provide technical specifications for TTC manufacturing efforts.

Review shipyard generated shield drawings for CVN 21.

Continue extension of advanced thermal/hydraulic code and methodology to provide multi-channel analysis capability.

Complete thermal structural analyses of the TTC core basket.

Detailed Justification

Materials Development and Verification

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 funding 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 are 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 is 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.

Materials Development and Verification

Funding Schedule

	FY 2004	FY 2005	FY 2006
Materials Development and Verification	136,888	154,256	145,100

Verifiable Supporting Activities:

FY 2004 Perform testing in Multiple Irradiation Capsule Experiment (MICE) facility and manufacturing irradiation test specimens. The MICE facility provides a unique testing platform at ATR to develop high temperature reactor materials.

Obtain initial zircaloy corrosion data from the first OHIO-class fuel elements and validate operation limits.

Initiate and complete design of the Materials Development Facility major construction project, utilizing advanced design funds for preliminary and final design efforts.

Continue development of advanced stress corrosion cracking (SCC) Model and incorporate results from environmental stress corrosion cracking growth rate (SCCGR) testing, microstructure characterization studies, and refined creep/deformation models. One of the leading concerns in material degradation is stress corrosion cracking, which is the damage that occurs to materials carrying high tensile loads exposed to fluids, radiation, and/or high temperatures.

Continue thermal embrittlement testing of pressure vessel steel. Material embrittlement can occur due to irradiation and the presence of cobalt corrosion and wear products.

Continue studies of PWR fuel and cladding performance by developing and deploying advanced examination techniques for characterization of fuel and structural materials.

Continue to perform irradiation testing and post-irradiation examinations of current and future fuel systems and structural materials.

FY 2005 Initiate operations in the Fuel Development Laboratory including fuel fabrication and processing of advanced element fabrication lines.

Initiate testing and characterization work to resolve emergent manufacturing and design issues, as well as to improve fundamental understanding to support predictive model development.

Evaluate 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.

Establish the processes needed to qualify new materials and manufacturing methods for PWR designs beyond A1B.

Materials Development and Verification

Initiate design of the Material Research and Technology Complex major construction project, utilizing advanced design funds for preliminary and final design efforts.

Initiate and complete design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Continue 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.

Continue studies of PWR fuel and cladding performance by developing and deploying advanced examination techniques for characterization of fuel and structural materials.

Complete the SCCGR component of the Advanced 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 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.

Begin to evaluate performance data of materials to improve efficiency and power density of thermophotovoltaic (TPV) devices and to identify feasible fabrication cost reduction approaches. Begin testing TPV power conversion modules.

Continue to establish the processes needed to qualify new materials and manufacturing methods for PWR designs beyond A1B.

Continue to develop models based on thermodynamic and kinetic analysis to better understand the role of microstructure on stress corrosion cracking.

Complete design of the Material Research and Technology Complex major construction project, utilizing advanced design funds for preliminary and final design efforts.

Complete the refinement for the CINCH4 corrosion model, a computer code that models the corrosion of Zircaloy.

Detailed Justification

Evaluation and Servicing

Mission Supporting Goals/Objectives:

Evaluation and Servicing (E&S) work encompasses the operation, maintenance, and servicing of land-based test facilities, including the 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.

Evaluation and Servicing

Funding Schedule

	FY 2004	FY 2005	FY 2006
Evaluation and Servicing	169,693	172,906	183,400

Verifiable Supporting Activities:

FY 2004 Initiate design of the canister baskets for shipment and long-term storage of S8G spent fuel in the Spent Fuel Canister (SFC).

Initiate a major non-refueling overhaul of the S8G prototype.

Continue extended operational testing of production models of Static Electronically Reversible Power Supplies (SERPOS) and advanced power system breakers and switches at the MARF prototype prior to fleet implementation. SERPOS provides a more effective and efficient alternative to the conventional ship service motor generator sets.

Continue S3G and D1G reactor compartment disassembly and disposal in accordance with the EIS Record of Decision and consistent with available funding. Complete removal and ship-out of S3G Primary Shield Tank to a DOE Treatment and Disposal Facility.

Continue to develop A1B designs for head area seal servicing, including Control Rod Drive Mechanism (CDM) weld machines, CDM cutting machines, and the main seal cutting machine.

Test an automated reactor coolant chemistry process at the S8G prototype in support of future Fleet usage. This process will allow for more consistent reactor coolant chemistry measurements, as the new analytical techniques are designed to result in less technician-introduced variation.

Construct engineered covers over the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites at the S1W Leaching Bed Area, the A1W Leaching Bed Area, and the Old Sewage Basin Area.

Complete thermal analysis, reactor physics testing, and plant performance evaluations supporting S8G end-of-life Reactor Systems Performance Analysis.

Evaluation and Servicing

FY 2005 Initiate 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.

Initiate and complete design of the Central Office Building #2 major construction project, utilizing advanced design funds for preliminary and final design efforts.

Continue development of detailed designs for initial A1B reactor servicing equipment.

Continue 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.

Continue 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).

Complete design of the canister baskets for shipment and long-term storage of S8G spent fuel in the Spent Fuel Canister (SFC).

Perform chemistry automation testing at the S8G prototype in support of potential future deployment to the fleet and commence testing with a new integrated sample sink system.

Provide 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).

Complete S9G reactor hardware and software maintenance.

Complete the design of ECF Dry Storage Process Systems No. 1 to prepare and place existing and incoming fuel into dry storage.

Complete 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 Betts Atomic Power Laboratory, formerly used for the manufacture of fuel.

Continue to 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.

Evaluation and Servicing

Continue remediation of KSO Building 29, which is an inactive wastewater collection system formally used by the S3G Prototype.

Continue with the remaining D1G inactivation work covered by the EIS Record of Decision.

Continue to 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.

Support startup and testing of ECF Dry Storage Process System No. 1 and 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.

Complete design of the canister baskets for shipment and long-term storage of D1G-2 spent fuel in the Spent Fuel Canister (SFC).

Complete the dismantlement and removal of S3G prototype plant equipment and hull at KSO.

Continue the design of new visual examination stations (VES) for use at ECF in examining irradiated test specimens, using latest computer hardware and software.

Complete various decontamination work efforts to disposition ECF radiological systems no longer in use, including, but not limited to, Water Pit #1 remediation.

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
▪ Plant Technology	
Requirements decrease due to reduction in steam generator design efforts for TTC	-6,900
Reduce work on high performance TPV power conversion integrated systems and assessments of emergent energy conversion systems	-3,556
▪ Reactor Technology and Analysis	
Requirements decrease due to reduction in A1B development efforts for a core design utilizing lower enriched fuel for use in the CVN 21 follow ship	-5,400
Requirements decrease due to reduction in TTC Fuel manufacturing development in advance of transition to production support of full-scale manufacturing efforts	-6,500
Reduce the initial development of integrated systems incorporating coolant heat transfer, high temperature radiator and high performing TPV power conversion module	-4,443
▪ Materials Development and Verification	
Decrease reflects the Congressionally directed increase for the Advanced Test Reactor in FY 2005	-3,900
Reduce the evaluation of performance data of materials associated with efficiency and power density of TPV devices	-5,256
▪ Evaluation and Servicing	
Requirements increase due to revitalization of remediation efforts at Program facilities including major efforts such as: L-Building at Bettis Atomic Power Laboratory and S3G at the Kesselring site	+10,494
▪ Facility Operations	-780
Total Funding Change	**-26,241**

Capital Operating Expenses & Construction Summary
Capital Operating Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
General Plant Projects	12,900	20,236	13,300	- 6,936	- 34.3%
Capital Equipment	35,115	33,144	39,300	+ 6,156	+ 18.6%
Total, Capital Operating Expenses	48,015	53,380	52,600	- 780	- 1.5%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2004	FY 2005	FY 2006	Unappropriated Balances
Naval Reactors						
90-N-102 Expended Core Facility Dry Cell	109,371	90,198	18,192	981	0	0
03-D-201 Cleanroom Technology Facility...................	7,451	7,153	298	0	0	0
05-D-900 Materials Materials Development Facility.....................	17,351	0	0	6,151	9,900	1,300
06-D-901 Central..... Office...................... Building #2..............	7,000	0	0	0	7,000	0
Total, Construction............		97,351	18,490	7,132	16,900	1,300

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

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2004	FY 2005	FY 2006	Acceptance Date
Network Upgrade		2,800	0	1,000	1,000	800	FY 2006
Low Level Exam Equipment	5,340	5,000	0	320	3,970	710	FY 2006
Scalable Parallel Supercomputer	12,830	12,000	0	0	0	12,000	FY 2006
Scalable Parallel Supercomputer	8,380	8,000	0	8,000	0	0	FY 2004
High Performance Technical Computing System	8,400	8,000	0	0	8,000	0	FY 2005
Network Convergence		3,000	0	0	800	700	FY 2007
Emergency Safety Fill System................................	11,500	10,300	0	0	1,600	2,600	FY 2010
Total, Major Items of Equipment	46,450	49,100	0	9,320	15,370	16,810	

Program Direction

Funding Profile by Category

(dollars in thousands/whole FTE's)

	FY 2004 Comp Approp [a]	FY 2005 Comp Request [b]	FY 2006 Request	$ Change	% Change
Program Direction					
Headquarters					
Salary and Benefits	8,992	9,845	10,127	+ 282	+ 2.9%
Travel	550	560	570	+ 10	+ 1.8%
Support Services	0	0	0	0	0.0%
Other Related Expenses	2,067	2,990	3,179	+ 189	+ 6.3%
Total, Headquarters	11,609	13,395	13,876	+ 481	+ 3.6%
Full Time Equivalents	60	67	67	+ 0	+ 0.0%
Pittsburgh Naval Reactors					
Salary and Benefits	7,029	7,789	8,103	+ 314	+ 4.0%
Travel	135	142	147	+ 5	+ 3.5%
Support Services	0	0	0	0	0.0%
Other Related Expenses	1067	1,127	1,159	+ 32	+ 2.8%
Total, Pittsburgh Naval Reactors	8,231	9,058	9,409	+ 351	+ 3.9%
Full Time Equivalents	70	73	73	0	0.0%
Schenectady Naval Reactors					
Salary and Benefits	6,065	6,153	6,345	+ 192	+ 3.1%
Travel	106	115	120	+ 5	+ 4.3%
Support Services	0	0	0	+ 0	0.0%
Other Related Expenses	541	543	550	+ 7	+ 1.3%
Total, Schenectady Naval Reactors	6,712	6,811	7,015	+ 204	+ 3.0%
Full Time Equivalents	64	64	64	0	0.0%
Total Naval Reactors Program					
Salary and Benefits	22,086	23,787	24,575	+ 788	+ 3.3%
Travel	791	817	837	+ 20	+ 2.4%
Support Services	0	0	0	0	0.0%
Other Related Expenses	3,675	4,660	4,888	+ 228	+ 4.9%
Total, Program Direction	26,552	29,264	30,300	+ 1,036	+ 3.5%
Full Time Equivalents	194	204	204	+ 0	+ 0.0%

[a] Reflects rescission of $148,000 as directed in the Energy and Water Development Appropriation Act, (Public Law 108-137).

[b] Reflects 0.8 percent rescission of $236,000 as directed in the Consolidated Appropriations Act (Public Law 108-447).

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.

In FY 2006, Naval Reactors Program Direction will provide $110,965 for deployment (operating and maintenance costs), of the Standard Accounting and Reporting System (STARS), within the Working Capital Fund; and $79,498 in FY 2006 for E-Government initiatives ($12,251 for E-Travel; $5,989 for Business Gateway, and $61,257 for Integrated Acquisition Environment). The total NNSA contribution is $1,306,000 for STARS and $1,957,753 for E-Government initiatives.

Detailed Justification

Program Direction	FY 2004	FY 2005	FY 2006
	(dollars in thousands)		
Salaries and Benefits	**22,086**	**23,787**	**24,575**

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	**791**	**817**	**837**

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 2006 funding supports travel required for the management and oversight of the Naval Reactors Program, in addition to inflationary growth between FY 2005 and FY 2006.

Support Services	**0**	**0**	**0**

Naval Reactors does not use Support Services contractors.

Other Related Expenses	**3,675**	**4,660**	**4,888**

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	**26,552**	**29,264**	**30,300**

Explanation of Funding Changes

	FY 2006 vs. FY 2005 ($000)
▪ **Salaries and Benefits** The change is due to salary adjustments in accordance with allowable inflation in achieving the FY 2006 FTE target	+788
▪ **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	+20
▪ **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.	+228
Total Funding Change, Program Direction	**+1,036**

Other Related Expenses

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	$ Change	% Change
Training	160	185	195	+ 10	+ 5.4%
Working Capital Fund and Rent	570	580	595	+ 15	+ 2.6%
Software Procurement/Maintenance Activities/ Capital Acquisitions	1,234	1,644	1,801	+ 157	+ 9.5%
Other	1,711	2,251	2,297	+ 46	+ 2.0%
Total, Budget Authority	3,675	4,660	4,888	+ 228	+ 4.9%

06-D-901, Central Office Building 2, Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2006 Budget Request (Preliminary Estimate) [a]	1Q 2005	4Q 2005	3Q 2006	3Q 2007	7,000	7,620

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2006	7,000	7,000	4,840
2007	0	0	2,160

3. Project Description, Justification and Scope

Project Description

This project provides funding for the construction of the Central Office Building 2 (COB-2). Advanced design funding was provided for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and Title II) design of COB-2. This design effort will be completed during FY 2005. The objectives of this project are to provide approximately 200 flexible, modern, professional office spaces at the Bettis Atomic Power Laboratory in Pittsburgh, PA.

Project Justification

Planning for COB-2 is consistent with the Bettis objective to vacate personnel from areas with radiological histories and the Bettis Atomic Power Laboratory-Pittsburgh Site's integrated 30-year construction and remediation/demolition program. COB-2 will provide space to eliminate utilization of the other offices and consolidate the technical personnel into the core of the main site. Relocating engineering and scientific personnel will enable them to more effectively interact with the centrally located Bettis Atomic Power Laboratory technical community. Additionally, the office spaces gained from this new construction and other associated office rearrangement efforts planned at the Bettis Atomic Power Laboratory site will provide "turnaround" space for the movement and temporary

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[a] This project is still in the Planning Phase. As a result, the cost and schedule are preliminary estimates and are subject to change until the Performance Baseline is approved by the Acquisition Executive at the completion of the preliminary design (Critical Decision 2), which is expected 3Q FY 2005. No funding will be used for construction until the Performance Baseline has been validated.

relocation of personnel who are displaced while substandard office areas are being renovated. Approximately 140 office spaces will be eliminated from normal office use when personnel are relocated from these offices and the last two office trailers are eliminated. Additionally, the relocation of other upper site personnel into COB-2 will permit further organizational consolidation of Bettis Activities. Planning for this new construction is being closely integrated with Bettis' overall strategies for removing older contaminated structures. The new office building, and rearrangements that will be achievable when COB-2 is occupied, will ultimately create an environment at the Bettis Atomic Power Laboratory which will enhance its ability to recruit and retain the highly qualified engineers, scientists and professionals that are needed to meet the high goals, standards, and increasing needs of the Naval Reactors program.

Project Scope

Central Office Building 2 (COB-2) will be a three-story office building at the Bettis Atomic Power Laboratory-Pittsburgh site on the main runway. The building will provide approximately 33,000 additional square feet and utilize an open office layout with modular furniture to maximize space utilization and create approximately 200 flexible, modern, and professional high quality office space environments. This Bettis initiative is considered critical to the Program's ability to attract and retain technical expertise and an effective and highly qualified workforce. The actual number of office spaces will be determined during the final design process. COB-2 will have an integral cable network for utilization with desktop computing, and a heating, ventilation, and air conditioning system designed in accordance with the latest energy efficiency requirements. COB-2 will also make use of low maintenance materials to minimize future cost.

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Construction Phase		
Buildings	4,526	0
Utilities	221	0
Inspection, design and project liaison, testing, checkout, and acceptance	70	0
Construction Management (1.6% of TEC)	113	0
Project Management (0.5% of TEC)	37	0
Standard Equipment (Modular Furniture/Office Equipment)	883	0
Total, Construction Costs	5,850	0
Contingencies		
Construction Phase (16.4% of TEC)	1,150	0
Total, Line Item Costs (TEC)	7,000	0

5. Method of Performance

The A/E Title I and II design will be performed under a Bettis Engineering Services Subcontract. Construction and procurement will be competitively bid and placed on a firm fixed price basis using the best value award selection process. Title III inspection will be performed by the operating contractor with support from the Bettis Engineering Services Subcontract.

6. Schedule of Project Funding

(dollars in thousands)

	FY 2004	FY 2005	FY 2006	FY 2007	Total
Project Costs					
Facility Costs					
Construction			4,840	2,160	7,000
Total, Line Item TEC/Facility Cost	0	0	4,840	2,160	7,000
Other Project Costs					
Pre-conceptual Design Costs					
Conceptual Design Costs	165				165
Design Criteria Development	40				40
Site Characterization	20				20
Preliminary and Final Design Costs		300			300
Temporary boundary fencing			50	20	70
Relocation costs				25	25
Total, Other Project Costs	225	300	50	45	620
Total Project Cost (TPC)	225	300	4,890	2,205	7,620

7. Related Annual Funding Requirements

(dollars in thousands)

	Current Estimate	Previous Estimate
Annual Facility Maintenance/Repair Costs	140	N/A
Utility Costs (estimate based on FY 2003 rate structure)	104	N/A
Total Related Annual Funding	244	N/A
Total Operating Costs (operating from FY 2007 through FY 2037)	7,320	N/A

05-D-900, Materials Development Facility Building, Schenectady, New York

Significant Changes

- The Performance Baseline for this project was approved on July 26, 2004, and is reflected in this data sheet.
- Total Project Costs increased due to additional requirements for equipment characterization and remediation prior to relocation of the equipment and project design.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2005 Budget Request (Preliminary Estimate)	1Q2005	4Q2005	4Q2005	4Q2008	17,400	20,350
FY2006 Budget Request (Performance Baseline)	2Q2005	4Q2006	3Q2005	4Q2008	17,351	21,041

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2005	6,151 [a]	6,151	1,851
2006	9,900	9,900	6,660
2007	1,300	1,300	7,275
2008	0	0	1,565

[a] The FY 2005 appropriated amount of $6,200,000 was reduced by $49,000 by a rescission of 0.8 percent (Public Law 108-447).

3. Project Description, Justification and Scope

Project Description

This project provides funding for the construction of the Materials Development Facility (MDF) Project. Advanced design funding was provided for the Architect-Engineering (A-E) services to develop and complete the preliminary and final (Title I and Title II) design of the MDF. This design effort will be completed during FY 2006. 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.

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 liability.

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.

4. Details of Cost Estimate

	(dollars in thousands) Current Estimate	Previous Estimate
Design Phase		
Design drawings and Specifications	730	730
Design Management costs (1.0% of TEC)	180	180
Project Management costs (0.1% of TEC)	25	25
Total, Engineering design inspection and administration of construction costs (5.4% of TEC)	935	935
Construction Phase		
Buildings	8,700	8,700
Utilities (Electrical/Civil)	3,970	3,970
Standard Equipment (Modular Furniture/Office Equipment)	555	555
Removal less salvage	375	375
Inspection, design and project liaison, testing, checkout and acceptance	335	335
Construction Management (5.2% of TEC)	895	895
Project Management (0.5% of TEC)	95	95
Total, Construction Costs	14,925	14,925
Contingencies		
Design Phase	70	70
Construction Phase (8.2% of TEC)	1,421	1,470
Total, Contingencies (8.6% of TEC)	1,491	1,540
Total, Line Item Cost (TEC)	17,351	17,400

5. Method of Performance

Building design/construction will be competitively 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.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2004	FY 2005	FY 2006	Outyears	Total
Project Costs						
Facility Costs						
Design	0	0	200	805	0	1,005
Construction	0	0	1,651	5,855	8,840	16,346
Total, Line Item TEC	0	0	1,851	6,660	8,840	17,351
Preliminary and Final Design Cost	0	260	180	0	0	440
Other Project Costs	0	0	50	60	990	1,100
Conceptual Design Cost	80	270	90	0	0	440
Decontamination and Decommissioning	0	325	225	935	225	1,710
Total, Other Project Costs	80	855	545	995	1215	3,690
Total Project Cost (TPC)	80	855	2,396	7,655	10,055	21,041

7. Related Annual Funding Requirements

(dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	861	861
Utility costs (estimate based on FY 2002 rate structure)	729	729
Total related annual funding	1,590	1,590
Total operating costs (operating FY 2008 through FY 2038)	67,383	67,383

Site Funding Summary

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Chicago Operations Office							
Ames Laboratory	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Argonne Nat. Laboratory	22.1	28.7	36.2	31.2	29.8	30.4	32.9
Brookhaven National Laboratory	34.1	61.1	60.3	60.8	58.9	51.2	49.6
Chicago Operations Office	488.4	439.8	426.4	433.2	498.6	520.3	521.7
New Brunswick Laboratory	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Lawrence Berkeley National Laboratory	3.8	3.0	2.7	2.7	2.7	2.7	2.8
Idaho Operations Office							
Idaho National Laboratory	65.8	70.5	61.5	62.0	62.2	63.3	64.5
Idaho Operations Office	1.7	1.6	2.6	2.9	3.4	3.9	4.3
Kansas City Site Office							
Kansas City Plant	428.7	363.5	357.0	396.3	415.2	424.8	427.2
Kansas City Site Office	6.0	6.0	6.3	6.6	6.9	7.2	7.5
Livermore Site Office							
Lawrence Livermore National Laboratory	1,208.2	1,170.6	1,067.6	1,110.5	1,104.2	1,125.6	1,145.1
Livermore Site Office	17.9	18.4	19.1	17.1	17.8	18.6	19.3
Los Alamos Site Office							
Los Alamos National Laboratory	1,487.7	1,555.5	1,571.0	1,686.2	1,749.1	1,825.8	1,803.5
Los Alamos Site Office	15.6	15.5	16.5	16.2	17.0	17.7	18.5
NNSA Service Center							
Atomic Energy of Canada, Ltd.	0.5	0.0	0.0	0.0	0.0	0.0	0.0
General Atomics	14.4	13.2	14.5	16.3	17.3	17.7	18.1
National Renewable Energy Lab.	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Naval Research Laboratory	25.3	35.6	0.0	0.0	0.0	0.0	0.0
University of Rochester/LLE	62.4	72.6	45.6	43.9	55.8	59.9	54.1
NNSA Service Center (all other sites)	502.7	442.3	557.6	559.1	601.1	643.5	677.4
Nevada Site Office							
Nevada Site Office	114.9	83.5	75.2	96.6	90.0	95.6	90.2
Nevada Test Site	369.3	335.5	377.3	379.5	365.8	369.3	378.0
Oak Ridge Operations Office							
Oak Ridge Institute for Science and Engineering	8.4	7.8	7.9	8.4	8.4	8.7	8.7
Oak Ridge National Laboratory	118.1	171.2	181.9	195.9	176.4	163.3	163.6
Office of Science and Technical	0.1	0.1	0.1	0.1	0.1	0.1	0.1

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Information							
Y-12 Site Office	11.7	12.4	13.1	13.7	14.3	14.9	15.6
Y-12 National Security Complex	761.3	906.0	785.7	868.6	837.3	848.6	896.6
Pacific Northwest National Laboratory	119.0	107.5	123.1	143.6	137.1	123.3	131.4
Oak Ridge Operations Office	23.7	27.5	42.1	31.7	24.7	17.3	16.4
Other	3.9	3.1	3.3	3.4	3.4	3.5	3.6
Pantex Site Office							
Pantex Plant	450.7	514.9	447.5	491.9	523.9	529.9	550.2
Pantex Site Office	11.5	12.0	12.4	12.9	13.4	14.1	14.7
Pittsburgh Naval Reactors Office							
Bettis Atomic Power Laboratory	375.5	391.9	388.2	402.1	398.4	403.2	402.8
Pittsburgh Naval Reactors Office	8.6	9.1	9.4	9.8	10.2	10.7	11.1
Richland Operations Office							
Richland Operations Office	0.8	1.3	2.2	2.4	2.9	3.4	3.8
Sandia Site Office							
Sandia National Laboratories	1,462.5	1,360.3	1,257.4	1,292.7	1,426.7	1,454.4	1,499.7
Sandia Site Office	14.9	12.9	13.3	13.6	14.3	14.9	15.6
Savannah River Operations Office							
Savannah River Operations Office	15.2	11.3	13.0	13.4	12.1	14.8	13.0
Savannah River Site Office	3.0	3.1	3.3	3.4	3.6	3.7	3.9
Savannah River Site	296.2	305.1	282.2	316.3	298.7	303.9	316.3
Schenectady Naval Reactors Office							
Knolls Atomic Power Laboratory	301.8	316.8	314.5	333.3	355.1	371.0	387.0
Schenectady Naval Reactors Office	6.7	6.8	7.0	7.3	7.6	8.0	8.3
Washington DC Headquarters	247.7	602.7	828.0	566.1	498.3	501.4	571.9
Adjustments	- 184.8	-340.8	-38.9	-40.0	-41.2	-42.3	-44.0
Total, NNSA	8,929.2	9,163.9	9,397.2	9,614.7	9,824.7	10,051.5	10,308.3

BETTIS ATOMIC POWER LABORATORY

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.

HISTORY:

On December 10, 1948, the Atomic Energy Commission (AEC) awarded a contract to Westinghouse Atomic Power Division to design and develop a prototype nuclear power plant for submarine propulsion. Under this contract, the AEC agreed to furnish funds for the construction of a Government-owned/contractor-operated research and development laboratory. Westinghouse purchased the Bettis Airport on January 27, 1949, as the site for its newly formed Atomic Power Division to work on that contract. Bechtel National, Inc., replaced Westinghouse Electric Corporation as the operating contractor on February 1, 1999.

Since USS NAUTILUS, Bettis has worked on many aspects of the development of the nuclear navy. Advanced technology for submarine and surface ship nuclear propulsion plants has constituted a major portion of the work program. Bettis's work on the prototype nuclear propulsion plant for a surface ship, and successful operation of the prototype at the Naval Reactors Facility in Idaho Falls, Idaho, led to the development of the first nuclear-powered surface ship, the cruiser USS LONG BEACH (CGN 9), and the first nuclear-powered aircraft carrier, USS ENTERPRISE (CVN 65). Bettis currently provides design and engineering support for many of the Navy's operating propulsion plants, (including the propulsion plants in the NIMITZ-class aircraft carriers and in the new SEAWOLF-class attack submarines), and is developing new technologies and designs for the VIRGINIA-class submarines and the CVN 21-class aircraft carriers.

Bettis has also played a role in developing land-based nuclear reactor plants. Under Naval Reactors, Bettis worked on the design and development of the first United States full-scale nuclear power plant for civilian use, the Shippingport Atomic Power Station. Shippingport was also the site of the first Light Water Breeder Reactor, which operated from 1977 to October 1982. This advanced reactor system was developed to enhance the use of fuel in light water reactors. The technology developed for the Shippingport program has been made available to Industry for commercial application.

MANAGEMENT:

Federal management: Pittsburgh Naval Reactors Office

Management and Operation Contractor: Bechtel Bettis, Inc. was awarded a new 5-year contract for the management and operation of the laboratory. This contract began on February 1, 1999 and the Government has the option to extend the contract for another 5 years.

FUNDING:

	(dollars in millions)						
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Naval Reactors Dev. & Constn.	375.5	391.9	388.2	402.1	398.4	403.2	402.8
Total, Bettis	375.5	391.9	388.2	402.1	398.4	403.2	402.8

NNSA-funded end-of-year contractor employment is projected at approximately 3,200 in FY 2006.

MAJOR ACTIVITIES:

Naval Reactors Development

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

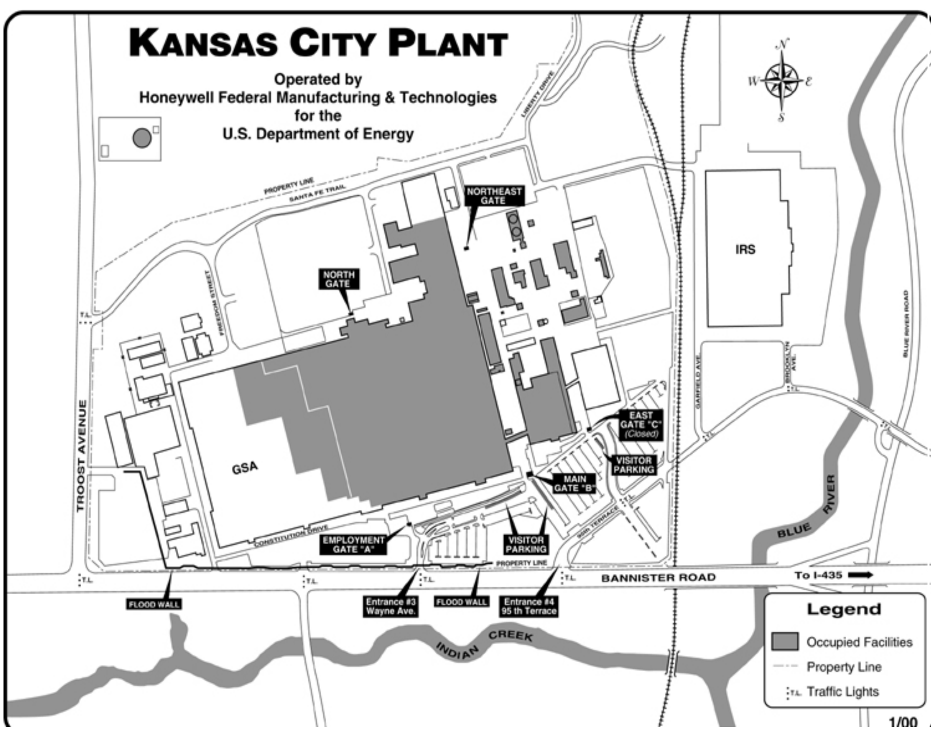
INTRODUCTION:

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.

HISTORY:

The U.S. Navy constructed the original plant, in 1941, to produce aircraft engines. In 1948, the Atomic Energy Commission obtained a significant portion of the war surplus plant, and selected the Bendix Corporation to produce electrical and mechanical components for nuclear weapons. Bendix managed the plant until 1982, when it was merged with Allied Signal. In 1999, Allied Signal merged with the Honeywell Corporation and renamed the new company Honeywell International. The Honeywell Federal Manufacturing and Technologies Division is the KCP Management and Operating (M&O) contractor for the National Nuclear Security Administration (NNSA). The Deputy Administrator for Defense Programs is both the Cognizant Secretarial Officer, having line-management accountability for KCP, and the Lead Program Secretarial Officer, responsible for landlord activities and overall site integration and operations.

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.



MANAGEMENT:

Federal management: Kansas City Site Office

Management and Operating Contractor: Honeywell was awarded a new 5-year contract for the management and operation of the plant. This contract began January 1, 2001 and has a value of $1.7 billion over 5 years. After the contract period, DOE has the option to extend the contract for another 5 years.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	184.7	169.0	174.3	The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.			
Engineering Campaign	8.6	7.7	8.1				
Inertial Confinement Fusion Ignition and High Yield Campaign	2.7	0.0	0.0				
Advanced Simulation and Computing Campaign	0.5	0.3	0.0	Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.			
Pit Manufacturing and Certification Campaign	0.4	0.0	0.2				
Readiness Campaign	47.0	41.0	30.7				
Readiness in Technical Base and Facilities	136.4	106.7	104.0				
Environmental Projects and Operations	2.1	3.5	4.5				
Safeguards and Security	27.1	16.9	19.5				
Facilities and Infrastructure Recapitalization Program	18.5	17.0	14.3				
Nonproliferation and International Security	0.5	0.7	0.7				
Global Initiatives for Proliferation Prevention	0.2	0.7	0.7				
TOTAL NNSA	428.7	363.5	357.0	396.3	415.2	424.8	427.2

NNSA-funded end-of-year contractor employment is projected at approximately 2,800 (out of 3,400 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work (DSW)
KCP activities include preproduction engineering, tooling, and material procurement associated with the W76 and W80 Life Extension Programs (LEPs), and production associated with the B61 Alteration LEP First Production Unit (FPU) and commencement of production on the B61 Alteration 356/8/9. Enduring Stockpile System production activities include Firing Set, Environmental Sensing Devices, Lightening

Arrestor Connector, and Aft Subassembly surveillance rebuilds in addition to lab and flight test sampling. Major reservoir production continues for the W76, B61, and W80 Enduring Stockpile Systems, and reservoir development activities include the W78 and W88 Systems.

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. The FY 2006 funding supports High Explosive Radio Telemetry (HERT) III and Engineering Development Telemetry (EDTM) flight tests, and new materials and components aging studies.

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 Lithographie Galvanoformung Abformung (LiGA) 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 Disposition (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 alternate materials and components to assure 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. In addition, the computing infrastructure for secure data exchange and interactive engineering collaborations will be developed.

Readiness in Technical Base and Facilities (RTBF)
In addition to the continual support of fundamental services, key RTBF activities for FY 2006 include construction of 3 General Plant Projects (GPP) and design of one GPP project to position the KCP for future GPP construction activity. Two line items received their last year of funding in FY 2004, reflecting the completion of the Stockpile Management Restructuring Initiative and the Gas Transfer Capacity Expansion project.

Environmental Projects and Operations
To date, KCP has completed restoration activities for 42 of 43 release sites under an accelerated cleanup approach with 95th Terrace as the final release site to be completed in FY 2006. Activities planned for FY 2006 include: construction of the 95th Terrace remediation phase; continuation of remaining compliance work on storm sewers, including annual cleaning of outfall 002; and continuation of pump and treat operations as required by the site's Post–Closure Permit.

Facilities and Infrastructure Recapitalization Program (FIRP)
KCP continues to demonstrate aggressive execution of FIRP activities by focusing on reducing the deferred maintenance of mission-essential facilities necessary to perform the Stockpile Stewardship Program. FIRP is replacing and upgrading systems located in essential facilities where Limited Life

Component production and Life Extension Programs for the B61, W76, and W80 weapons programs take place. These facilities are revitalizing Heating, Ventilation and Air Conditioning (HVAC) and air-handling equipments, and replacing water pumps and water main and distribution piping. Of special note is the FIRP utility line item construction project that will replace the main switchgear frame breakers and approximately 50 thousand feet of underground 13.8KV cables threading through duct banks and a cable tunnel. This project begins the FIRP Construction program at the KCP. The program is dedicated to utility line item construction, an area in need of special attention. The FIRP corporate approach to deferred maintenance reduction and revitalization of utility line items combine to minimize unscheduled work stoppages due to infrastructure failure, to improve worker safety, and minimize risk to mission execution. Recapitalization program performance expectations, year-to-year, continue to rise from the contribution made by the Planning component of FIRP. The FY 2006 budget includes funding for planning FY 2007 projects. Design of general plant and expense projects in advance of construction is leading to solid project cost estimates with a goal of eliminating project cost overruns. Rounding out the FIRP contribution to improved performance expectations at the plant is the Roof Asset Management Program (RAMP), an NNSA best business practice employed throughout the weapons complex. The program, 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. The program is the first in the NNSA to establish high standards of repair on a life-cycle basis across the complex.

Safeguards and Security

The KCP Safeguards and Security program provides plant safeguards and security consistent with security requirements documented in its approved facility Master Security Plan to implement necessary actions for the 2003 Design Basis Threat (DBT) policy by the end of FY 2006, and evaluate and develop the protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. Focus will be on continuing to work with the site landlord to enhance site vehicle access and denial capabilities and enhancing weapons capabilities in order to provide more effective security for site personnel, equipment and facilities.

KNOLLS ATOMIC POWER LABORATORY

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.

HISTORY:

The General Electric (GE) company originally operated KAPL. GE received its initial research contract to establish KAPL from the Manhattan Engineering District in May 1946. KAPL's mission was converted to a nuclear propulsion project in 1950. KAPL's initial efforts were spent developing a safe reactor small enough to operate inside a submarine. USS SEAWOLF (SSN 575), launched in 1955, represented the first KAPL-designed reactor plant. Subsequently, KAPL designed reactors for the USS TRITON (SSN 586), USS NARWHAL (SSN 671), the research submarine NR-1, LOS ANGELES and VIRGINIA-class attack submarines and OHIO-class ballistic missile submarine.

KAPL currently maintains, supports, and enhances the mission capability of LOS ANGELES-class submarines and OHIO-class ballistic missile submarines. KAPL also supports Electric Boat and Newport News in the test and construction of the VIRGINIA-class submarines and provides design and engineering support for the future CVN 21-class aircraft carriers.

MANAGEMENT:

Federal management: Schenectady Naval Reactors Office

Management and Operation Contractor: KAPL was awarded a new 5-year contract for the management and operation of the laboratory. This contract began on July 5, 2000; the Government has the option to extend the contract for another 5 years.

LAWRENCE LIVERMORE NATIONAL LABORATORY

INTRODUCTION:

Lawrence Livermore National Laboratory (LLNL) is a national security laboratory with responsibility for ensuring the nation's nuclear weapons remain safe, secure, and reliable. 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 National Nuclear Security Administration (NNSA) mission for assuring the safety, security and reliability of the nation's nuclear weapons stockpile and the prevention of the spread and use of nuclear weapons, as well as other weapons of mass destruction and applying technologies to address homeland security needs.

HISTORY:

Established in 1952 to augment the Nation's nuclear weapons design capability, LLNL made major advances in nuclear weapons safety and performance throughout the Cold War. To address national security needs, the Laboratory has pioneered the application of technologies ranging from high-performance computers to advanced lasers, and it has gained multiprogram responsibilities that draw on LLNL's multidisciplinary expertise.

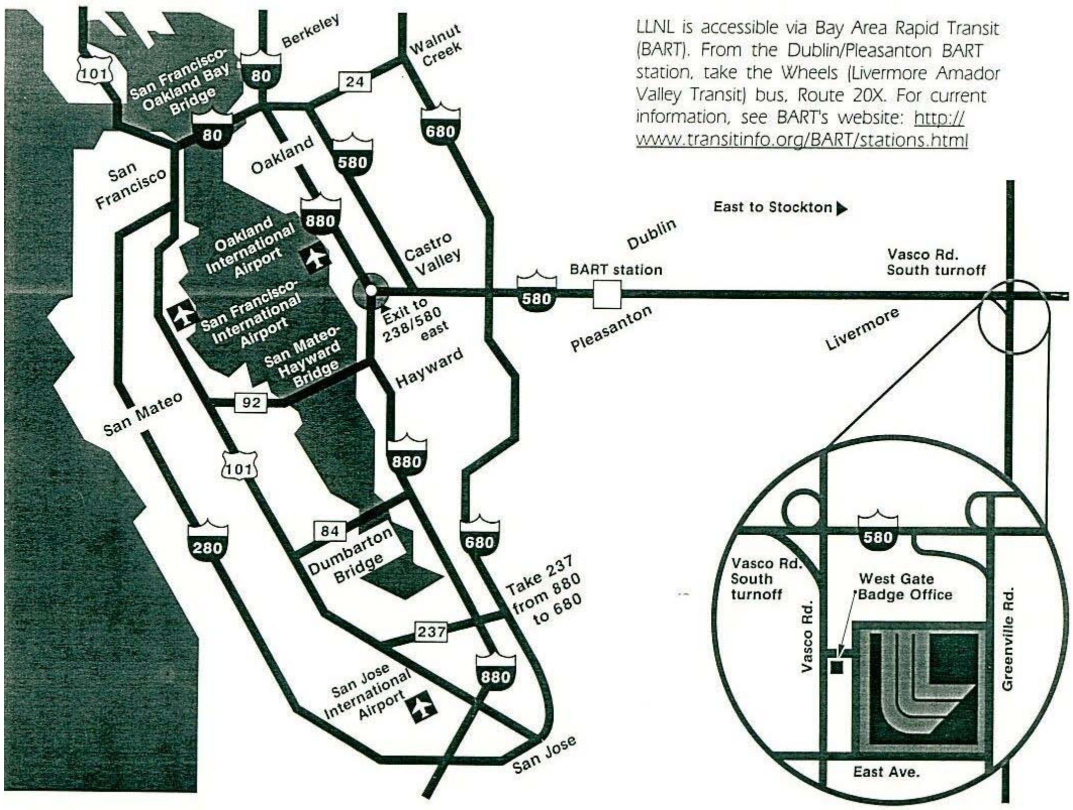
Today, LLNL's special capabilities, required for stockpile stewardship and nonproliferation activities, as well as homeland security, enable the laboratory to meet enduring national needs in conventional defense, energy, environment, biosciences, and basic science as well as enhancing the competencies needed for the national security mission. The Deputy Administrator for Defense Programs is both the Cognizant Secretarial Officer, having line-management accountability for LLNL, and the Lead Program Secretarial Officer, responsible for landlord activities and overall site integration and operations.

San Francisco Airport to LLNL, Livermore
Driving Time: Approx. 1 hour
Distance: 45 miles

Oakland Airport to LLNL, Livermore
Driving Time: Approx. 45 minutes
Distance: 36 miles

San Jose Airport to LLNL, Livermore
Driving Time: Approx. 45 minutes
Distance: 36 miles

LLNL is accessible via Bay Area Rapid Transit (BART). From the Dublin/Pleasanton BART station, take the Wheels (Livermore Amador Valley Transit) bus, Route 20X. For current information, see BART's website: http://www.transitinfo.org/BART/stations.html



MANAGEMENT:

Federal management: Livermore Site Office

Management and Operating Contractor: University of California. The current contract expires September 30, 2005.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	99.0	96.9	114.0	The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.			
Science Campaign	100.8	96.4	95.5				
Engineering Campaign	30.9	26.9	28.7				
Inertial Confinement Fusion Ignition and High Yield Campaign	321.0	314.0	337.5				
Advanced Simulation and Computing Campaign	306.4	270.4	135.6	Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.			
Pit Manufacturing and Certification Campaign	11.3	7.9	12.9				
Readiness Campaign	6.1	8.3	5.1				
Readiness in Technical Base and Facilities	85.5	84.5	88.6				
Environmental Projects and Operations	28.3	34.7	30.0				
Safeguards and Security	101.6	104.6	100.0				
Nuclear Weapons Incident Response	13.5	15.9	16.3				
Facilities and Infrastructure Recapitalization Program	30.3	36.3	33.4				
Global Threat Reduction Initiative	1.4	5.7	5.1				
Fissile Materials Disposition	3.0	2.9	3.4				
HEU Transparency Implementation	5.9	6.5	6.9				
International Nuclear Materials Protection and Cooperation	18.6	20.6	17.1				
Nonproliferation and International Security	9.3	10.6	10.7				
Nonproliferation and Verification R&D	30.2	27.3	26.9				
Global Initiatives for Proliferation Prevention	5.1	0.0	0.0				
TOTAL NNSA	1,208.2	1,170.6	1,067.6	1,110.5	1,104.2	1,125.6	1,145.1

NNSA-funded end-of-year contractor employment is projected at approximately 4,900 (out of 7,700 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work (DSW)

LLNL is responsible for executing a Life Extension Program (LEP) to refurbish the W80 Nuclear Explosive Package (NEP). Additionally, LLNL supports the production of the Mechanical Safe and Arm Devices for the W87 Life Extension Program (LEP) and the life of program build. For the W62, W80, B83, W84 and W87, LLNL performs engineering and physics analyses, supported by component, subsystem and system tests, to certify that weapons conform to their Military Characteristics (MC) and Stockpile-to-Target (STS) requirements. NNSA has requested development of a Reliable Replacement Warhead (RRW). RRW concepts conduct pre-conceptual, conceptual, and feasibility and costing studies of options regarding the nuclear weapons stockpile should that be required. LLNL is responsible for peer review of the B61 and W76 LEPs, primary and secondary performance, engineering design, and chemical stability/compatibility. LLNL is also responsible for the design agency surveillance activity of the LLNL designed weapons and for the production agency surveillance of the LLNL pits and detonators. LLNL also supplies detailed safety related information on weapons assembly and disassembly.

Science Campaign

As part of the Primary Assessment activity, LLNL has responsibility for developing the tools and methodology to assess and certify [via the Quantification of Margins and Uncertainty (QMU), or QMU process] the safety, reliability and performance of the stockpile systems for which LLNL is responsible. LLNL also has responsibility to execute an experimental program of hydros and plutonium experiments that support assessment and certification. A major deliverable of the Primary Assessment activity is the joint national hydrotest plan with Los Alamos National Laboratory (LANL).

LLNL work in the Dynamic Materials Properties activity extends key experimental capabilities, data analysis, and materials. The focus is on the experimental activities required to support the development of accurate, predictive, physics-based models of materials properties and behavior. The development of such models is supported through the closely coordinated Advanced Simulation and Computing (ASC) Materials Simulation Program. This campaign supports experiments and data analysis at U1a and the Joint Actinide Shock Physics Experimental Research facility (JASPER).

The scope of the Advanced Radiography activity is to develop the capability to experimentally infer the integral performance of the primary stage of a nuclear weapon. Radiographic hydrotest data is a critical element of major weapon programs, including pit production, the current LEPs, and the development of modern baselines for all weapon systems. The LLNL Contained Firing Facility (CFF) and Flash X Ray Accelerator (FXR) provide a unique combination of capabilities for the National Hydrotest Plan. LLNL also operates a linear induction accelerator electron-beam research machine (the Experimental Test Accelerator (ETA-II) facility) that is the test stand for much of the Dual-Axis Radiographic Hydrotest (DARHT-II) technology and is essential for DARHT-II multi-pulsed target studies.

In the area of secondary assessment, LLNL has responsibility for developing the tools and methodology to assess and certify (via QMU) the safety, reliability and performance of the stockpile, including ongoing activities in LEPs and Significant Finding Investigations (SFIs). As the QMU tools and methodology, developed as part of the Science Campaign, are validated they will be used in assessment work required to support directed stockpile activities at LLNL. In FY 2006, the new models, tools, and methodologies, developed as part of the Science Campaign, will be applied toward quantifying the uncertainty associated with important potential failure modes.

Engineering Campaign

The Engineering Campaign contains four major activities: Enhanced Surety, Weapons Systems Engineering Assessment Technology, Nuclear Survivability, and Enhanced Surveillance. The Enhanced Surety activity at LLNL will develop nuclear explosive-related technologies aimed at improving the safety of nuclear weapons in abnormal environments. Weapons Systems Engineering Assessment Technology activity focuses on material models used in engineering analysis and warhead safety evaluation. The Proliferation Threat Project assesses evolving foreign nuclear threats based on new technologies. The Nuclear Survivability (Hostile Environments) Campaign will demonstrate the capability to support the nuclear survivability of the enduring stockpile, its certification and life extension, without underground tests, through radiation hardening, modeling and validation, and aboveground testing. LLNL will develop validated computational tools to re-evaluate threat nuclear weapon radiation environments and provide this information to Sandia National Laboratories (SNL) and the Defense Threat Reduction Agency (DTRA) for applications in effects related work. LLNL also has the responsibility for developing the tools and methodology to assess threat outputs via the QMU. The Enhanced Surveillance activity at LLNL will continue to determine pit, and other component, minimum lifetimes as well as develop advanced diagnostics for transition to core surveillance activities.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign

The ICF supports the NNSA 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 goals 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 robust national program infrastructure and scientific talent in HEDP. ICF is an integral part of NNSA's program to develop advanced assessment capabilities required to support the stockpile. Major interfaces and technical objectives are shared with three of the four SSP Science Campaign activities (Primary Assessment Technology, Dynamic Materials Properties, and Secondary Assessment Technology), one Engineering Campaign activity (Nuclear Survivability), the Advanced Simulation and Computing (ASC) Campaign, and the Readiness in Technical Base Facilities (RTBF) Program.

The National Ignition Facility (NIF), which contains the world's largest laser and is one of the core facilities in support of the ICF Campaign and the SSP, is under construction at the site. The project, including the NIF Laser Demonstration Program, will continue in FY 2006. The ICF Experimental Physics program activities are focused on the central program goal of demonstrating ignition on the NIF in 2010. Specific areas of emphasis include ignition target design, fabrication technology, laser-plasma interaction investigations on NIF, and the development of experimental methods for indirect drive ignition. Experimental Support Technology activities will include the development and delivery of ICF/HED experimental support systems, including diagnostic systems, completion of the Conceptual Design and initiation of Preliminary Design of the National Cryogenic Target System to support the ignition experimental campaigns, and the installation of production capacity and technology development of user-defined experimental support optics to support experiments.

Advanced Simulation and Computing (ASC) Campaign

The ASC Campaign provides the tools which are essential for SSP to meet its deliverables in the area of advanced nuclear weapon design and manufacturing processes, accident scenarios, weapons aging, and the resolution of SFIs. This requires a balanced system of hardware, simulation software, and computer science solutions. Since its inception, ASC has produced capabilities to solve progressively more difficult problems, with its focus on high resolution three-dimensional (3-D) full-system simulation using advanced models and algorithms on high-end parallel computers. LLNL and LANL both have the same ASC charter for simulation and modeling. The LLNL ASC program benefits from collocation with the resources of the laser program expediting tight coupling between experiment and simulation. On the computational side in FY 2006, the ASC Purple and BlueGene/L platforms will enter limited production status for the program, adding significant computational resources. The combination of the Purple and BlueGene/L will continue to put considerable personnel and budget stress on the Integrated Computing Systems (ICS) and Simulation and Computer Support (S&CS) components of the LLNL ASC program in FY 2006.

Pit Manufacturing and Certification Campaign
LLNL's efforts provide independent technical assessments of the physics performance and engineering response, using the latest legacy and ASC codes; enabling technologies required to build a modern pit facility; and requirements and process definitions of technologies required to build pits for LLNL systems.

Readiness Campaign
LLNL centers of excellence in design, modeling, simulation, materials processing, high explosives development, non-destructive evaluation and information technologies enable Advanced Design and Production Technologies (ADAPT) efforts that, in turn, are of direct benefit to LEPs such as the W80 and other DSW, Core and Enhanced Surveillance.

Readiness in Technical Base and Facilities (RTBF)
The SSP 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 include the Nuclear Materials Technology Program facilities (i.e., 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 activities at the Nevada Test Site. Construction projects currently underway at LLNL include: the Tritium Facility Modernization (TFM).

Beginning in FY 2006, the NNSA assumes the responsibility and funding to manage newly generated waste responsibilities at LLNL to ensure hazardous, radioactive, and mixed wastes are stored, treated, certified, and shipped to off-site disposal safely and in compliance with Federal, State, and local regulations and DOE orders.

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 by EM in FY 2005. Environmental management activities at LLNL are scheduled to be completed by the end of FY 2006 for the Main Site and FY 2008 for Site 300. The primary focus for FY 2006 will be completion of the build-out of the required remediation system(s) to reduce the risk associated with groundwater contamination at the Main Site. The FY 2006 activities at LLNL Site 300 will be directed toward submitting documents to meet negotiated Federal Facility Act milestones, continued installation and hook-up of planned

groundwater treatment systems, and implementation of other agreed to remedial actions.

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)
The FIRP is funding facility and infrastructure projects that reduce deferred maintenance and eliminate excess facilities. The program at LLNL is in the forefront of the NNSA sites that execute an aggressive corporate facilities management approach to improving the facility condition of the laboratory. For FY 2006 the Recapitalization Component of FIRP is funding high priority projects that restore mission essential and key facilities, which focus on improving utilities through electrical transformer replacement, minimize the risk of unscheduled facility outages, and make significant strides improving safety throughout the work areas. Since the beginning of FIRP, improved reliability of laboratory facilities is recognized as its major achievement. Specifically, 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 in radiological facilities are being funded. The site continues to participate in the complex-wide Roof Asset Management Program (RAMP) and is achieving improved cost efficiencies and life extension of the NNSA roofing assets. The facilities disposition program is reducing the overall facility footprint of the complex in a systematic way. Elimination of excess facilities is reducing surveillance and maintenance costs. LLNL plans to reduce its footprint by some 130,000 gross square feet through the use of FIRP dollars in FY 2006.

Safeguards and Security
The LLNL Safeguards and Security program provides laboratory safeguards and security consistent with security requirements documented in its approved Site Safeguards and Security Plan (SSSP). FY 2006 activities will include implementing necessary actions for compliance with the 2003 Design Basis Threat (DBT) policy by the end of FY 2006, and utilizing the DBT funding to support recurring costs generated from actions initiated in FY 2004 and FY 2005. Additionally, site analysis will be conducted to develop a revised protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. In addition, new vehicle denial barriers will be in place to significantly enhance sites protection capability for Category 1 Special Nuclear Material (SNM). Focus will also be on continued consolidation of SNM and life cycle replacement of critical detection and assessment systems and other security related equipment. The program will initiate a contract to replace components of the Argus access control system that are or will soon be obsolete.

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 Nonproliferation Policy by providing support for conducting technical exchanges and technology development under the Warhead Safety and Security Exchange (WSSX) Agreement, Highly Enriched Uranium (HEU) Purchase Agreement policy and transparency development, Plutonium Production Reactor Agreement (PPRA) implementation, development of nuclear transparency measures, including through technical analysis and technology development, and regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. In addition, LLNL provides Export Control 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 International Safeguards, 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.

Highly Enriched Uranium Transparency Implementation Program
LLNL provides technical experts to serve as permanent and special monitors at Russian uranium processing facilities, as well as overall coordination for all U.S. special monitoring trips. LLNL support includes the management and analysis of transparency data obtained by program monitors during their visits to Russian uranium processing facilities. LLNL develops, supplies, maintains, and performs technical troubleshooting for the portable non-destructive assay equipment used by monitors in Russian plants to measure the enrichment of uranium components and assure it is at 90% U-235 assay. LLNL also provides planning and health and safety support for monitoring visits at Russian facilities as well as support for Russian monitoring visits to U.S. facilities.

Global Threat Reduction Initiative
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

INTRODUCTION:

The Los Alamos National Laboratory (LANL) was established as a nuclear weapons design laboratory in 1943, under the leadership of J. Robert Oppenheimer. LANL is located on approximately 25,000 acres, adjacent to the town of Los Alamos, New Mexico, approximately 25 miles northwest of Santa Fe.

HISTORY:

LANL is a multi-program laboratory, supporting research predominantly in national security. LANL also supports environmental restoration, waste management, general science programs, homeland security, and work for others. The Deputy Administrator for Defense Programs is both the Cognizant Secretarial Officer, having line-management accountability for LANL, and the Lead Program Secretarial Officer, responsible for landlord activities and overall site integration and operations.

The Record of Decision for a Site-Wide Environmental Impact Statement for the continued operation of LANL was published September 20, 1999. The decision allows for expanded operations, consistent with the Record of Decision for the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, issued December 19, 1996, including implementation of pit manufacturing, at the level of twenty pits per year, and expansion of the low-level radioactive waste disposal facility.

The Record of Decision, administered by the Department of Energy (DOE) at Los Alamos, for the conveyance and transfer of land tracts to Los Alamos County and to the Department of Interior, in trust for the Pueblo of San Ildefonso, was published March 2000. From a total of 4,120 acres of land to be conveyed or transferred, the DOE at Los Alamos has conveyed to the County of Los Alamos or transferred to the Department of the Interior, in trust for the Pueblo of San Ildefonso, 2,210 acres of land. Additional future land transfers are pending.

Routes to Los Alamos from Albuquerque International Airport

Main Route

This route takes approximately 1.5 hours of driving time.

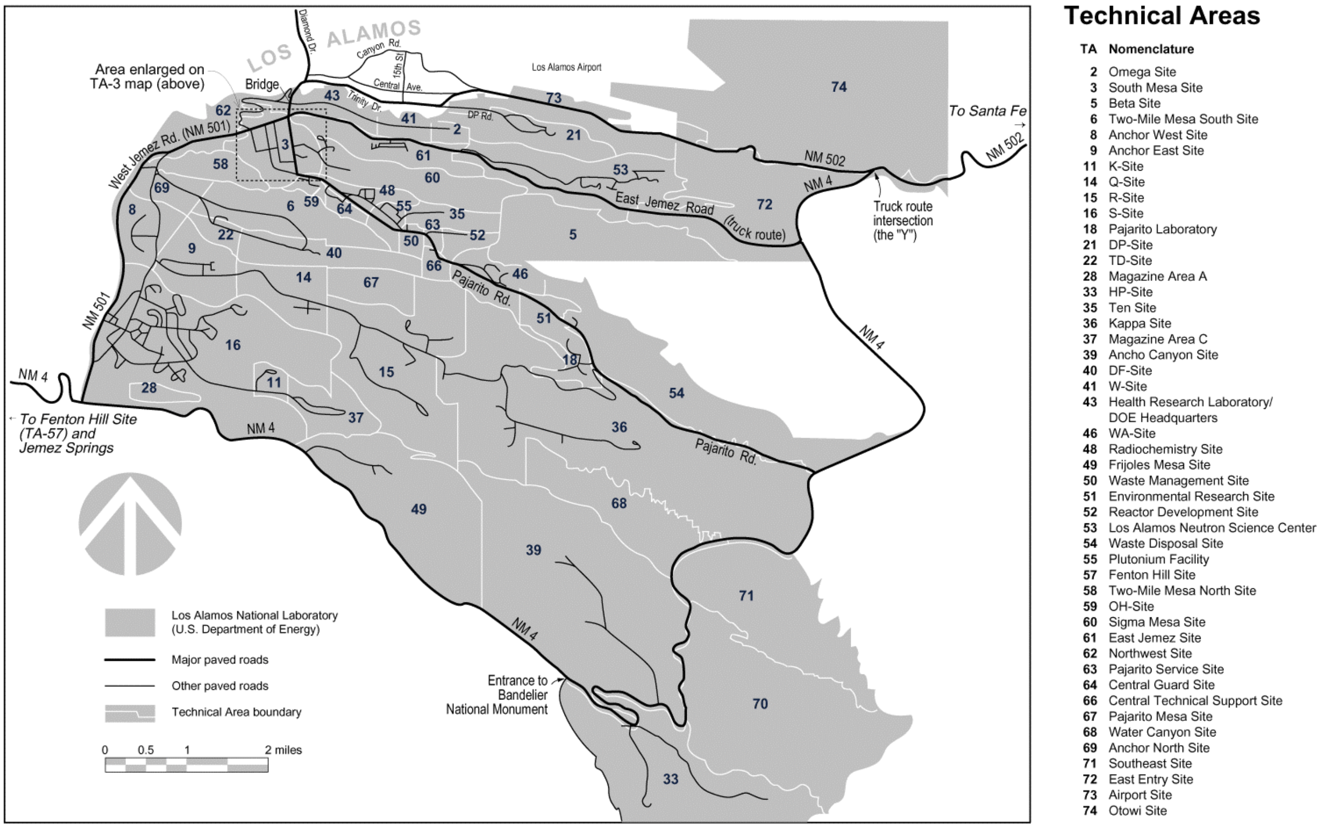
1. From the airport terminal, take Sunport Blvd. to I-25 (you may also take Yale north to Gibson, turn left onto Gibson, and continue to the I-25 north access ramp).
2. Take I-25 north to Santa Fe.
3. From Santa Fe, take US 84/285 (St. Francis Dr.) north to Pojoaque.
4. At Pojoaque, take NM 502 west; follow NM 502 into Los Alamos.

Scenic Route

This route takes approximately 2.0 hours of driving time and is not recommended during winter months.

1. From the airport terminal, take Sunport Blvd. directly to I-25 (you may also take Yale north to Gibson, turn left onto Gibson, and continue to the I-25 north access ramp)
2. Follow I-25 north to Bernalillo.
3. Turn northwest on NM 44 and follow until you reach San Ysidro.
4. At San Ysidro, turn right onto NM 4 and follow it to Los Alamos.

Los Alamos National Laboratory
A US Department of Energy Laboratory



MANAGEMENT:

<u>Federal management</u>: Los Alamos Site Office

<u>Management and Operating Contractor</u>: University of California. The current contract will be competed in September 2005.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	230.0	209.0	241.5				
Science Campaign	68.2	86.9	90.7				
Engineering Campaign	26.6	25.4	28.0				
Inertial Confinement Fusion Ignition and High Yield Campaign	29.6	30.8	12.3				
Advanced Simulation and Computing Campaign	192.4	191.0	144.8				
Pit Manufacturing and Certification Campaign	193.9	191.3	181.4				
Readiness Campaign	9.1	10.8	4.7				
Readiness in Technical Base and Facilities	422.6	416.7	416.4				
Nuclear Weapons Incident Response	8.8	9.8	10.1				
Safeguards and Security	127.3	188.2	169.8				
Facilities and Infrastructure Recapitalization Program	45.2	55.3	52.2				
Global Threat Reduction Initiative	8.6	10.1	16.8				
International Nuclear Materials Protection and Cooperation	9.9	11.4	19.4				
Nonproliferation and Verification R&D	66.0	78.4	123.2				
Global Initiatives for Proliferation Prevention	3.4	5.1	4.3				
HEU Transparency Implementation	2.1	2.6	2.2				
Fissile Materials Disposition	31.9	19.7	42.7				
Nonproliferation and International Security	12.0	13.0	10.5				
TOTAL NNSA	1,487.7	1,555.5	1,571.0	1,686.2	1,749.1	1,825.8	1,803.5

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

NNSA-funded end-of-year contractor employment is projected at approximately 6,000 (out of 8,600 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work (DSW)

Directed Stockpile Work encompasses the broad range of activities that directly support maintaining the safety, reliability and performance of the nuclear warheads in the stockpile. DSW focuses on nuclear warhead lifecycle management and maintains the nuclear deterrent as specified in the Nuclear Weapons Stockpile Plan (NWSP). It includes stockpile-related workload, policy guidance, coordination and oversight of all activities that directly support stockpile requirements. DSW policy and program guidance is formulated within the National Nuclear Security Administration (NNSA) and implemented by those organizations that collectively comprise the nuclear weapons complex. These organizations include the NNSA, the national nuclear weapons laboratories, the production plants, and the Nevada Test Site. LANL is committed to maintaining the safety, reliability, and performance of the warheads for which LANL is the responsible Design Agency. This activity includes the budgets for executing life extension projects (LEPs) for the B61 and the W76 and support for the W80, which is a Lawrence Livermore National Laboratory/Sandia National Laboratories responsibility. This subprogram includes both production and Research and Development DSW activities.

Science Campaign
In its role as a nuclear weapons design laboratory, Los Alamos has a strong multidimensional 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 campaign activities are:

- ***Primary Assessment Technologies*** 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 uncertainty (Quantification of Margins and Uncertainty (QMU)) without additional nuclear tests. Approximately half of the activity's effort is directed toward boost physics.
- ***Dynamic Materials Properties*** develops physics-based, experimentally validated data and models of all stockpile materials, at a level of accuracy required by the primary and secondary assessment activities, and the Engineering Campaign.
- ***Advanced Radiography*** supports development of technologies for three-dimensional imagery of imploding surrogate primaries, with sufficient time and space resolution to help resolve uncertainties in primary performance.
- ***Secondary Assessment Technologies*** includes experimental and computational activities to determine the minimum primary performance necessary to produce a militarily effective warhead/bomb. These activities develop a validated, predictive computational capability for each system in the stockpile, determine the primary radiation emission and energy flow, and determines the performance of nominal, aged, and rebuilt secondaries.

Engineering Campaign
In its role as a nuclear weapons design laboratory, Los Alamos is focused on the development of engineering-based development in support of the nuclear weapons stockpile. With respect to enhanced surety, LANL recognizes that in addition to ensuring the nuclear stockpile is safe, secure, and reliable, the DOE/NNSA has an obligation to provide the most modern surety (i.e., safety, security, and use control) possible for nuclear warheads/bombs. The LANL Engineering Subprogram includes efforts to develop improved surety options, such as a new level of use-control capabilities that may be considered for incorporation in scheduled stockpile refurbishments. In addition, LANL has established science-based engineering methods to increase confidence in weapons systems through validated simulation models and high-fidelity experimental tests. LANL develops validated engineering computational models and a suite of tools to allow for science-based certification. With respect to Nuclear Survivability, LANL is responsible for the development of validated computational tools for certification, reevaluate nuclear weapon hostile environments, develop radiation-hardened technologies, and demonstrate certification technologies for W76 refurbishment planning. Since LANL is responsible

for five of the eight systems in the enduring stockpile, it is heavily engaged in the development of the tools needed to predict or detect the precursors of aging-related defects before they jeopardize warhead safety or reliability. Predictive modeling and simulation are central to this activity. Enhanced Surveillance develops the technologies and methods, as well as the fundamental understanding of materials properties and weapons science, to significantly improve detection and prediction capabilities.

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), and other High Energy Density Physics (HEDP) facilities.

Advanced Simulation and Computing (ASC) Campaign
Within the NNSA/DOE, the ASC Campaign is a program integrated across the three NNSA weapons 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. In addition to developing simulation capabilities needed to analyze and predict the performance, safety, and reliability of nuclear weapons and certify their functionality, the ASC Campaign provides the support for the computing infrastructure required for all computational analysis of stockpile issues. The vision of the Los Alamos ASC program is to predict with confidence the behavior of nuclear weapons through comprehensive science-based simulation. ASC will continue to assist the weapons complex in meeting directed stockpile work schedules including the annual assessments of safety and reliability and analysis of issues in significant finding investigations and life extension programs. FY 2006 completes the transition from legacy codes to new codes as the primary vehicle for designers to perform assessments for the W76-1 LEP and W88. LANL will finalize and apply two-dimensional modern baselines for the W76-1 LEP and W88 Major Assembly Releases. ASC will provide the computational tools and infrastructure used in analyses for the Redbook and Bluebook. FY 2006 will see an increased emphasis on developing methods for quantification of margins and uncertainty in the simulation of weapon system performance and safety. Software quality will continue to be a high priority for the ASC program. Lastly, the linkage of simulation, theory and experimentation will continue to mature as demonstrated by experimental programs providing timely data used to validate ASC models and codes. This work will support the ASC march to a predictive capability as measured by an evaluation of the accuracy of primary predictions for the W76 and W88; an initial implementation of quantification of margins and uncertainties using ASC code baselines for the W76; and the delivery of improved physics models to support certification.

Pit Manufacturing and Certification Campaign
The purpose of the Los Alamos Pit Manufacturing and Certification Subprogram 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, the 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 campaign are to:

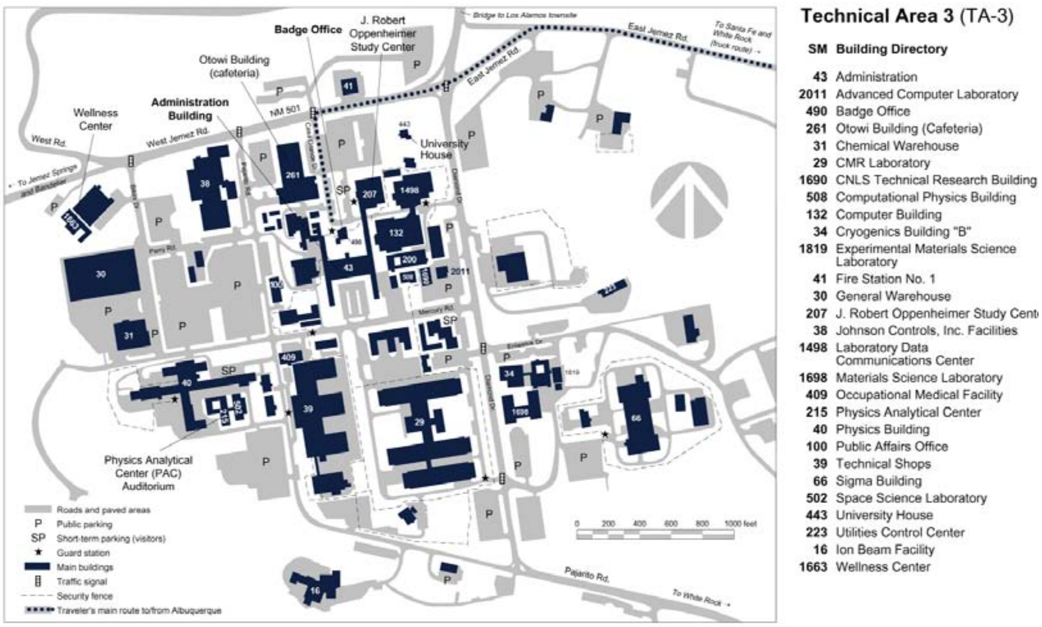
- Plan the certification requirements and processes to certify a W88 weapon system with a pit built at LANL without underground nuclear testing in FY 2007 or earlier
- Establish a pit manufacturing capacity of ten pits per year at LANL in FY 2007
- Demonstrate the capability to manufacture other pits (Engineering Development Units) in the enduring stockpile in FY 2012
- Plan for long-term pit manufacturing.

Readiness Campaign

At LANL, two Readiness Subprogram activities are performed, Advanced Design and Production Technologies (ADAPT) and Non-nuclear Readiness (NNR). LANL's ADAPT activities reflect both design and production technology development. 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, Beryllium Components, and Pits/Mock Pits/Experimental Hardware). LANL also has a significant NNR production activity in developing capabilities for LANL non-nuclear production as well as capabilities for other plants. The scope of work 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, neutron tube target loading, mW RTG (radioistopic thermoelectric generator) surveillance, and portions of the beryllium technology mission.

Readiness in Technical Base and Facilities (RTBF)

LANL supports a broad base of activities and facilities that enable the Laboratory to meet its mission obligations to the NNSA and the Nation. The mission is to ensure that the site is implementing the technologies and methods necessary to make construction, operation, and maintenance of its facilities safe, secure, compliant, and cost effective. The goal is to ensure that NNSA 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 mission. LANL's Operations of Facilities activity includes NNSA's share of the cost to operate and maintain NNSA-owned programmatic facilities in "warm standby" mode, a state of readiness at which each facility is prepared to execute programmatic tasks identified in the subprograms. At LANL, NNSA direct-funded facilities include the Engineering, Tritium, Dynamic Experimentation, Los Alamos Neutron Science Center (LANSCE), Waste Management, Nuclear Materials Technology (TA-55 & Chemistry and Metallurgy Research (CMR) Facility Replacement), Beryllium Technology, and Nuclear Materials Storage and Critical Experiments Facility (TA-18). Warm-standby work scope includes conventional facility management, infrastructure and utilities, and operation & maintenance of real property and special equipment. This activity also includes infrastructure support: Line Item other project costs (OPCs), general plant projects (GPP) construction, seismic studies, authorization basis, monitoring wells, beryllium rule, and program management.



Facilities and Infrastructure Recapitalization Program (FIRP)

The FIRP is funding a robust and balanced program of systematic deferred maintenance reduction, focused facility disposition, and construction components. With regard to facility disposition, approximately 98, 000 gross square feet of excess space is targeted for elimination. Beginning in FY 2006, a Line Item Utility project, which brings long-needed upgrade to the site's power grid is funded through the FIRP construction program. The well-conceived project is contributing to the deferred maintenance buy down, while at the same time improving the reliability of vitally needed electrical power. A third power line is being built to eliminate the risk of a single point power failure. FIRP Recapitalization-funded projects are providing improvements to mission essential facilities, improving worker safety, and generally improving the reliability of facilities. For FY 2006, system reliability through electrical safety upgrades, sanitary sewer system replacement; Heating, Ventilation, and Air Conditioning (HVAC) upgrades; and gas transfer systems highlight the facilities management approach to revitalizing the site. Recapitalization program performance expectations continue to rise due to the contribution made by the Planning Component of FIRP. The FY 2006 budget includes the funding of planning for FY 2007 projects. Design of general plant and expense projects in advance of construction is leading to solid project cost estimates thereby reducing project cost overruns. 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 consistent approach and common standards for optimal roofing repairs and replacement is making a marked contribution to reduction of deferred maintenance.

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 safeguards and security consistent with security requirements documented in its approved Site Safeguards and Security Plan (SSSP). During FY 2006, the laboratory will continue making upgrades to the Nuclear Materials Safeguards and Security Upgrade Project (NMSSUP), Phase II, access control systems begun in FY 2005 as well as implementing new security measures resulting from the completion of the roads project in FY 2005. These upgrades are part of Design Basis Threat (DBT) requirements identified by the laboratory. Other DBT related funding will support recurring costs resulting from actions initiated in FY 2004 and FY 2005 in order to ensure site's compliance with the 2003 DBT policy by the end of FY 2006. Additionally, site analysis will be conducted to develop a revised protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. 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 (ARIES) 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, and 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 activities for the BN-350 spent fuel disposition project, and work in cooperation with Kazakhstan and the International Atomic Energy Agency (IAEA). 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 International Atomic Energy Agency (IAEA) safeguards cooperation, verification of the DPRK nuclear weapons program dismantlement. LANL also 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.

Global Initiatives for Proliferation Prevention

LANL provides support for commercialization efforts in the Former Soviet Union and efforts to downsize the Russian nuclear weapons complex and, help create business opportunities for displaced weapons workers.

NEVADA TEST SITE

INTRODUCTION:

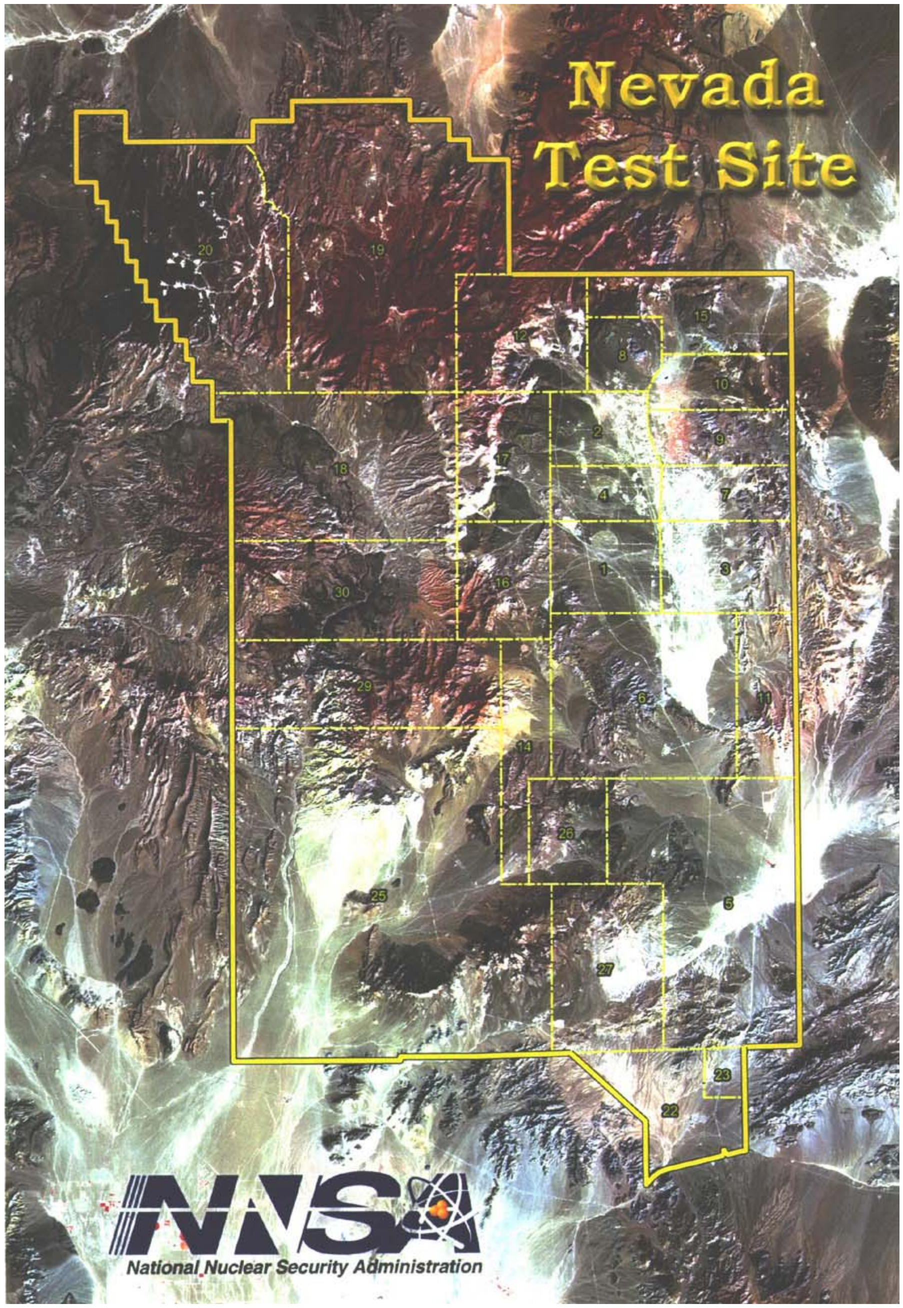
The Nevada Test Site (NTS) is a unique expanse of federally controlled land and facilities in a remote region of southern Nevada. The approximate 1,375 square miles that make up the NTS are surrounded by the Department of Defense (DoD) Nevada Test and Training Ranges and unpopulated land controlled by the United States (U.S.) Bureau of Land Management. Located 65 miles northwest of Las Vegas, the NTS is one of the largest secure areas in the United States, due to buffer zones to the west, north and east. The geology, hydrology, meteorology, and radiological environments are well characterized. 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. In addition to the NTS, the NSO assets include facilities in North Las Vegas, NV; Nellis Air Force Base (AFB), NV; Andrews AFB, MD; Livermore, CA; Los Alamos, NM; and Santa Barbara, CA.

HISTORY:

In December 1950, President Truman announced the establishment of the Nevada Proving Grounds – forerunner of the NTS. The U.S. Government conducted 1,054 nuclear tests between July 16, 1945 and September 23, 1992. Of these 1,054 nuclear tests, 928 (100 atmospheric, 828 underground) were conducted at the NTS. On October 2, 1992. The President signed a nine-month moratorium stopping all nuclear testing until July 1, 1993. On July 3, 1993, President Clinton extended the moratorium on nuclear weapons testing.

The NTS facilities and outlying sites help implement National Nuclear Security Administration (NNSA) initiatives in Weapons Activities. The NTS has conducted 20 Subcritical Special Nuclear Materials (SNM) experiments in U1a and 9 SNM gas gun experiments at the Joint Actinide Shock Physics Experimental Research (JASPER) facility in support of the Primary Assessment, Dynamic Materials, Directed Stockpile Work, and Pit Certification Campaign. The Atlas facility has been successfully relocated from Los Alamos National Laboratory (LANL) and the Criticality Experiment machines are being relocated from TA-18 at LANL to the NTS Device Assembly Facility. Additionally, the NTS has an active program training first responder and other response teams using real and surrogate hazards in realistic settings and structures left from past NTS missions and legacies. The Deputy Administrator for Defense Programs is both the Cognizant Secretarial Officer, having line-management accountability for the NTS, and the Lead Program Secretarial Officer, responsible for landlord activities and overall site integration and operations.

The current and future missions at the NTS are consistent with the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, December 1996, the Nevada Test Site, Site-Wide Environmental Impact Statement, December 1996, and the Supplemental Analysis to the Nevada Test Site Site-Wide Environmental Impact Statement, July 2002.



MANAGEMENT:

Federal management: Nevada Site Office

Management and Operating Contractor: The primary contractor is Bechtel Nevada (BN) Corporation (composed of Bechtel Corporation and Lockheed Martin Nevada Technologies, Inc.). The Management and Operating (M&O) contract, originally scheduled to terminate on December 31, 2000 was extended to September 30, 2005.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	17.5	12.4	34.8				
Science Campaign	51.6	48.0	38.9				
Inertial Confinement Fusion Ignition and High Yield Campaign	0.0	0.9	0.0				
Pit Manufacturing and Certification Campaign	46.7	47.9	35.2				
Readiness in Technical Base and Facilities	116.4	84.2	123.5				
Nuclear Weapons Incident Response	36.8	37.1	38.6				
Facilities and Infrastructure Recapitalization Program	17.3	23.1	23.1				
Environmental Projects and Operations	74.1	80.7	81.9				
Global Threat Reduction Initiative	7.9	0.1	0.1				
HEU Transparency Implementation	0.4	0.5	0.5				
Fissile Materials Disposition	0.1	0.3	0.3				
International Nuclear Materials Protection and Cooperation	0.5	0.4	0.3				
TOTAL NNSA	369.3	335.5	377.3	379.5	365.8	369.3	378.0

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

NNSA-funded end-of-year contractor employment is projected at approximately 2,400 (out of 3,500 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work

Through Stockpile Services Research and Development, the NTS will develop and execute Subcritical Experiments (SCEs) as defined by Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) to meet certification needs. Planned activities in FY 2006 to support LLNL efforts include the execution and data recovery of the Accordion SCE, diagnostic development for future SCEs and test bed construction for the Accordion Prime. Scope of work supporting LANL includes the preparation and fielding of SCEs for various weapons, to include all diagnostics and SCE support.

Science Campaign

Within the Primary Assessment Technology activity, NTS will continue to support the LLNL efforts with their SCEs, diagnostic development and fielding of experiments in support of this campaign. NTS will also continue to analyze archived data from past nuclear events using modern computer systems and algorithms to support the LANL effort to better understand the existing database of nuclear event information. NTS will support Dynamic Materials in FY 2006 by continuing to support diagnostic development and fielding of experiments supporting the National Weapons Laboratories. NTS will support Sandia National Laboratories (SNL) in experiments, pulsed power source development, and diagnostic advancements. JASPER experiment series and diagnostic advancements are planned to support both LLNL and LANL. NTS will support LANL in executing materials constitutive properties experiments on the Atlas Pulsed Power Facility in areas of machine operation and diagnostic advancements. In FY 2006, NTS will continue to support LANL with Advanced Radiography activities. These activities include support to the LANL Dual-Axis Radiographic Hydrodynamics Test (DARHT) and proton radiography experiments at the LANL Neutron Science Center (LANSC) and Brookhaven National Laboratory. Key activities in Secondary Assessments for FY 2006 will include diagnostic development, calibration, and experiment data collection related to radiation flow studies performed by LLNL and SNL. Test Readiness is designed to ensure that an underground nuclear test could be executed within the established time frame by maintaining critical personnel, equipment, and infrastructure resources. Working with the DoD and the Nuclear Weapons Council (NWC), the NNSA began transition to an 18-month test readiness posture in FY 2003. The transition to an 18-month readiness posture is planned for completion by the end of FY 2006 and continuing maintenance activities for the foreseeable future.

Pit Manufacturing and Certification Campaign

FY 2006 represents the last year of support by NTS in the Pit Manufacturing and Certification Campaign. Significant FY 2006 activities include the preparation and fielding of the LANL weapons sub-critical experiments (SCE), including all diagnostics and other experiment support.

Readiness in Technical Base and Facilities (RTBF)

A key RTBF activity in FY 2006 includes the continued state of operational readiness for the following facilities: Device Assembly Facility (DAF), U1a Complex, JASPER, Control Point Complex, Atlas, High Explosive Facility, NTS Los Alamos Technical Facility, NTS Livermore Technical Facility, and the North Las Vegas Complex. Planned FY 2006 activities at these facilities include sub-critical experiments at U1a, dynamic material property experiments at JASPER, nuclear material handling and Emergency Operations response at DAF, and pulse power experiments at Atlas. NTS will continue activities in Program Readiness. These support activities include logistics to the National Weapons Laboratories, support to Other Federal Agencies, program operations, legacy compliance, equipment revitalization and the Borehole Management Program. In FY 2006, NTS will initiate the North Las Vegas B3 construction project and consolidate and initiate the NTS Fire Station No. 1 and 2 projects.

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 2006 emphasize safety and infrastructure projects. Long neglected roads and security structures are in the fore of the improvements addressed. Building fire protection systems are being upgraded to code requirements regarding backflow prevention in existing fire protection sprinkler systems. Similarly, the road upgrades are undertaken to repair badly deteriorated road surfaces and to meet transportation standards. NTS 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. The consistent approach and common standards for optimal roofing repairs and replacement is making a marked contribution to reduction of deferred maintenance. Thus far, results are realized in improved cost efficiencies, improved quality of life extension of NNSA's roofing assets, and additional deferred maintenance reduction.

Environmental Projects and Operations
The NTS environmental management program includes environmental restoration activities, legacy waste management, waste disposal facility operations and Nevada community and regulatory support. In FY2006, the following activities are among those planned to support accelerated cleanup of the NTS: continue transport data analysis and modeling for several areas; and, complete the characterization of waste dumps, contaminated soil sites, and other similar sites. Other activities include the complete closure of waste disposal sites, septic systems and dry wells, chemical/spill release sites, and decontamination and decommissioning (D&D) of Test Cell A. Also during FY 2006, drums containing items that do not meet the WIPP Waste Acceptance Criteria will be processed to meet requirements for disposal, oversized waste storage boxes will be sized reduced, the Visual Examination Repackaging Building will be decontaminated, and preparations will continue for receipt and disposal of off-site generated mixed low-level waste pending approval by the State of Nevada of the Resource Conservation and Recovery Act (RCRA) Part B Permit.

Safeguards and Security
The NTS Safeguards and Security program is funded through the Nevada Site Office and provides site safeguards and security consistent with security requirements documented in its approved Site Master Security Plan. Design Basis Threat (DBT) funding will be used to implement necessary actions for compliance with the 2003 DBT policy by the end of FY 2006 and fund recurring DBT costs resulting from initiatives generated during FY 2004 and FY 2005 to include continuing required protective force staffing increases, and training and equipment upgrades. Additionally, site analysis will be conducted to develop a revised protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. 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

INTRODUCTION:

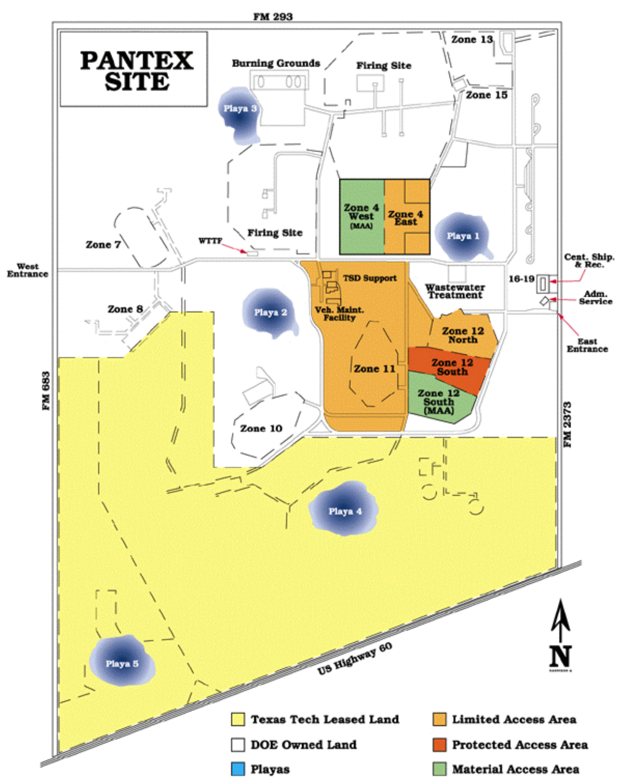
The Pantex Plant is located on 16,000 acres in the Texas Panhandle, approximately 17 miles northeast of Amarillo, Texas.

HISTORY:

Constructed by the U.S. Army, in 1942, as a conventional bomb plant, Pantex was decommissioned after World War II and sold to Texas Tech University as excess government property. In 1951, the Atomic Energy Commission (AEC) reclaimed 10,000 acres of the site for nuclear weapons work from Texas Tech. The remaining 6,000 acres were reclaimed by 1989 and are leased from Texas Tech.

Pantex assumed responsibility for weapons maintenance and modification in the mid-1960s, when plants that had been performing those tasks closed. With the closure of the AEC Burlington Plant in Iowa in 1975, Pantex became the nation's only assembly and disassembly point for nuclear weapons. The Deputy Administrator for Defense Programs is both the Cognizant Secretarial Officer, having line-management accountability for Pantex, and the Lead Program Secretarial Officer, responsible for landlord activities and overall site integration and operations.

The current and future missions are consistent with the Records of Decisions for the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (PEIS), December 19, 1996, and the Storage and Disposition of Surplus Weapons Usable Fissile Materials PEIS, January 14, 1997.



MANAGEMENT:

Federal management: Pantex Site Office

Management and Operating Contractor: BWXT Pantex, LLC was awarded a 5-year contract for the management and operation of the plant. This contract began February 1, 2001 and has a value of $1.7 billion over 5 years. After the contract period, the Department of Energy (DOE) has the option to extend the contract for another 5 years.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	127.0	111.1	136.0	The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.			
Engineering Campaign	4.1	3.4	3.1				
Readiness Campaign	25.7	37.8	17.9				
Readiness in Technical Base and Facilities	138.1	188.9	130.2				
Nuclear Weapons Incident Response	1.1	0.8	0.8	Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.			
Safeguards and Security	100.7	107.3	101.2				
Facilities and Infrastructure Recapitalization Program	28.2	36.0	33.1				
Environmental Projects and Operations	20.7	24.0	19.5				
Fissile Materials Disposition	4.2	4.5	4.7				
Nonproliferation and International Security	0.6	0.7	0.7				
International Nuclear Materials Protection and Cooperation	0.3	0.4	0.3				
TOTAL NNSA	450.7	514.9	447.5	491.9	523.9	529.9	550.2

NNSA-funded end-of-year contractor employment is projected at approximately 3,200 (out of 3,400 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work (DSW)

Pantex is the assembly/disassembly plant for all nuclear weapons. Activities include procurement of materials (exclusive of nuclear materials); fabrication and assembly of nuclear weapons and weapon components; lifetime surety maintenance and reliability assessment of the enduring stockpile; weapon dismantlement and disposal; and maintenance of field training manuals for activities that directly support weapons in the enduring nuclear stockpile, including current maintenance; day-to-day care, and development, engineering, and certification activities to support planned life extensions.

Engineering Campaign
The Pantex Plant supports the Enhanced Surveillance activity of Engineering Campaign strategic objectives by performing aging studies on explosives and nonnuclear 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.

Readiness Campaign
The Pantex Plant is dependent upon the Advanced Design & Production Technologies (ADAPT) and High Explosives and Weapons Operations (HEWO) activities for the Enterprise and Science Based Tools and Process Development to establish processes to meet Base Workload and Life Extension Program (LEP) requirements.

Readiness in Technical Base and Facilities (RTBF)
The RTBF Program provides the physical infrastructure and operational capabilities required to support the conduct of the DSW and Campaign activities. This includes ensuring that facilities are operational, safe, secure, and compliant, and that a defined level of readiness is sustained to perform the current and future Pantex mission. In addition to the RTBF Program elements, the companion programs and Construction work cooperatively with the RTBF elements.

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. Recapitalization projects for FY 2006 address deferred maintenance buy down through refurbishments to selected structures, replacement of fire alarm systems in a number of structures, and the initiation of a substation for the site fire department. Companion to the recapitalization projects are the facility disposition projects that clear some 78,000 gross square feet of excess facilities from the landscape. Pantex 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. The consistent approach and common standards for optimal roofing repairs and replacement is making a marked contribution to reduction of deferred maintenance. In the utility line item arena, Pantex embarks on planning and design of two new projects that upgrade high-pressure fire system distribution lines and upgrade water productions wells and primary distribution lines. Construction begins in FY 2006 on electrical distribution system upgrades and improvements and upgrade to gas main and distribution lines.

Environmental Projects and Operations
The Pantex Plant environmental management program includes both an environmental restoration project and a decontamination and destruction project. These projects are scheduled for completion in FY 2008. The end state for the Pantex Plant soil and water remediation project is for all corrective measures to be implemented for legacy contamination (252 release sites). Specific FY 2006 planned activities are to: continue operation and maintenance of contamination source term Interim Corrective Measures for Zone 11, (soil vapor extraction) and Zone 12 (ozone injection, ditch liners) and complete demolition of the Building 12-24 Complex.

Safeguards and Security
The Pantex Safeguards and Security program provides safeguards and security consistent with security requirements documented in the approved Site Safeguards and Security Plan (SSSP). In FY 2006, the Pantex Plant will ensure necessary actions are implemented for compliance with the 2003 Design Basis

Threat (DBT), while funding recurring costs generated from FY 2004 and FY 2005 DBT initiatives, such as continued use of enhanced weapons and equipment by protective forces to improve capabilities against terrorist threats, and utilization of new site detection and assessment capabilities to reduce requirements for the number of Special Police Officers needed for site protection. Additionally, site analysis will be conducted to develop a revised protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. 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

INTRODUCTION:

Sandia National Laboratories/New Mexico (SNL/NM) is located on the 75,520 acre Kirtland Air Force Base (AFB) military reservation, about 6.5 miles east of Albuquerque, New Mexico. The laboratory occupies nearly 9,000 acres on the Kirtland reservation and has additional facilities in Livermore, California (400 acres), Kauai, Hawaii (120 acres) and Tonopah, Nevada (600 square miles).

HISTORY:

The Sandia/NM site was a branch of the Los Alamos National Laboratory (LANL) before becoming a separate entity, in 1949, under management of the American Telephone and Telegraph Company. In 1993, Martin Marietta-Lockheed Martin assumed responsibility for the Sandia National Laboratories (SNL) management contract. The SNL/Livermore site, in Livermore, California opened in 1956.

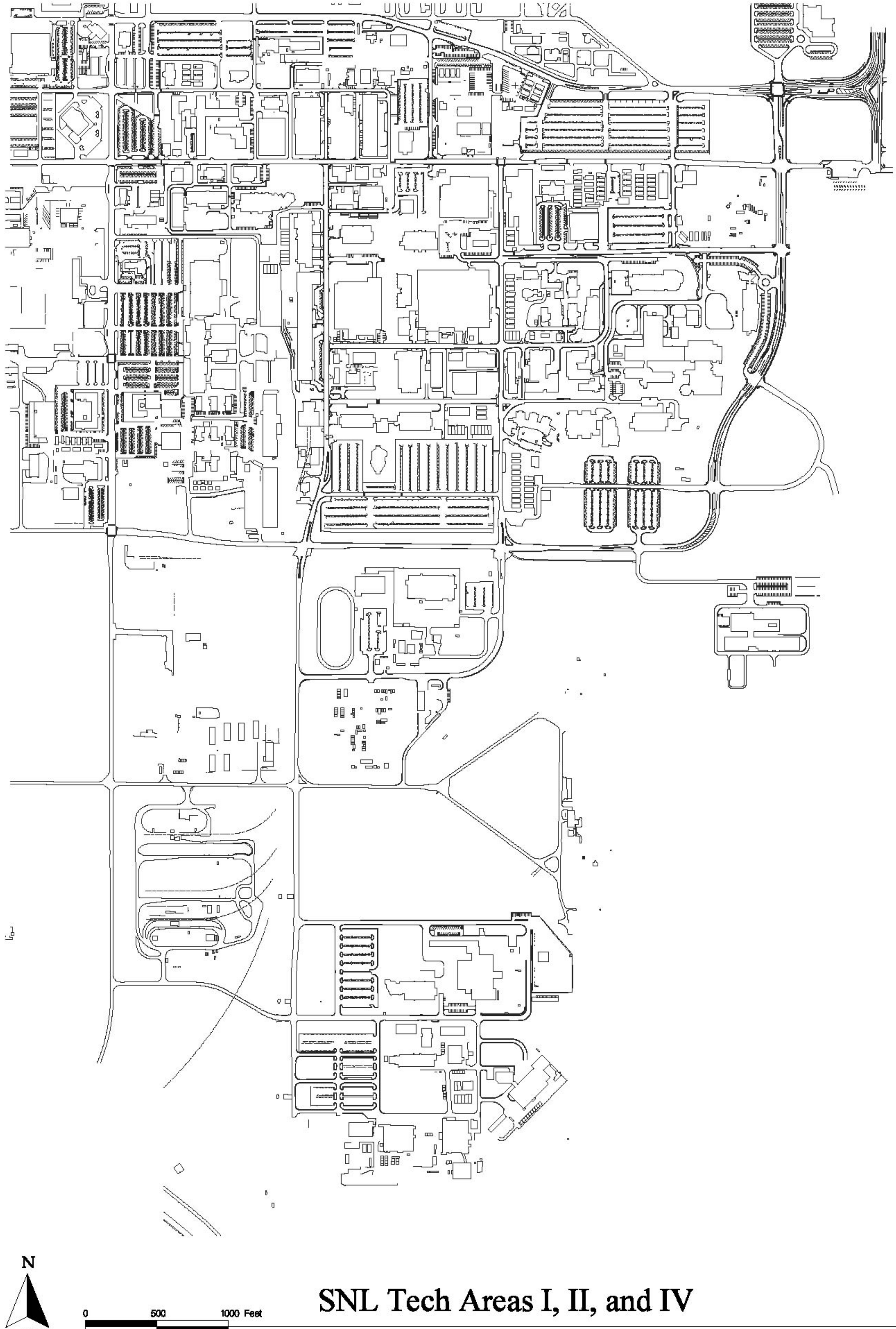
A Record of Decision on the Site-Wide Environmental Impact Statement for the continued operation of the laboratory was published in December 1999. The preferred alternative is for expanded operations consistent with the Record of Decision for the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, issued December 19, 1996. The statement includes the environmental analysis for the Microsystems and Engineering Science Application (MESA) facility.

The Deputy Administrator for Defense Programs is both the Cognizant Secretarial Officer, having line management accountability for SNL, and the Lead Program Secretarial Officer, responsible for landlord activities and overall SNL site integration and operations.

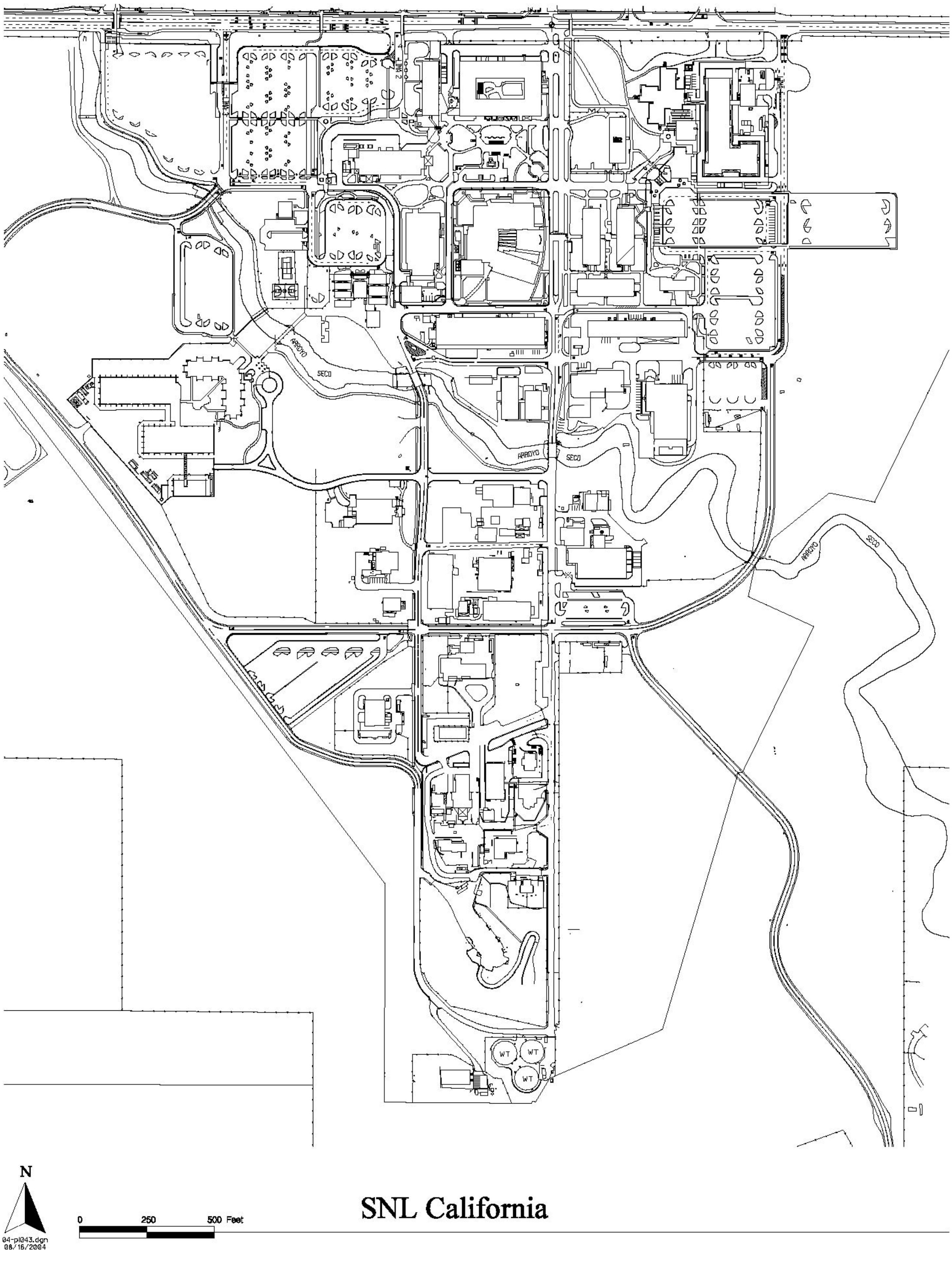
MANAGEMENT:

<u>Federal management</u>: Sandia Site Office

<u>Management and Operating Contractor</u>: Lockheed Martin Corporation. The current contract expires September 30, 2008.



SNL Tech Areas I, II, and IV



SNL California

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FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	433.9	417.6	437.1				
Science Campaign	14.3	17.6	14.6				
Engineering Campaign	185.7	173.7	150.9				
Inertial Confinement Fusion Ignition and High Ignition and High Yield Campaign	44.0	55.1	40.6				
Advanced Simulation and Computing	195.5	168.5	120.0				
Pit Manufacturing and Certification Campaign	0.6	0.6	0.7				
Readiness Campaign	24.6	21.7	14.7				
Readiness in Technical Base and Facilities	256.9	204.0	195.7				
Nuclear Weapons Incident Response	8.5	8.5	8.8				
Safeguards and Security	91.2	93.3	95.5				
Facilities and Infrastructure Recapitalization Program	24.0	33.8	31.1				
Environmental Projects and Operations	20.7	20.1	9.8				
Global Threat Reduction Initiative	4.2	6.4	7.7				
Nonproliferation and Verification R&D	71.1	66.2	65.4				
HEU Transparency Initiative	1.5	1.7	1.7				
International Nuclear Materials Protection and Cooperation	61.9	50.5	46.1				
Global Initiatives for Proliferation Prevention	1.3	4.5	4.0				
Nonproliferation and International Security	21.9	16.6	12.5				
Fissile Materials Disposition	0.6	0.0	0.4				
TOTAL NNSA	1,462.5	1,360.3	1257.4	1,292.7	1,426.7	1,454.4	1,499.7

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

NNSA-funded end-of-year contractor employment is projected at approximately 5,300 (out of 8,700 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work (DSW)

SNL supports DSW activities to: ensure the reliability, safety and security of the current and future nuclear weapons stockpile in an affordable manner; define, prioritize, and integrate the science and technology needs of the future stockpile while reducing risk, cycle times, and cost; deliver all required production hardware on time and at the lowest achievable cost; assure integration occurs without costly gaps and overlaps among Defense Programs and SNL Nuclear Weapons Strategic Management Unit programs; acquire, nurture, and deploy the people necessary to carry out the mission and provide them with the knowledge and information to do their job in a secure manner; provide technology to ensure the Nation has confidence in the surety of the nuclear weapons stockpile; and protect the information entrusted to SNL. SNL supports the Life Extension Program (LEP) activities and, in FY 2006, will support the W76-1 LEP with production readiness reviews and will provide hardware for various tests. On the W80-3, SNL will issue complete engineering releases for many of the weapon system components and associated engineering releases per the W80-3 baseline schedule. Within the Enduring Stockpile activities, SNL supports the requirements to keep the stockpile safe, secure and reliable by supporting weapon alterations (ALTs) and, in FY 2006, will achieve phase 6.5 authorization for the B61-3, 4, 7, 10, and 11 ALT 356/358/359 and First Production Unit (FPU) the Spin Rocket Motor. SNL will complete all production deliverables in accordance with the W76 Program Management Document (PMD) schedules and the LEP Integrated Schedules by the end of September 2006. Finally, SNL activities support multiple systems and, in this area, SNL will support Use Control System Development, Joint Test Assemblies (JTA) technology development, Advanced Systems & Technology Studies, Code Management System Initial Operational Capability (CMS IOC is scheduled for FY 2006), U.S. Strategic Command Advanced Code and Control/Navy Depot, U.S. Air Force Material Command (AFMC) Depot, Pantex, and the Advanced Military Technologies Memorandum of Understanding.

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 LANL and Atomic Weapons Enterprise (AWE). On the Z facility, SNL also develops intense energetic radiation sources, sophisticated x-ray diagnostics, and the 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 compress (i.e., shocklessly) 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 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

SNL is developing through the Engineering Campaign, the technologies and assessment tools required to support the design, qualification, and continued certification of the existing nuclear weapon stockpile, currently planned refurbishments, and any potential new weapon developments, as authorized. The Enhanced Surety Major Technical Effort (MTE) will develop architectures, subsystems, components, and technologies to enhance the safety, security, and use control of the stockpile. Scheduled refurbishments provide a timeline against which to mature technologies. The Weapons Systems Engineering Assessment Technology MTE provides state-of-the-art experimental capabilities that are closely integrated with computational activities and are targeted to support the qualification, certification, and assessment of enduring stockpile systems and stockpile LEPs. The Enhanced Surveillance MTE provides development of advanced surveillance testers for the Weapons Evaluation Test Laboratory (WETL), development of advanced telemetry for enhanced fidelity instrumentation, prototyping of a modern component surveillance program, and the fundamental materials research necessary to underpin advanced materials and subsystem models for aging and other failure assessments. SNL's largest-to-date construction project, the Microsystems Engineering Sciences and Applications (MESA) Complex, officially broke ground on major facility construction activities on August 19, 2003. Construction activities will continue in FY 2006.

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. In FY 2004, SNL reached full single shift operation of the Z facility and performed over 200 Z shots, which represents approximately half of the requested stockpile stewardship experiments (for Dynamic Materials, Secondary Assessment Technology, and Nuclear Survivability Campaign activities and the 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 multidimensional 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 Atomic Weapons Establishment (Aldermaston).

Pit Manufacturing and Certification Campaign
The SNL Pit activities provide technical support in mission analyses, facility design, material transport system development and safeguards and security systems for the Modern Pit Facility.

Advanced Simulation and Computing (ASC) Campaign
The ASC Subprogram at SNL will deliver validated software for application to SNL's nuclear weapon stockpile mission, the computing infrastructure to provide a user environment for SNL's weapon designers and analysts, and the ASC-scale computing platforms for both capability and capacity computing.

Readiness Campaign
For the Advanced Design and Production Technologies (ADAPT) activities, SNL provides a leadership role in all of the MTEs for the campaign as the Nuclear Weapons Complex (NWC) system integrator, having a significant role in production and associated process development decisions and as the engineering Design Agency. SNL's Nonnuclear Readiness activity role is scaled to the portion of production responsibilities and has been limited to the replacement or refurbishment of obsolete equipment, primarily tester, for SNL's Neutron Generator (NG) production mission responsibilities. SNL has accomplished the goals of the startup phase of the NG tester after transition from Pinellas to SNL and is now embarking on the establishment of the sustainment phase.

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 derive from the staffing and operation of a number of critical Nuclear Weapon 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, and Tech Area-III Full Scale Test Facilities) or production capabilities (Microelectronics Development Laboratory, and, Neutron Generator Plant) to the infrastructure fundamentals of Decommissioning and Demolition (D&D), and General Plant Projects. The common thread is that the RTBF activities are essential to develop and maintain the suite of capabilities necessary for SNL to be able to carry out its Nuclear Weapon Program missions today and in the future.

Safeguards and Security
The SNL Safeguards and Security program provides laboratory safeguards and security consistent with security requirements documented in its approved Site Safeguards and Security Plan (SSSP). The laboratories will be in the final year of Design Basis Threat (DBT) implementation with funding directed primarily to support recurring DBT costs resulting from actions initiated during FY 2004 and FY 2005. The laboratory will take remaining necessary actions to be in compliance with the 2003 DBT policy by the end of FY 2006. Additionally, site analysis will be conducted to develop a revised protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. 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)
SNL continues to demonstrate execution of FIRP activities by focusing on reducing the deferred maintenance of mission-essential facilities necessary to perform the site's primary missions. The program is funded to reduce deferred maintenance of facilities that house scientific research in support of the Stockpile Stewardship Program. Recapitalization projects are a blend of road construction projects, heating, ventilation, and air conditioning (HVAC) system upgrades, and electrical system upgrades. In addition, a major replacement of chillers and the accompanying cooling tower complements refurbishment of air handling and exhaust fans. Together, these projects combine in the improvement to the facility condition of the site. FIRP is facilitating measurable improvement because site standards are high, acquisition strategies are sound, and corporate facilities management is embraced at all decision levels of management. Facility footprint reduction is especially important at

SNL because the modernization is confined to existing boundaries. The Facility Disposition activity is providing space to meet future needs. For FY 2006, SNL is targeting the elimination of some 46,000 gross square feet of excess space. Two FIRP Construction projects, one initiated in FY 2004 and the other in FY 2005, continue. The New Master Substation, Technical Areas I & IV, was designed in FY 2004, began limited construction in FY 2005, and is slotted to perform the bulk of the project's construction in FY 2006. The Technical Area-I Heating System Modernization project initiated design in FY 2005, completes design in FY 2006 for a targeted construction start in FY 2007.

Environmental Projects and Operations

The majority of clean-up activities at SNL will have been completed or will be in a site closure process by FY 2006 including closure of two landfills. The FY 2006 activities include the remediation, regulatory documentation for the Chemical Waste Landfill and Mixed Waste Landfill.

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 (DoD), 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 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 Radioisotropic Thermoelectric Generator project. SNL also provides a physical protection training course for IRTR staff personnel.

Nonproliferation and International Security

SNL provides support for Nonproliferation Policy regional security efforts, conducts technical exchanges and technology development under the U.S.-Russian Warhead Safety and Security Exchange (WSSX) 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 Export Control, 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 International Safeguards cooperation, provides vulnerability assessment support for foreign sites of interest, physical protection upgrades, training to foreign nationals as needed, Additional Protocol outreach and training, safeguards agreement implementation and, Proliferation Resistant Fuel Cycle Technology project.

Global Initiatives for Proliferation Prevention
SNL provides support for commercialization efforts in the Former Soviet Union and efforts to downsize the Russian nuclear weapons complex and, help create business opportunities for displaced weapons workers.

SAVANNAH RIVER SITE

INTRODUCTION:

The Savannah River Site (SRS) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Environmental Management is the site landlord for the Department of Energy. The overall site covers approximately 310 square miles bordering the Savannah River in western South Carolina. Environmental Management is the site landlord. SRS is designated as a National Environmental Research Park and covers a portion of Aiken, Barnwell, and Allendale counties. However, significant NNSA work is conducted at the site.

The SRS Tritium Facility occupies approximately 25 acres in the northwest portion of H-Area, near the center of the SRS. The SRS Tritium Facility includes five production structures, ten administrative office structures, three storage structures, and twenty-four service structures. The five production buildings within the SRS Tritium Facility house tritium reservoir loading and unloading, tritium recovery and purification, reservoir reclamation, reservoir surveillance testing and evaluation, and Life Storage Program research activities. The Tritium Extraction Facility, capable of extracting tritium gas from targets to ensure the future availability of tritium, is being constructed in this area. The Deputy Administrator for Defense Programs is the Cognizant Secretarial Officer, having line-management accountability for the SRS Tritium Facility, but not the Lead Program Secretarial Officer, responsible for SRS landlord activities and overall site integration and operations.

HISTORY:

SRS was constructed in the early 1950s to produce basic materials used in nuclear weapons, primarily tritium and plutonium. DuPont managed the site until April 1989. Since that time, Westinghouse Savannah River Company Limited Liability Company (WSRC LLC) has been the operating contractor of SRS. The company is a consortium of partner firms: Westinghouse Savannah River Company; Bechtel Savannah River Company, Inc.; BNFL Savannah River Corporation; BWXT Savannah River Company; CH2 Savannah River Company; and Polestar Savannah River Company. Today, in addition to various environmental management activities, recycling and reloading tritium to keep the nation’s supply of nuclear weapons ready is a continuing site mission.

Aerial Photo of SRS Tritium Facility

MANAGEMENT:

<u>Federal management</u>: Savannah River Site Office; Fissile Material Disposition Office, SRS

<u>Management and Operating Contractor</u>: WSRC LLC is the operating contractor and the current expiration date is September 30, 2006.

FUNDING:

(dollars in millions)

NNSA activities	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	28.5	36.7	28.1				
Science Campaign	1.6	1.3	0.0				
Engineering Campaign	1.1	1.5	1.0				
Pit Manufacturing and Certification Campaign	6.0	6.5	7.1				
Readiness Campaign	98.1	57.1	54.8				
Readiness in Technical Base and Facilities	90.1	105.5	100.9				
Nuclear Weapons Incident Response	1.3	1.2	1.2				
Safeguards and Security	13.3	13.0	12.7				
Facilities and Infrastructure Recapitalization Program	8.0	8.1	6.8				
Global Threat Reduction Initiative	1.7	1.0	2.1				
Fissile Materials Disposition	39.2	67.7	62.5				
Nonproliferation and Verification R&D	3.1	2.0	2.0				
Nonproliferation and International Security	2.3	2.4	2.2				
Global Initiatives for Proliferation Prevention	1.9	1.0	0.7				
TOTAL NNSA	296.2	305.1	282.2	316.3	298.7	303.9	316.3

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

NNSA-funded end-of-year contractor employment is projected at approximately 1,700 (out of 10,100 sitewide) in FY 2006.

MAJOR NNSA ACTIVITIES:

Directed Stockpile Work (DSW)

DSW activities include processing tritium and inert reservoirs and associated components in support of Life Extension Programs (LEPs), Stockpile Systems, and Retired Systems. The LEP activities include planning, pre-production, production, and evaluation associated with the refurbishment of the B61, W76, and W80. These activities involve weld and fixture development, loading and processing of prototypes, initial life storage, qualification, and first production units. Stockpile Systems categories include Limited Life Component Exchange (LLCE), Reservoir Surveillance, Stockpile Laboratory Tests, and Life Storage Program (LSP) activities. Costs for these missions will be distributed between the weapons systems supported in accordance with the workload performed for each weapon system. Reservoirs and associated parts will be processed as necessary to support LLCE schedules per production directive requirements for the enduring stockpile. Reservoir processing operations include receiving, proof testing, loading, pinch welding, finishing, assembly, inspection, and packaging for shipment. Returned reservoirs will be unloaded to support production needs for tritium gas or reclaimable reservoirs, and to meet Reservoir Age Management Program goals. Reusable unloaded reservoirs will be reclaimed and reprocessed for stockpile service; retired reservoirs will be welded closed to prepare them for disposal. Stockpile Laboratory Test activities also include environmental conditioning, function testing, precision unloading, hydraulic burst testing and destructive examination of tritium reservoirs, metallography reporting and data analysis. The LSP conducts research to determine the effects of long-term tritium exposure on reservoir designs and materials to improve personnel protection and increase the safety of weapons components. Retired Systems includes reservoirs returned from retired weapons that will be unloaded, welded closed for disposal, or managed per Stockpile Laboratory Test requirements.

Engineering Campaign
SRS activities involve development of new surveillance techniques for gas transfer systems. The Enhanced Surveillance activity develops the tools, techniques, and procedures to advance the capabilities of the Nuclear Weapons Complex 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 efforts in this campaign are to develop new surveillance techniques for gas transfer systems.

Pit Manufacturing and Certification Campaign
The Modern Pit Facility Project will re-establish the needed capability to manufacture pits to replace aging pits in the nation's nuclear stockpile. SRS is one of five sites being considered for this mission. SRS is currently performing the Conceptual Design of the Modern Pit Facility under the direction of NNSA Headquarters.

Readiness Campaign
The SRS role in support of the Tritium Readiness activity 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 Tritium Producing Burnable Absorber Rods. This will provide sufficient tritium to support stockpile requirements. The TEF is located adjacent to building 233-H in order to share common facilities. The TEF is designed for a forty-year operating life. In FY 2006, Other Project Costs (OPC) activities will include completing component system and integrated start-up testing, completing the operating and maintenance procedures, and training operating staff. The Facility Safety Analysis Report will be completed. Hydrogen testing of the processes, operator proficiency, and internal review team assessments will be completed and preparation for the WSRC and DOE Operational readiness review will be concluded. Total Estimated Cost activities will include engineering, construction, and project support activities to address issues that are encountered during start-up testing.

The Advanced Design and Production Technologies (ADAPT) activity consists of three Major Technical Efforts: Process Development (PD), Enterprise Integration (EI), and Integrated Design Engineering and Manufacturing (IDEM). PD develops and improves processes to be used for future production and ensures these processes are fully production capable, while IDEM develops those technologies that facilitate a more agile, responsive manufacturing infrastructure. At SRS, PD and IDEM are focused on tritium production and processing technologies and on the development of new reservoirs and the associated reservoir processing and inspection technologies. Enterprise Integration supports development and deployment of information technologies and practices that allow a geographically distributed complex to interact as if members were co-located.

Readiness in Technical Base and Facilities (RTBF)
SRS 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 includes 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 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. 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 2006, deactivation of 232-H will be completed, and long-term surveillance and maintenance of this legacy facility will begin. 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. Gas mixtures are enriched to support the Life Extension Programs and Stockpile Services missions. SRS maintains H1616, SR-101, and UC-609 shipping containers and Hydride Transport Vessels (HTVs), and provides operational, regulatory, and technical support of H1616s, SR-101s, UC-609s, HTVs, and Pressure Vessels. SRS will also begin developing the Bulk Tritium Shipping Package as a replacement for the UC-609 package; FY 2006 scope includes design and testing, certification and licensing, quality assurance, and fabrication and procurement.

Safeguards and Security
The SRS Safeguards and Security program provides the safeguards and security for the Tritium Facility consistent with security requirements documented in its approved facility Master Security Plan. In FY 2006, the SRS Tritium Facility will utilize site Program Funds to address the majority of security requirements related to the Design Basis Threat and continue to meet all safeguards and security requirements for the facility.

Facilities and Infrastructure Recapitalization Program (FIRP)
Within the Facilities and Infrastructure Recapitalization Program, the Savannah River Site's contributions derive from Recapitalization projects that renovate sections of the Calorimeter and Calibration Laboratory, replace monitoring and control systems in selected buildings, and embark on the construction of a facility support building that permits the replacement of an existing office building in a "failed" facility condition, along with six modular trailers.

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. SRS participated 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 and laboratory management and technical experts participate in the International Radiological Threat Reduction (IRTR) Program.

Y-12 NATIONAL SECURITY COMPLEX

INTRODUCTION:

The Y-12 National Security Complex (Y-12) is located on approximately 800 acres of the almost 35,000-acre Oak Ridge Reservation, about 20 miles west of Knoxville, Tennessee. The Y-12 Site Office provides federal oversight and manages the National Nuclear Security Administration (NNSA) Management and Operating (M&O) contract for Y-12. BWXT Y-12 L.L.C. is the M&O Contractor responsible for management and operation of Y-12.

HISTORY:

Built in a rural section of East Tennessee, Y-12 was previously known as the Oak Ridge Y-12 Plant and was part of the Manhattan Project. Its job was to process uranium for the first atomic bomb. Construction of Y-12 started in February 1943; enriched uranium production started in November of the same year. Construction, however, was not entirely finished until 1945. At its peak during the war, Y-12 employed 22,000 workers.

Since World War II, the number of buildings at Y-12 has doubled. Its mission and capabilities have changed as well. The first site mission was the separation of uranium-235 from natural uranium by the electromagnetic separation process. The magnetic separators were taken out of commission at the end of 1946 when gaseous diffusion became the accepted process for enriching uranium. For more than 50 years, Y-12 has been one of the Department of Energy (DOE) weapons complex's premier manufacturing facilities for enriched uranium. Every weapon in the stockpile has some components manufactured by Y-12. Y-12's work in the Manhattan Project helped produce the first nuclear weapons—the ones that helped to end World War II—and weapon components later produced at Y-12 contributed directly to victory in the Cold War. Nuclear weapons remain a vital part of national security today and Y-12 continues to serve an essential role in the nuclear weapons program. The Deputy Administrator for Defense Programs is the Cognizant Secretarial Officer, having line-management accountability for Y-12, but not the Lead Program Secretarial Officer, responsible for landlord activities and overall site integration and operations.

Today, Y-12 is a manufacturing facility that stretches over approximately 800 acres. Its approximately 700 buildings contain about 7.6 million square feet of floor space.

MANAGEMENT:

Federal management: Y-12 Site Office

Management and Operating Contractor: BWXT Y-12, L.L.C. was awarded the contract for management and operation of the site November 1, 2000.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	163.0	155.6	158.6				
Science Campaign	2.4	1.2	0.0				
Engineering Campaign	3.6	3.8	4.0				
Advanced Simulation and Computing Campaign	0.5	0.3	0.0				
Pit Manufacturing and Certification Campaign	0.1	0.0	0.1				
Readiness Campaign	45.3	47.3	35.5				
Readiness in Technical Base and Facilities	332.7	434.5	357.2				
Safeguards and Security	112.0	138.5	116.7				
Facilities and Infrastructure Recapitalization Program	62.1	73.5	67.5				
Nuclear Weapons Incident Response	0.9	1.4	2.3				
Fissile Materials Disposition	37.0	38.6	41.7				
Global Initiatives for Proliferation Prevention	1.1	1.5	1.0				
Global Threat Reduction Initiative	0.5	9.0	0.0				
HEU Transparency Implementation	0.1	0.9	1.0				
TOTAL NNSA	761.3	906.1	785.7	868.6	837.3	848.6	896.6

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

NNSA-funded end-of-year contractor employment is projected at approximately 4,000 (out of 4,500 sitewide) in FY 2006.

MAJOR ACTIVITIES:

Directed Stockpile Work (DSW)

The Y-12 Complex maintains the only U.S. capability to fabricate precision parts and components (from certain materials) for nuclear weapons. Every nuclear weapon produced in the U.S. has components that were fabricated at Y-12. Y-12 is also involved in the evaluation of components and subsystems returned from the stockpile, the dismantlement of secondaries, and the processing of recovered special nuclear materials (SNM). Planning is underway to support future Life Extension Programs (LEPs), such as the B61 First Production Unit (FPU) currently scheduled for February 2006 (Y-12)/June 2006 (Complex) and the W76 currently scheduled for March 2007 (Y-12)/September 2007 (Complex). Significant FY 2006 activities include: process prove-in for the B61, preparation for the W76 LEP first production unit (FPU), and continuation of evaluation and dismantlement activities.

Engineering Campaign
Enhanced Surveillance projects at Y-12 will contribute to the scientific/technical bases for annual assessment of aged components and for refurbishment decisions and schedules, and will also provide diagnostic tools for early detection of potential age-induced defects. Planned FY 2006 projects include: developing weapon specific aging models, evaluation and process development for non-destructive laser gas sampling system and enhanced low-temperature thermal decomposition system, evaluate corrosion mechanisms for metals of interest, and continue special material characterization.

Readiness Campaign
The Stockpile Readiness Campaign activity at Y-12 is the primary vehicle for the revitalization of Y-12's ability to meet mission requirements in a more efficient and cost effective manner while providing capability for the future needs of the Nuclear Weapons Complex. Y-12 is tasked with providing virtually all new processing, machining, and inspection equipment required for planned Life Extension Programs (LEP). In addition, the Campaign is charged with improving Y-12's basic manufacturing capability and deploying much needed technology developed by the Advanced Design and Production Technologies (ADAPT) activity and other technology campaigns.

The ADAPT effort at Y-12 is a key element in the DOE mission to ensure a safe, reliable, and secure nuclear weapons stockpile. By developing and deploying new information and manufacturing technologies, ADAPT is acting as a catalyst to revolutionize the way the DOE fabricates its nuclear weapon products. ADAPT draws from promising research and development efforts within the DOE, other government agencies, universities, and industry to demonstrate and deploy advanced tools, methods, and processes to meet LEP objectives for stockpile management. The three primary aims of ADAPT are to reduce the occurrence of design and manufacturing defects in refurbished stockpile hardware, reduce the time and cost for fabricating products, and maintain the capability to respond to emergency stockpile refurbishment requirements.

Readiness in Technical Base and Facilities (RTBF)
The Y-12 RTBF activities include the continued safe operation of the major Y-12 production facilities; institutional site support including common site support, maintaining a viable Chronic Beryllium Disease Prevention Program; recycle and recovery of enriched uranium and lithium; storage of highly enriched uranium (HEU), lithium, and other nuclear and weapons materials, including the nation's strategic reserve of HEU; and a container program that identifies program needs and design and testing of container designs to be used to ship weapon components between the Y-12 Complex and the Pantex Plant.

Beginning in FY 2006, the NNSA assumes the responsibility and funding to manage newly generated waste responsibilities at Y-12 to ensure hazardous, radioactive, and mixed wastes are stored, treated, certified, and shipped to off-site disposal safely and in compliance with Federal, State, and local regulations and DOE orders.

Facilities and Infrastructure Recapitalization Program (FIRP)
The facility conditions of Y-12 are noticeably improving thanks to the aggressive execution of the Facilities and Infrastructure Recapitalization Program. In the recapitalization area, Y-12 has established a deferred maintenance reduction program that is focused on supporting Directed Stockpile Work (DSW), and three major campaign activities: Enhanced Surveillance, Stockpile Readiness, and Advanced Design and Production Technologies (ADAPT). For FY 2006, recapitalization projects address electrical, mechanical, and structural system upgrades for both mission essential and other key facilities. In addition, the site is replacing deteriorated natural gas lines supplying stockpile maintenance activities. The site 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. The consistent approach and common standards for optimal roofing repairs and replacement is making a marked contribution to reduction of deferred maintenance. In the area of facility disposition for FY 2006, the Y-12 site has targeted some 269,000 gross square feet for demolition. The significance of this effort is best understood in terms the on-going Y-12 modernization program. Rounding out its comprehensive revitalization program, Y-12 is executing several Line Item projects that address some of the most demanding utility issues at Y-12, including Compressed Air Upgrade (design start in FY 2004; construction in FY 2005) and Steam Plant Life Extension (design start in FY 2005), as well as planned future projects to address potable water, electrical distribution, and utility distribution systems.

Safeguards and Security
The Y-12 Safeguards and Security program provides safeguards and security consistent with protection requirements documented in the facility approved Site Safeguards and Security Plan (SSSP). Y-12 will implement necessary actions for compliance with the 2003 Design Basis Threat (DBT) policy consistent with Secretarial direction through the implementation of interim measures pending completion of site upgrades in both operational and security facilities. Interim 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. Additionally, site analysis will be conducted to develop a revised protection strategy necessary to come into compliance with the new 2004 DBT policy by the end of FY 2008. Based on a comprehensive review of the Y-12 Security Improvement Line Item Construction Project (LICP) versus changes in operational facilities, it is anticipated that a decision will be made before the end of FY 2005 that cancels this LICP in favor of a construction project that better fulfills future programmatic needs and be more affordable and effective from a security protection standpoint. The program will also complete a two-year effort, begun in FY 2005, to centralize computer management to control the use and application of personnel computers through a master network.

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).

ARGONNE NATIONAL LABORATORY

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.

FUNDING:

(dollars in millions)

NNSA	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	0.1	0.0	0.0				
Advanced Simulation and Computing Campaign	0.7	0.3	0.0				
Readiness Campaign	0.3	0.2	0.0				
Readiness in Technical Base and Facilities	0.8	0.0	0.8				
Nuclear Weapons Incident Response	1.1	1.6	2.5				
Nonproliferation and International Security	5.0	5.8	6.9				
International Nuclear Materials Protection and Cooperation	1.0	0.5	0.4				
Global Initiatives for Proliferation	0.6	0.0	0.0				
HEU Transparency Implementation	1.3	1.5	1.2				
International Nuclear Safety and Cooperation	0.8	0.0	0.0				
Global Threat Reduction Initiative	10.3	18.7	24.4				
TOTAL NNSA	22.1	28.7	36.2	31.2	29.8	30.4	32.9

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

MAJOR NNSA ACTIVITIES:

Global Threat Reduction Initiative

ANL supports all technical aspects of the Reduced Enrichment for Research and Test Reactors (RERTR) program, including reactor analysis, conversion assistance, molybdenum-99 target development, and advanced fuel development. ANL is the technical lead for work on advanced fuel development. ANL provides support to the Russian Research Reactor Fuel Return (RRRFR) program. ANL management and technical experts participate in the International Radiological Threat Reduction Program (IRTR). In particular, ANL supports the technical aspects of the work with Interpol to compile and assess theft and diversion information relative to nuclear and radiological materials, and 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.

BROOKHAVEN NATIONAL LABORATORY

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.

FUNDING:

(dollars in millions)

NNSA activities	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Readiness in Technical Base and Facilities	0.1	0.8	0.1				
Nuclear Weapons Incident Response	0.9	1.2	2.1				
Nonproliferation and Verification R&D	0.4	6.0	6.0				
Global Threat Reduction Initiative	1.6	1.1	1.1				
Nonproliferation and International Security	2.3	2.1	2.1				
International Nuclear Materials Protection and Cooperation	23.7	46.5	46.3				
Global Initiatives for Proliferation Prevention	5.1	3.4	2.5				
TOTAL NNSA	34.1	61.1	60.3	60.8	58.9	51.2	49.6

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

MAJOR NNSA 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 Verification Research and Development

BNL develops radiation detection, scientific foundations, and instrumentation.

CHICAGO OPERATIONS OFFICE

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.

FUNDING:

(dollars in millions)

NNSA activities	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work............	0.2	0.0	0.0	The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites. Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.			
Science Campaign......................	0.2	0.7	0.0				
Engineering Campaign...............	0.0	0.1	0.0				
Advanced Simulation and Computing Campaign	2.1	2.0	2.0				
Readiness Campaign..................	22.6	24.8	31.7				
Nonproliferation and Verification R&D.......................	0.3	0.4	0.4				
Fissile Materials Disposition	461.5	410.2	390.6				
TOTAL NNSA	486.9	438.2	424.6	431.4	496.7	518.3	519.6

MAJOR NNSA 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 Barr reactor.

IDAHO NATIONAL LABORATORY

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.

FUNDING:

(dollars in millions)

NNSA activities	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	0.1	0.0	0.0	The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.			
Readiness in Technical Base and Facilities O&M	1.8	1.9	1.8				
Nuclear Weapons Incident Response	0.2	0.5	0.5				
Global Initiatives for Proliferation Prevention	0.5	0.5	0.5	Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.			
Nonproliferation and Verification R&D	0.0	0.1	0.1				
Global Threat Reduction Initiative	1.4	1.5	2.2				
Naval Reactors Development	61.8	66.0	56.4				
TOTAL NNSA	65.8	70.5	61.5	62.0	62.2	63.3	64.5

MAJOR NNSA ACTIVITIES:

Defense Nuclear Nonproliferation (DNN)

The Idaho National Laboratory supports Global Initiatives for Proliferation Prevention to provide technical support for the Initiatives for Proliferation Prevention program activities; and support for Global Threat Reduction Initiative for Russian Research Reactor Fuel Return (RRRFR) Program and International Radiological Threat Reduction (RTR) Program activities.

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

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.

FUNDING:

(dollars in millions)

NNSA activities	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Directed Stockpile Work	1.6	1.2	1.6	The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.			
Science Campaign	4.0	3.5	1.7				
Advanced Simulation and Computing Campaign	0.7	0.7	0.0				
Readiness in Technical Base and Facilities	6.2	5.0	4.6				
Nuclear Weapons Incident Response	0.4	0.4	0.4	Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.			
Global Threat Reduction Initiative	6.7	5.5	6.1				
Nonproliferation and Verification R&D	5.7	3.6	5.6				
HEU Transparency Implementation	3.9	4.3	4.1				
Nonproliferation and International Security	12.4	17.8	14.2				
International Nuclear Materials Protection and Cooperation	45.3	94.1	97.3				
Fissile Materials Disposition	31.3	35.1	46.3				
TOTAL NNSA	118.1	171.2	181.9	195.9	176.4	163.3	163.6

MAJOR NNSA 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 the DPRK nuclear weapons program dismantlement, licensing activities and export control cooperation with international partners, and development of nuclear transparency measures. ORNL 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.-Russian-IAEA Working Group on the Trilateral Initiative. ORNL provides additional technical support related to safeguards and verification measures and uranium enrichment processes and facilities, and supports work with Russia to negotiate and implement transparent nuclear reductions. Additional specialized expertise is provided in the control of nuclear-related technology, preparing analyses to revise U.S. and international nuclear export control lists, study the export control implications of the development of advanced fuel cycle technologies, and track global machine tool supply trends.

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 provides support on cask design for the BN-350 spent fuel disposition project; 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 management and technical experts participate in the International Radiological Threat Reduction Program (IRTR). 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 also participates and lead 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.

Highly Enriched Uranium Transparency Implementation

ORNL provides 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.

PACIFIC NORTHWEST NATIONAL LABORATORY

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.

FUNDING:

(dollars in millions)

NNSA activities	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Readiness Campaign	14.6	4.0	3.0				
Nuclear Weapons Incident Response	0.4	1.0	1.0				
Nonproliferation and Verification R&D	19.8	20.1	24.7				
Nonproliferation and International Security	12.3	13.8	13.1				
International Nuclear Materials Protection and Cooperation	35.5	49.0	65.5				
Global Initiatives for Proliferation Prevention	8.2	6.8	4.8				
Global Threat Reduction Initiative	5.3	9.0	7.8				
Elimination of Weapons-grade Plutonium Prod.	0.1	0.2	0.4				
HEU Transparency	0.1	0.0	0.0				
International Nuclear Safety and Cooperation	18.7	0.0	0.0				
Fissile Materials Disposition	4.0	3.6	2.8				
TOTAL NNSA	119.0	107.5	123.1	143.6	137.1	123.3	131.4

The FYNSP outyears are revised each year during the PPBE Programming phase. Adjustments are made to reflect program priorities, Congressional action, emerging requirements, and other NNSA prerogatives to rebalance work at this site and other sites.

Site allocations by program are not finalized until the enactment of the appropriation. Due to the potential for significant and numerous adjustments during any year (e.g. Congressional earmarks, changes in work scope during the execution year, etc), it is more appropriate to reflect the outyear estimates as total site funding instead of for each discrete program.

MAJOR NNSA ACTIVITIES:

Nonproliferation and Verification Research and Development

PNNL provides tools to radionuclide and statistical expertise (seismic discrimination) in the ground-based portion of nuclear explosion monitoring efforts. PNNL plays a key role in the identification of detection signatures and observables, nonproliferation data exploitation, and leading edge research and 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 EM clean-up activities, with respect to the River Corridor Contract, forces the evacuation of these facilities by 2009.

Nonproliferation and International Security
PNNL assists Nonproliferation Policy by providing support for conducting technical exchanges and technology development under the WSSX Agreement, HEU Purchase Agreement policy and transparency development, Plutonium Production Reactor Agreement (PPRA) implementation, development of nuclear transparency measures, including through technical analysis and technology development, and regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. In addition, PNNL provides Export Control 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 FSU but increasingly in transit states as well. For the International Safeguards 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 Initiatives.

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.

Global Initiatives for Proliferation Prevention
PNNL provides support for commercialization efforts in the Former Soviet Union and efforts to downsize the Russian nuclear weapons complex and help create business opportunities for displaced weapons workers.

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 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.