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Volume 1

Department of Energy
FY 2012 Congressional Budget Request

National Nuclear Security Administration

Office of the Administrator
Weapons Activities
Defense Nuclear Nonproliferation
Naval Reactors

February 2011 Office of Chief Financial Officer Volume 1

Printed with soy ink on recycled paper

Office of the Administrator

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

DEPARTMENT OF ENERGY
Appropriation Account Summary
(dollars in thousands - OMB Scoring)

	FY 2010 Current Approp.	FY 2011 Cong. Request	FY 2011 Annualized CR	FY 2012 Congressional Request	FY 2012 vs. FY 2010	
					$	%
Discretionary Summary By Appropriation						
Energy And Water Development, And Related Agencies						
Appropriation Summary:						
Energy Programs						
Energy efficiency and renewable energy	2,216,392	2,355,473	2,242,500	3,200,053	+983,661	+44.4%
Electricity delivery and energy reliability	168,484	185,930	171,982	237,717	+69,233	+41.1%
Nuclear energy	774,578	824,052	786,637	754,028	-20,546	-2.7%
Fossil energy programs						
Fossil energy research and development	659,770	586,583	672,383	452,975	-206,795	-31.3%
Naval petroleum and oil shale reserves	23,627	23,614	23,627	14,909	-8,718	-36.9%
Strategic petroleum reserve	243,823	138,861	243,823	121,704	-122,119	-50.1%
Northeast home heating oil reserve	11,300	11,300	11,300	10,119	-1,181	-10.5%
Northeast home heating oil reserve oil sale	0	0	0	-79,000	-79,000	N/A
Total, Fossil energy programs	938,520	760,358	951,133	520,707	-417,813	-44.5%
Uranium enrichment D&D fund	573,850	730,498	573,850	504,169	-69,681	-12.1%
Energy information administration	110,595	128,833	110,595	123,957	+13,362	+12.1%
Non-Defense environmental cleanup	254,673	225,163	244,673	219,121	-35,552	-14.0%
Science	4,963,887	5,121,437	4,903,710	5,416,114	+452,227	+9.1%
Energy transformation acceleration fund	0	299,966	0	550,011	+550,011	N/A
Nuclear waste disposal	98,400	----	98,400	0	-98,400	-100.0%
Departmental administration	168,944	169,132	168,944	128,740	-40,204	-23.8%
Inspector general	51,927	42,850	51,927	41,774	-10,153	-19.6%
Title 17 - Innovative technology loan guarantee program	0	500,000	-15,000	200,000	+200,000	N/A
Section 1705 temporary loan guarantee program	0	----	0	0	——	——
Advanced technology vehicles manufacturing loan	20,000	9,998	20,000	6,000	-14,000	-70.0%
Better building pilot loan guarantee initiative for Universities, Schools, and Hospitals	0	0	0	105,000	+105,000	N/A
Total, Energy Programs	10,340,250	11,353,690	10,309,351	12,007,391	+1,667,145	+16.1%
Atomic Energy Defense Activities						
National nuclear security administration:						
Weapons activities *	6,386,371	7,008,835	7,008,835	7,629,716	+620,881	+8.9%
Defense nuclear nonproliferation *	2,131,382	2,687,167	2,136,709	2,549,492	-137,675	-5.1%
Naval reactors *	945,133	1,070,486	945,133	1,153,662	+83,176	+7.8%
Office of the administrator *	410,754	448,267	410,754	450,060	+1,793	+0.4%
Total, National nuclear security administration	9,873,640	11,214,755	10,501,431	11,782,930	+568,175	+5.1%
Environmental and other defense activities:						
Defense environmental cleanup	5,640,371	5,588,039	5,642,331	5,406,781	-233,590	-4.1%
Other defense activities	847,468	878,209	847,468	859,952	+12,484	+1.5%
Defense nuclear waste disposal	98,400	0	98,400	0	-98,400	-100.0%
Total, Environmental & other defense activities	6,586,239	6,466,248	6,588,199	6,266,733	-319,506	-4.9%
Total, Atomic Energy Defense Activities	16,459,879	17,681,003	17,089,630	18,049,663	+248,669	+1.5%
Power marketing administrations:						
Southeastern power administration	0	0	0	0	——	——
Southwestern power administration	13,076	12,699	13,076	11,892	-1,184	-9.1%
Western area power administration	109,181	105,558	109,181	95,968	-13,213	-12.1%
Falcon & Amistad operating & maintenance fund	220	220	220	220	——	——
Colorado River Basins	-23,000	-23,000	-23,000	-23,000	——	——
Total, Power marketing administrations	99,477	95,477	99,477	85,080	-14,397	-14.5%
Federal energy regulatory commission	0	0	0	0	——	——
Subtotal, Energy And Water Development and Related Agencies	26,899,606	29,130,170	27,498,458	30,142,134	+1,901,417	+6.7%
Uranium enrichment D&D fund discretionary payments	-463,000	-696,700	-463,000	0	+463,000	+100.0%
Excess fees and recoveries, FERC	-10,933	-29,111	-28,886	-25,072	-14,139	-129.3%
Subtotal, Discretionary Funding	26,425,673	28,404,359	27,006,572	30,117,062	+2,350,278	+8.5%
Strategic petroleum reserve sale	0	0	0	-500,000	-500,000	N/A
Cancellation of prior year unobligated balances	0	0	0	-70,332	-70,332	N/A
Total, Discretionary Funding **	26,425,673	28,404,359	27,006,572	29,546,730	+3,121,057	+11.8%

NOTE: * FY12 is compared against the FY11 Request. This exception has been implemented for NNSA only.
** The Total, Discretionary Funding, FY12 vs FY10 "$" and "%" columns, reflects a comparison of FY12 Request vs. FY10 Current Approp for all programs including NNSA

National Nuclear Security Administration

Overview

Appropriation Summary

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2011 CR	FY 2012 Request	FY 2012 vs. FY 2010 $	FY 2012 vs. FY 2010 %	FY 2012 vs. FY 2011 $	FY 2012 vs. FY 2011 %
National Nuclear Security Administration								
Office of the Administrator	420,754	448,267	420,754	450,060	29,306	7.0%	1,793	0.4%
Weapons Activities	6,386,371	7,008,835	7,008,835	7,629,716	1,243,345	19.5%	620,881	8.9%
Defense Nuclear Nonproliferation	2,131,382	2,687,167	2,136,709	2,549,492	418,110	19.6%	-137,675	-5.1%
Naval Reactors	945,133	1,070,486	945,133	1,153,662	208,529	22.1%	83,176	7.8%
Subtotal, NNSA	**9,883,640**	**11,214,755**	**10,511,431**	**11,782,930**	**1,899,290**	19.2%	**568,175**	**5.1%**
Transfer of prior year balances	-10,000	0	0	0	0	0%	0	0%
Total, NNSA	**9,873,640**	**11,214,755**	**10,511,431**	**11,782,930**	**1,899,290**	**19.2%**	**568,175**	**5.1%**

The National Nuclear Security Administration (NNSA) is critical to ensuring the security and safety of our nation.

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

The NNSA has specialized programs that support the President's nuclear strategy, as delineated in the Nuclear Posture Review (NPR) report. The first programmatic priority is to fund activities that contribute to the President's stated policy of maintaining strategic deterrence and stability at reduced nuclear force levels and of sustaining a safe, secure, and effective nuclear arsenal without testing. Examples of these activities funded in the FY 2012 President's Budget include: Directed Stockpile Work (DSW), Campaigns, design and construction of the Chemistry and Metallurgy Research Replacement (CMRR), Uranium Processing Facility (UPF), and High Explosive Pressing Facility (HEPF), and testing and operations at the Nevada National Security Site (NNSS). Second, as a result of fundamental changes in the international security environment and the President's focus on preventing nuclear proliferation and nuclear terrorism, NNSA is fully funding that portion of Defense Nuclear Nonproliferation's (DNN) budget request that is focused on securing all vulnerable nuclear material within four years and on reducing the role of U.S. nuclear weapons in U.S. national security strategy. Third, in order to strengthen regional deterrence and reassure U.S. allies and partners, the NNSA has fully funded programs supporting the development of the next generation ballistic missile submarine reactor.

Outyear Appropriation Summary
NNSA Future-Years Nuclear Security Program*

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NNSA					
Office of the Administrator	450,060	442,992	441,242	441,522	440,591
Weapons Activities	7,629,716	7,948,673	8,418,480	8,683,538	8,905,597
Defense Nuclear Nonproliferation	2,549,492	2,771,068	2,907,934	2,983,984	3,038,395
Naval Reactors	1,153,662	1,232,278	1,289,917	1,474,200	1,569,800
Total, NNSA	**11,782,930**	**12,395,011**	**13,057,573**	**13,583,244**	**13,954,383**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD's) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts included from this DoD account are FY 2013, $438.987 million; FY 2014, $552.862 million; FY 2015, $585.800 million; and FY 2016, $637.933 million.

The NNSA budget justification contains information for five years, as required by Section 3253 of P.L. 106-065, entitled "Future-Years Nuclear Security Program (FYNSP)." The FY 2012-2016 FYNSP projects $64.8 billion for NNSA programs through 2016. The outyear profile reflects a continuing ramp-up that began with the FY 2011 request. The FY 2011 proposed FYNSP for Weapons Activities, envisioned steady-state funding for the preparatory work on major projects and activities in FY 2012 and FY 2013, to inform FY 2014 and beyond. However, this path proved overly conservative and did not account for new requirements (a) as specified in the NPR, (b) identified as the New START Treaty implications were better understood, and (c) as our Department of Defense (DoD) partners came to more fully understand their new obligations relative to the nuclear deterrent. The additional resources requested will address the evolved scope and mitigate newly recognized risks to ensure the continued safety, security, and reliability of the stockpile and successful modernization of the nuclear security enterprise.

FY 2010 Budget Execution

(dollars in thousands)

	FY 2010 Appropriation	PY Balance/ General Reduction	International Contributions	Reprogramming and Other Transfers	Total Adjustments	Final FY 2010
Office of the Administrator	431,074	-10,320	0	-10,000	-20,320	410,754
Weapons Activities	6,426,531	-42,100	0	1,940	-40,160	6,386,371
Defense Nuclear Nonproliferation	2,136,709	0	699	-6,026	-5,327	2,131,382
Naval Reactors	945,133	0	0	0	0	945,133
Total, NNSA	**9,939,447**	**-52,420**	**699**	**-14,086**	**-65,807**	**9,873,640**

Preface

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

The NNSA is funded through four appropriations. The Weapons Activities appropriation has 14 Government Performance and Results Act (GPRA) Units. The Defense Nuclear Nonproliferation (DNN) appropriation consists of five GPRA Units. The Naval Reactors appropriation supports all activities, including Program Direction, and is a separate GPRA Unit. The Office of the Administrator appropriation provides support for all Federal NNSA employees in Headquarters and its field elements (except the Secure Transportation Asset (STA) and Naval Reactors), and also provides for Information Technology for Federal employees in Headquarters and field locations and is considered a single GPRA Unit.

Mission

The NNSA's mission is to strengthen U.S. security through the military application of nuclear energy and by reducing the global threat from terrorism and weapons of mass destruction.

Presidential Initiatives

The NNSA is working to implement the President's policy direction articulated in his April 5, 2009 speech in Prague, Czech Republic. The President provided clear direction for the NNSA by establishing the goals of reducing the role of nuclear weapons in U.S. national security strategy, securing nuclear material world-wide in four years, and sustaining a safe, secure and effective nuclear arsenal. This request fully funds efforts focused on the four year "lockdown" of nuclear material in the DNN appropriation, particularly in the International Nuclear Materials Protection and Cooperation (INMP&C) and Global Threat Reduction Initiative (GTRI) programs.

The NPR report outlines the requirements to maintain a safe, secure, and effective arsenal to deter any adversary while working towards a world without nuclear weapons. The Stockpile Stewardship and Management Plan describes in detail the plans for executing against these requirements and is the program of record underpinning the nuclear deterrent element of the NNSA FY 2012-2016 President's Budget. Programs funded within the Weapons Activities appropriation support the nation's current and future defense posture, the Stockpile Management Program, and its attendant nationwide infrastructure of science, technology and engineering capabilities. This request reflects an investment strategy consistent with these challenges by providing a strong basis for transitioning to a smaller but continued safe, secure and effective nuclear stockpile without additional nuclear testing; strengthening the science, technology and engineering base, modernizing the physical infrastructure; and streamlining the enterprise's physical and operational footprint. These investments will continue the enablement of a comprehensive nuclear defense strategy -- which began in FY 2011 -- based on current and projected global threats that relies less on nuclear weapons, while strengthening the nation's nuclear deterrent through completing major stockpile system life extensions, stabilizing the science, technology and engineering base, and modernizing the infrastructure.

NNSA Program Summaries

The FY 2012 President's Budget Request for the NNSA is $11.8 billion, a 5.1 percent increase over the FY 2011 President's Request. Outyear projections increase for significant long term investments in the nuclear security enterprise deliverables, capabilities and infrastructure.

<u>Weapons Activities Appropriation</u>

The request for this appropriation is $7.6 billion, an 8.9 percent increase from the FY 2011 President's Request. This annual funding level increases in the outyears. For FY 2012, Defense Programs increases 11.0 percent over FY 2011, and most other programs in the account are within 1-2 percent of their

FY 2011 President's Request level. The exception is the NCTIR program that has a 4.7 percent decrease, principally due to completion of specialized research and development. This slows growth in this area, which has had increases in the past few years. There is one new construction start requested for the TRU Waste Facilities at LANL. Prior Year unobligated balances of $40.3 million associated primarily with the deferred Radioactive Liquid Waste Treatment Facility project, and an anticipated cost under run in the Nuclear Materials Safeguards and Security Project are proposed for cancellation to offset requirements elsewhere within DOE. The FY 2012 President's Request reflects an increase of 19.5 percent from the FY 2010 appropriation.

Defense Nuclear Nonproliferation Appropriation

The request for this appropriation is $2.5 billion, a decrease of 5.1 percent from the FY 2011 President's Request. The decrease reflects NNSA's budget strategy was to assure that programs supporting the President's commitment to lead an international effort to secure all vulnerable nuclear materials around the world in four years are fully funded in the Request: The GTRI efforts related to radiological material, as well as, INMPC efforts related to border crossings and megaports security have been slowed to accommodate accelerated nuclear material lockdown efforts. The request for Fissile Materials Disposition activities decreases as there is no continued funding for the Russian Plutonium Disposition activities. The construction requests for the Waste Solidification Building and the MOX facility decrease by about $130 million from FY 2011 to FY 2012 consistent with project baselines. Prior Year unobligated balances of $30 million associated with the completed Elimination of Weapons Grade Plutonium Production Program are proposed for cancellation to offset requirements elsewhere within DOE. The FY 2012 President's Request reflects an increase of 19.6 percent from the FY 2010 appropriation.

Naval Reactors Appropriation

The President's Request for Naval Reactors is $1.2 billion, an increase of 7.8 percent over the FY 2011 President's Request. The programs in this appropriation support the U.S. Navy's nuclear fleet, and major new missions for the OHIO Class submarine replacement that will begin procurement in 2019, and refueling of the land-based prototype (located at the Kesselring site in New York), which requires refueling in 2017.

Increased funding is also requested for the Spent Fuel Handling Project (SFHP), which will replace the over 50-year old Expended Core Facility (ECF) as the location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage. FY 2012 funding continues the conceptual design for the facility, equipment, and related systems, as well as continued NEPA-related efforts and project oversight (e.g., engineering procurement and construction management). Detailed project engineering and design work will commence in FY 2013 and construction will commence in FY 2015. The FY 2012 President's Request reflects an increase of 22.1 percent from the FY 2010 appropriation.

Office of the Administrator Appropriation

This appropriation provides funding for the Federal staff and related support for the NNSA Headquarters and field organizations. The FY 2012 funding request is $450.1 million. The FY 2012 Request provides for a NNSA Federal staff level of 1,859 full time equivalents (1,984 onboard employees, including 56 limited term employees). The increase reflects funding for Federal oversight of the Pit Disassembly and Conversion at the Savannah River Site ($5,000,000; 20 limited-term FTEs); Uranium Processing Facility at Y-12 ($6,750,000; 27 limited-term FTEs); and the Chemistry and Metallurgy Research Replacement Facility at Los Alamos National Laboratory ($2,250,000; 9 limited-term FTEs).

This request is consistent with the DOE/NNSA federal project management improvement initiative. The FY 2012 President's Request reflects an increase of 7.0 percent from the FY 2010 appropriation.

NNSA Summary by Appropriation							
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Office of the Administrator							
Program Direction	418,074	448,267	450,060	442,992	441,242	441,522	440,591
Congressionally Directed Projects	13,000	0	0	0	0	0	0
Use of Prior Year Balances	-10,320	0	0	0	0	0	0
Total, Office of the Administrator	420,754	448,267	450,060	442,992	441,242	441,522	440,591
Weapons Activities Appropriation							
Defense Programs							
Directed Stockpile Work	1,564,290	1,898,379	1,963,583	2,111,439	2,327,859	2,529,992	2,630,707
Science Campaign	294,548	365,222	405,939	418,216	416,284	394,315	404,097
Engineering Campaign	149,679	141,920	143,078	168,418	165,898	159,449	158,693
Inertial Confinement Fusion Ignition and High Yield Campaign	457,486	481,548	476,274	476,381	471,668	485,237	495,026
Advanced Simulation and Computing Campaign	566,069	615,748	628,945	616,104	628,100	643,120	659,210
Readiness Campaign	106,744	112,092	142,491	130,753	130,754	133,706	135,320
Readiness in Technical Base and Facilities	1,810,279	1,848,970	2,326,134	2,484,259	2,742,504	2,729,657	2,734,890
Secure Transportation Asset	240,683	248,045	251,272	249,456	252,869	261,521	267,773
Total, Defense Programs	5,189,778	5,711,924	6,337,716	6,655,026	7,135,936	7,336,997	7,485,716
Nuclear Counterterrorism Incident Response	223,379	233,134	222,147	219,737	232,680	236,045	242,205
Facilities and Infrastructure Recapitalization Program	95,575	94,000	96,380	94,000	0	0	0
Site Stewardship	63,308	105,478	104,002	104,699	175,370	207,488	212,706
Safeguards and Security							
Defense Nuclear Security	769,823	719,954	722,857	729,795	729,173	756,110	814,967
Cyber Security	123,338	124,345	126,614	125,416	125,321	126,898	130,003
Subtotal, Safeguards and Security	893,161	844,299	849,471	855,211	854,494	883,008	944,970
National Security Applications	0	20,000	20,000	20,000	20,000	20,000	20,000
Congressionally Directed Projects	3,000	0	0	0	0	0	0
Use of Prior Year Balances	-81,830	0	0	0	0	0	0
Total, Weapons Activities	6,386,371	7,008,835	7,629,716	7,948,673	8,418,480	8,683,538	8,905,597
Defense Nuclear Nonproliferation							
Nonproliferation and Verification Research and Development	311,274	351,568	417,598	479,191	506,243	503,328	519,455
Nonproliferation and International Security	187,202	155,930	161,833	163,000	168,000	171,999	174,999
International Nuclear Materials Protection and Cooperation	572,749	590,118	571,639	519,000	633,000	656,000	531,723
Elimination of Weapons-Grade Plutonium Production	24,507	0	0	0	0	0	0
Fissile Materials Disposition	701,900	1,030,713	890,153	1,112,877	963,691	991,657	1,071,940
Global Threat Reduction Initiative	333,500	558,838	508,269	497,000	637,000	661,000	740,278
Congressionally Directed Projects	250	0	0	0	0	0	0
Total, Defense Nuclear Nonproliferation	2,131,382	2,687,167	2,549,492	2,771,068	2,907,934	2,983,984	3,038,395
Naval Reactors							
Naval Reactors	945,133	1,070,486	1,153,662	1,232,278	1,289,917	1,474,200	1,569,800
Total, Naval Reactors	945,133	1,070,486	1,153,662	1,232,278	1,289,917	1,474,200	1,569,800
Total, NNSA	9,883,640	11,214,755	11,782,930	12,395,011	13,057,573	13,583,244	13,954,383
Transfer of Prior Year Balances (Office of the Administrator)	-10,000						
Total, NNSA	9,873,640	11,214,755	11,782,930	12,395,011	13,057,573	13,583,244	13,954,383

Site Estimates
(Dollars in Thousands)

Site	FY 2010 Actual	FY 2011 Request	FY 2012 OA	FY 2012 WA	FY 2012 NN	FY 2012 NR	Total
Ames	435	200	—	—	208	—	208
ANL	53,224	65,398	—	2,480	65,913	—	68,393
BAPL	434,400	498,900	—	—	—	545,600	545,600
BNL	30,629	20,996	—	1,970	19,518	—	21,488
CH	14,991	14,236	—	—	—	—	—
GA	22,455	22,500	—	21,000	—	—	21,000
HQ	465,910	732,090	255,725	559,359	108,268	25,662	949,014
ID	1,299	1,364	—	1,400	—	—	1,400
INL	188,052	237,746	—	8,823	144,785	105,000	258,608
KAPL	391,800	434,900	—	—	—	455,500	455,500
KCP	433,194	535,358	—	545,475	2,584	—	548,059
KSO	5,972	6,614	6,677	—	—	—	6,677
LANL	1,524,613	1,867,794	—	1,593,863	233,331	—	1,827,194
LASO	19,987	18,801	19,297	—	—	—	19,297
LBNL	6,535	3,176	—	—	3,289	—	3,289
LLNL	1,081,186	1,134,657	—	1,091,008	85,272	—	1,176,280
LSO	19,001	19,967	19,409	—	—	—	19,409
NBL	3,769	1,209	—	232	993	—	1,225
NETL	8,325	—	—	3,930	—	—	3,930
NNSS	264,037	252,160	—	228,309	58,752	—	287,061
NRL	3,592	2,060	—	7,060	—	—	7,060
NRLFO	18,300	19,200	—	—	—	21,900	21,900
NS	608,305	674,736	80,019	303,941	254,649	—	638,609
NVSO	103,415	97,247	18,407	78,075	—	—	96,482
OR	240	223	—	—	225	—	225
ORISE	15,833	15,075	—	15,758	68	—	15,826
ORNL	180,337	291,143	—	4,388	215,193	—	219,581
OSTI	487	485	—	362	—	—	362
PNNL	328,657	279,401	—	13,792	270,651	—	284,443
PSO	13,105	14,232	14,268	—	—	—	14,268
PX	555,707	538,949	—	645,051	4,304	—	649,355
RL	1,385	1,418	—	1,469	—	—	1,469
RSL	3,025	9,464	—	—	4,475	—	4,475
SNL	1,172,308	1,314,434	—	1,242,074	188,230	—	1,430,304
SR	138,256	181,738	—	—	165,204	—	165,204
SR/MOX	494,238	470,788	—	—	380,172	—	380,172
SR/WGI	—	46,650	—	—	154,300	—	154,300
SRS	325,695	371,040	—	202,546	119,807	—	322,353
SRSO	7,797	7,395	5,559	1,516	—	—	7,075
SSO	14,493	15,269	14,880	—	—	—	14,880
UR/LLE	60,514	62,477	—	61,000	—	—	61,000
Y-12	944,769	911,853	—	989,204	69,061	—	1,058,265
YSO	15,518	21,412	15,819	5,631	240	—	21,690
Grand Total	9,975,790	11,214,755	450,060	7,629,716	2,549,492	1,153,662	11,782,930

Indirect Costs and Other Items of Interest

General Plant Projects (GPP)

Pursuant to Section 3121 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (P.L. 111-383), notification is being provided for general plant projects with a total estimated cost of more than $5 million planned for execution in FY 2011.

Project Title	Project Description	Program	TEC	FY 2010 Funding	FY 2011 Funding	FY 2012 Funding	FY 2011 Deliverable	FY 2012 Deliverable
TA-48-107 Revitalization, LANL	Modify office/laboratory space to chemistry laboratory.	DNN R&D	$8,000,000	$0	$4,000,000	$4,000,000	Complete Design	Begin Construction
Nevada National Security Site Upgrade Area 23 4.16kV Lines 1-4, NNSS	Upgrade the capacity and the operating voltage of overhead electrical distribution lines 1-4 in Mercury from 4,160 volts to 12,470 volts. The project will also replace transformers, arrestors, cutouts, pins and insulators and insulator supports, the supporting hardware such as clamps, shoes, cross arms, poles, risers, guys, and grounding conductors.	FIRP	$6,726,000	$755,000	$5,971,000		Complete Design	Construction Complete
Nevada National Security Site Upgrade Area 23 4.16kV Lines 5-8, NNSS	Upgrade the capacity and the operating voltage of overhead electrical distribution lines 5-8 in Mercury from 4,160 volts to 12,470 volts. The project will also replace transformers, arrestors, cutouts, pins and insulators and insulator supports, the supporting hardware such as clamps, shoes, cross arms, poles, risers, guys, and grounding conductors.	FIRP	$6,670,000	$0	$954,000	$5,716,000	Complete Design	Construction Complete
Portals 8 and 14 Barrier Upgrades, Y-12	Graded security projection upgrade to Portals 8 and 14.	DNS	$6,000,000	$1,200,000	$4,800,000	$0	Complete Design	Construction Complete

Institutional General Plant Projects (IGPP)

Institutional General Plant Projects (IGPP) are construction projects that are less than $10 million and cannot be allocated to a specific program. The IGPPs fulfill multi-programmatic and/or inter-disciplinary needs and are funded through site overhead. The IGPP also provides for minor new construction of a general institutional nature at multi-program sites, funded out of Management and Operating Contractor indirect funds. The IGPPs benefit multi-program users (e.g., NNSA and Office of Science) at a site. The following are planned IGPP funding projections:

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Institutional General Plant Projects			
Sandia National Laboratories	6,524	9,680	11,700
Los Alamos National Laboratory	9,900	23,800	20,000
Nevada National Security Site	350	3,000	3,000
Total Site IGPP	**16,774**	**36,480**	**34,700**

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

Outyear Institutional General Plant Projects

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Institutional General Plant Projects				
Sandia National Laboratories	6,700	5,800	7,400	1,500
Los Alamos National Laboratory	20,500	20,000	20,000	20,000
Nevada National Security Site	0	0	0	0
Total, Site IGPP	**27,200**	**25,800**	**27,400**	**21,500**

Other Indirect Cost Projections

Facilities Maintenance and Repair

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

Indirect-Funded Costs for Maintenance and Repair

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Indirect Maintenance			
Sandia National Laboratories	97,472	98,372	99,283
Lawrence Livermore National Laboratory	89,590	103,878	128,046
Savannah River Site	1,757	1,815	1,875
Y-12 National Security Complex	19,059	19,059	19,059
Nevada National Security Site	52,425	60,322	61,622
Bettis Atomic Power Laboratory	6,411	6,354	6,605
Knolls Atomic Power Laboratory	16,523	17,649	19,005
Total, Indirect-Funded Maintenance and Repair	**283,237**	**307,449**	**335,495**

Outyear Indirect-Funded Costs for Maintenance and Repair

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Indirect Maitenance				
Sandia National Laboratories	100,205	101,137	102,082	103,037
Lawrence Livermore National Laboratory	111,897	108,334	117,359	106,975
Savannah River Site	1,937	2,103	2,160	2,218
Y-12 National Security Complex	19,059	19,059	19,059	19,059
Nevada National Security Site	62,952	64,310	65,699	67,118
Bettis Atomic Power Laboratory	7,017	6,775	6,779	6,654
Knolls Atomic Power Laboratory	17,066	15,375	14,778	14,998
Total, Indirect-Funded Maintenance and Repair	**320,133**	**317,093**	**327,916**	**320,059**

Direct-Funded Costs for Maintenance and Repair

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Direct Maintenance			
Kansas City Plant	31,927	33,585	33,337
Sandia National Laboratories	3,830	3,874	3,918
Los Alamos National Laboratory	23,775	14,400	15,500
Lawrence Livermore National Laboratory	7,660	2,513	2,589
Pantex Plant	88,207	61,780	60,121
Savannah River Site	25,935	25,962	26,500
Y-12 National Security Complex	28,986	38,588	40,726
Nevada National Security Site	18,527	23,857	24,093
Bettis Atomic Power Laboratory	12,702	8,581	11,495
Knolls Atomic Power Laboratory	5,524	6,304	5,152
Total, Direct-Funded Maintenance and Repair	**247,073**	**219,444**	**223,431**

Outyear Direct-Funded Costs for Maintenance and Repair

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Direct Maintenance				
Kansas City Plant	32,184	27,928	14,939	0
Sandia National Laboratories	3,962	4,007	4,053	4,099
Los Alamos National Laboratory	14,500	1,000	1,000	1,000
Lawrence Livermore National Laboratory	2,666	2,746	2,829	2,913
Pantex Plant	60,484	50,087	51,801	53,573
Savannah River Site	28,689	29,390	30,036	30,697
Y-12 National Security Complex	40,226	23,657	23,657	23,657
Nevada National Security Site	23,069	20,070	20,512	20,963
Bettis Atomic Power Laboratory	12,005	11,110	11,746	9,883
Knolls Atomic Power Laboratory	5,341	5,285	5,390	5,365
Total, Direct-Funded Maintenance and Repair	**223,126**	**175,280**	**165,963**	**152,150**

Pension Cost Growth and Alternative Mitigation Strategies

The NNSA has a large contractor workforce that is covered by defined-benefit pension plans for which the U.S. Government reimburses reasonable costs. Market downturns, interest rate decreases, plan demographics, and new statutory requirements have caused large increases in pension costs. The Administration is fully committed to funding these plans in accordance with legal requirements without impacting the base programs.

The Administration will conduct an independent study of these issues using the appropriate statutory and regulatory framework to inform longer-term decisions on pension plan costs. The Administration is evaluating multiple approaches to determine the best path to cover pension plan contributions, while

minimizing the impact to mission. Contractors are evaluating mitigation strategies, such as analyzing plan changes, identifying alternative funding strategies, and seeking increased participant contributions. Also, contractors have been directed to look into other human resource areas where savings can be achieved, in order to help fund pension plan contributions.

NNSA Pension Payment Estimates

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NNSA	260.2	442.5	839.1	892.3	961.7	943.5	892.4

Source: FY 2010 actuals based on FAS87 financial reports and pro-rated by program office splits provided by contractors in June 2010. FY 2011-FY 2016 estimates based on Nov. 2010 contractor data and pro-rated by program office splits provided by contractors in January 2011.

Management and Operating (M&O) Salary Savings

The Department of Energy has frozen M&O salaries for the next two years. Based on Departmental guidance, NNSA is using that savings to support an increase of $10 million in the Advanced Simulation and Computing Campaign for exascale computing, and approved indirect Site projects. The approved indirect projects at the Sites include strategic investments to reduce the future cost of operations. They will accomplish three goals: (1) improve operational efficiency; (2) improve energy efficiency; (3) increase targeted research opportunities. The NNSA will monitor these activities to ensure that improvement to our operations is realized through this savings opportunity.

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, $450,060,000, to remain available until expended.

Explanation of Change

The FY 2012 Request provides for an estimated average of 1,859 full time equivalents (1,984 onboard employees, including 56 limited term employees) for NNSA federal staff. The increase reflects funding for Federal oversight of the Pit Disassembly and Conversion at the Savannah River Site ($5,000,000; 20 limited-term FTEs); Uranium Processing Facility at Y-12 ($6,750,000; 27 limited-term FTEs); and the Chemistry and Metallurgy Research Replacement Facility at Los Alamos National Laboratory ($2,250,000; 9 limited-term FTEs). This request is consistent with the DOE/NNSA federal project management improvement initiative.

Office of the Administrator

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 Continuing Resolution	FY 2012 Request
Office of the Administrator				
Office of the Administrator	418,074	448,267	410,754	450,060
Congressionally Directed Projects	13,000	0	0	0
Use of Prior Year Balances	-10,320	0	0	0
Subtotal, Office of the Administrator	**420,754**	**448,267**	**410,754**	**450,060**
Transfer of Prior Year Balances	-10,000	0	0	0
Total, Office of the Administrator	**410,754**	**448,267**	**410,754**	**450,060**

Public Law Authorization:

Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Office of the Administrator	**442,992**	**441,242**	**441,522**	**440,591**

FY 2010 Budget Execution

(dollars in thousands)

	FY 2010 Appropriation	PY Balance/ General Reduction	Supplemental Appropriation	Reprogramming and Other Transfers	Total Adjustments	Final FY 2010
Office of the Administrator	**431,074**	**-10,320**	**0**	**-10,000**	**-20,320**	**410,754**

Mission

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

Benefits

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

Much of the nation's nuclear expertise resides within NNSA, while the responsibility for protecting against nuclear-related terrorist threats cuts across many organizations within DOE and the whole of the government. The Office of the Administrator, through the Office of the Deputy Undersecretary for Counterterrorism, is the DOE senior point of contact with the other federal agencies engaged in common cause to protect against nuclear-related threats to the nation's security and ensures that these agencies have access to the range of NNSA's scientific, technical, and engineering capabilities. The Office of the Deputy Undersecretary also provides policy and strategic coordination of counterterrorism and counter proliferation initiatives throughout DOE, leads interagency dialogues with key foreign partners on nuclear counterterrorism and security, and conducts interagency and intergovernmental counterterrorism preparedness exercises.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

Major Outyear Priorities and Assumptions

- The outyear projections for the Office of the Administrator appropriation total $1,766,347,000 (FY 2013 through FY 2016). This funding profile provides for the Federal project management of the Pit Disassembly and Conversion at the Savannah River Site, the Uranium Processing Facility at Y-12, and the Chemistry and Metallurgy Research Replacement Facility at Los Alamos National Laboratory.

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

The NNSA Office of the Administrator appropriation projected allocation of the DOE Working Capital fund for FY 2012 is $25,946,000.

The DOE WCF Board has further extended the policy for using program funding to finance WCF activities. Beginning in FY 2011, NNSA programs (in addition to Program Direction) will fund a pro rata share by appropriation of certain DOE Working Capital Fund activities. In FY 2012, the WCF Board further increased costs for iManage by adding iBudget which is planned to become operational in FY 2012. Additionally, beginning in FY 2012, the Department's policy includes financing Federal salaries and benefits for some employees supporting operation of the Fund in the prices of the WCF. The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2012 is projected at $36,853,000 (excluding the Naval Reactors portion).

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established a program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the nuclear security enterprise. In FY 2012, the Office of the Administrator requests $4,677,051 for HBCU activities primarily in support of efforts underway in the Massie Chairs of Excellence Program. Additionally, the Weapons Activities appropriation plans to provide up to $6,000,000; the Defense Nuclear Nonproliferation appropriation plans to provide up to $3,000,000; and

the Naval Reactors program plans to fund up to $1,000,000 of HBCU efforts in multiple research areas directly supporting program activities.

Security Investigations

The Homeland Security Presidential Directive-12 (HSPD-12) directed the establishment of a common identification standard for Federal employees and contractors. This directive will continue to drive investments in upgrades to the physical security infrastructure and information technology to accept HSPD-12 credentials throughout the NNSA. Defense Nuclear Security, Cyber Security and Office of the Administrator Information Technology programs will continue to fund the HSPD-12 activities in FY 2012. All NNSA Headquarters employees Security Investigations clearances, with the exception of Naval Reactors, are centrally processed and funded by the Department of Energy Office of Health, Safety and Security (HSS). The Office of the Administrator account request includes approximately $1,000,000 in FY 2012 for all Federal field security clearance investigations for the Service Center and Site Offices.

Office of the Administrator

Onboard Staff and Full Time Equivalents (FTEs)

	Actual FY 2010	Request FY 2011	Request FY 2012
Office of the Administrator			
Office of the Administrator	91	84	107
Defense Programs			
Headquarters	169	178	177
Livermore Site Office	96	97	93
Los Alamos Site Office	109	111	106
Sandia Site Office	82	84	82
Nevada Site Office	97	98	91
Pantex Site Office	80	81	80
Y-12 Site Office	78	81	81
Kansas City Site Office	40	42	41
Savannah River Site Office	30	33	32
Defense Nuclear Nonproliferation	253	259	264
Emergency Operations	100	99	102
Infrastructure and Environment	45	42	0
Management and Administration	99	102	105
Defense Nuclear Security	26	28	37
Future Leaders Program	57	60	57
NNSA Service Center	488	491	473
Total, Office of the Administrator	1,940	1,970	1,928
Federal Oversight of Construction Projects	-	-	56
Total, Office of the Administrator	1,940	1,970	1,984
FTEs	1,897	1,970	1,859

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Salaries and Benefits	**305,569**	**321,149**	**326,876**

Provides support for an estimated average of 1,859 Full Time Equivalents (1,984 projected onboard employees, excluding stay-in-schools/summer hires, including 56 limited term employees) for NNSA Federal staff under the provisions of NNSA's Pay for Performance Demonstration Project. Funding includes promotions, performance awards, severance costs, health and retirement benefits, workman's compensation payments, and other payroll adjustments. It does not include funding for annual adjustments.

This category also supports the Future Leaders Program (the seventh class of NNSA interns is planned to come on board at the end of the 3rd quarter of FY 2011). Funding for this mission remains level at $6.5 million. The Future Leaders Program funds the interns for two years, during which time they are not counted against an organization's managed staffing targets. After the two years, the interns are absorbed into the staffing allocations at the receiving locations.

This request includes $14,000,000 for 56 limited term employees for the Federal oversight of the following construction projects: Pit Disassembly and Conversion at the Savannah River Site ($5,000,000; 20 limited-term FTEs), Uranium Processing Facility at Y-12 ($6,750,000; 27 limited-term FTEs), and the Chemistry and Metallurgy Research Replacement Facility at Los Alamos National Laboratory ($2,250,000; 9 limited-term FTEs). This funding will be needed to form Federal Oversight Teams consistent with the DOE/NNSA federal project management improvement initiative. These teams would execute the scope of design and construction of these projects and build confidence in NNSA's ability to execute large line item construction projects successfully within budget and on schedule.

Travel	**15,686**	**15,495**	**15,777**

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

International travel is being held constant to support essential DNN mission growth. It is a key element of the nonproliferation work with international agencies and the former Soviet Union republics, and other International partners. The DNN travel accounts for 44 percent of the total NNSA travel request.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Support Services	**23,238**	**23,256**	**21,308**

Provides technical support for highly specialized analytical expertise required to address critical technical program issues in nonproliferation and national security including areas of security, facility representatives, environment, safety and health, and project management. (FY 2012: $7,289,000) Administrative support includes the operation of mailrooms and maintenance of various databases in addition to clerical support. (FY 2012: $10,538,000)

Funding requested provides management support for studies and reviews of NNSA corporate policies and procedures concerning management operations and planning. (FY 2012: $3,481,000)

Other Related Expenses	**73,581**	**88,367**	**86,099**

Information Technology

Provides Information Technology (IT) policy, governance and direct operational support for the NNSA HQ and Site Office Federal staff, including network services and classified and unclassified desktops for federal employees; maintenance and equipment; help desk support; and user equipment and software, including support for Department-wide systems such as the financial information reporting systems. Provides Federal video-teleconferencing and mission support applications development and maintenance. Provides for governance and oversight of NNSA's $1,000,000,000 IT capital investment portfolio and nearly $500,000,000 in other annual IT expenditures. Provides Enterprise Architecture, Capital Planning and Investment Control services and Federal records management services.

The IT request for FY 2012 is $24,991,729, the majority of which is provided to the DOE under the Common Operating Environment (DOECOE) arrangement and other IT operational services contracts. The remainder of the funding is for application development; technology refresh; and support for implementation of NNSA’s capital planning and acquisition management programs associated with IT investments at NNSA Management and Operating facilities.

Space and Occupancy/Working Capital Fund

Supports $43,643,074 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 2012 allocation for space and occupancy costs is comprised of the following areas and associated funding estimates:

- Rental Payments $19,167,765
- Facilities and Maintenance $9,073,141
- Utilities $2,886,800
- Office Space $4,442,378
- Supplies and Materials $1,317,858
- Equipment Maintenance $636,504
- Printing and Production $350,628

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- CIO Operations $3,519,000
- I-Manage/Payroll and Personnel $2,249,000

A component of the Space and Occupancy funding level is for the Working Capital Fund (WCF) located within Headquarters. The WCF provides a framework for managing certain common administrative services within the Department. The DOE WCF Board extended the policy for using program funding to finance some WCF activities. Beginning in FY 2011, NNSA programs will fund a pro rata share by Appropriation activities such as: DOEnet, Financial Statement Audits, Defense Contract Audit Agency (DCAA) Audits, iManage, and Financial Control Reporting Assessment. In FY 2012, the WCF Board further increased costs for iManage due to adding iBudget which is planned to become operational in FY 2012. Additionally, beginning in FY 2012, the Department's policy includes financing some Federal salaries and benefits in the prices of the WCF. The following table outlines the specific funding levels funded by the NNSA.

(dollars in thousands)

	FY 2010 Current Appropriation	FY 2011 Request	FY 2012 Request
Supplies	561	500	537
Mail Services	495	459	581
Copying Service	354	387	387
Printing and Graphics	291	285	285
Building Occupancy	15,730	16,045	17,956
CIO Operations	2,816	3,159	3,304
Corporate Training Services	43	428	358
Project Management	212	281	236
I-MANAGE/Payroll and Personnel	3,906	1,554	2,249
Internal Control/Financial Statements	1,070	0	53
Subtotal, WCF at HQ (OA)	**25,478**	**23,098**	**25,946**
WCF Paid by Other NNSA Appropriations	**5,258**	**11,531**	**10,907**
Total, WCF at HQ	**30,736**	**34,629**	**36,853**

International Program

Requests approximately $5,878,477 in FY 2012 for operational costs associated with the international offices in Moscow, Vienna, Tokyo, Kiev, Tbilisi, Astana, Islamabad, and Beijing; all critical to executing the Defense Nuclear Nonproliferation programs. The international office funding supports full operation of the mandatory entitlements for personnel, State Department Capital Security Cost Sharing (CSCS) charges, and the State Department's International Cooperative Administrative Support Services (ICASS) charges.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Training
Supports necessary training and skills maintenance of the NNSA Federal staff of $3,062,981. Includes training for the Future Leaders Program and corporate training managed by the NNSA Chief Learning Officer.

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

Historically Black Colleges and Universities (HBCU)
Requests $4,677,051 for the Minority Serving Institutions (MSIs) and the Massie Chairs of Excellence Program.

Permanent Change of Station (PCS)
Requests $1,000,000 in support of PCS moves for Federal personnel.

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

Miscellaneous Other
Requests $1,833,965 for activities required for NNSA's Federal personnel, including minor procurements; the National Archives and Records Administration (NARA); Diversity program conferences and sponsorships; Small Business Administration activities; interpreting services; professional credentials; law library maintenance; NNSA Headquarters Going the Extra Mile (GEM) award program; and other miscellaneous activities.

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

Subtotal, Office of the Administrator	**418,074**	**448,267**	**450,060**
Use of Prior Year Balance	**-10,320**	**0**	**0**
Total, Office of Administrator	**407,754**	**448,267**	**450,060**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
▪ **Salary and Benefits**	
Increase from the FY 2011 Request level reflects Federal oversight of the Pit Disassembly and Conversion at the Savannah River Site; Uranium Processing Facility at Y-12; and the Chemistry and Metallurgy Research Replacement Facility at Los Alamos National Laboratory. This request is consistent with the DOE/NNSA federal project management improvement initiative. The increase is partially offset by decreased FTEs due to Governance efficiencies.	**+5,727**
▪ **Other Related Expenses**	
Decrease from the FY 2011 Request level reflects directed savings due to President's SAVE Awards effort to enhanced reliance on video telecommunications. Additionally reflects the government-wide initiative to reduce administrative costs through more efficient operations.	
Offsetting increases support the need to fund all NNSA site office space requirements, building maintenance at the Service Center, increases for the operational costs associated with the International offices, and increases to the Working Capital Fund to support increased iManage efforts and adding federal salaries in the WCF billing.	**-3,934**
Total Funding Change, Office of the Administrator	**+1,793**

Funding Profile by Category

	(dollars in thousand)		
	FY 2010	FY 2011	FY 2012
Headquarters			
Salaries and Benefits	145,457	152,749	161,560
Travel	12,333	12,873	12,424
Support Services	13,624	13,951	12,172
Other Related Expenses	63,352	69,108	69,569
Total, Headquarters	234,766	248,681	255,725
Total, Onboard	840	852	905
NNSA Service Center			
Salaries and Benefits	62,223	65,274	65,706
Travel	1,158	708	1,283
Support Services	5,267	4,556	4,379
Other Related Expenses	17,538	10,876	8,651
Total, NNSA Service Center	86,186	81,414	80,019
Total, Onboard	488	491	473
Livermore Site Office			
Salaries and Benefits	16,386	16,743	16,521
Travel	373	245	274
Support Services	875	1,085	1,017
Other Related Expenses	1,367	1,686	1,597
Total, Livermore Site Office	19,001	19,759	19,409
Total, Onboard	96	97	93
Los Alamos Site Office			
Salaries and Benefits	17,736	18,874	18,176
Travel	350	232	264
Support Services	386	397	351
Other Related Expenses	490	518	506
Total, Los Alamos Site Office	18,962	20,021	19,297
Total, Onboard	109	111	106
Sandia Site Office			
Salaries and Benefits	13,069	13,573	13,380
Travel	209	279	266
Support Services	568	666	631
Other Related Expenses	647	699	603
Total, Sandia Site Office	14,493	15,217	14,880
Total, Onboard	82	84	82

Funding Profile by Category (continued)

	(dollars in thousand)		
	FY 2010	FY 2011	FY 2012
Nevada Site Office			
Salaries and Benefits	15,234	16,166	15,320
Travel	341	378	281
Support Services	1,027	1,041	1,150
Other Related Expenses	1,598	1,900	1,656
Total, Nevada Site Office	18,200	19,485	18,407
Total, Onboard	97	98	91
Pantex Site Office			
Salaries and Benefits	12,120	12,797	12,765
Travel	218	175	236
Support Services	493	557	379
Other Related Expenses	71	867	888
Total, Pantex Site Office	12,902	14,396	14,268
Total, Onboard	80	81	80
Y-12 Site Office			
Salaries and Benefits	12,741	13,498	13,370
Travel	281	259	313
Support Services	914	902	781
Other Related Expenses	1,342	1,363	1,355
Total, Y-12 Site Office	15,278	16,022	15,819
Total, Onboard	78	81	81
Kansas City Site Office			
Salaries and Benefits	5,635	6,200	5,382
Travel	193	114	218
Support Services	5	6	300
Other Related Expenses	139	758	777
Total, Kansas City Site Office	5,972	7,078	6,677
Total, Onboard	40	42	41
Savannah River Site Office			
Salaries and Benefits	4,968	5,275	4,696
Travel	230	232	218
Support Services	79	95	148
Other Related Expenses	37	592	497
Total, Savannah River Site Office	5,314	6,194	5,559
Total, Onboard	30	33	32

Funding Profile by Category (continued)

	(dollars in thousand)		
	FY 2010	FY 2011	FY 2012
Office of the Administrator			
Salaries and Benefits	305,569	321,149	326,876
Travel	15,686	15,495	15,777
Support Services	23,238	23,256	21,308
Other Related Expenses	86,581	88,367	86,099
Total, Office of the Administrator	431,074	448,267	450,060
Total, Onboard	1,940	1,970	1,984
Total, FTEs	1,897	1,970	1,859

Office of the Administrator
Funding by Site

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request	$ Change	% Change
NNSA Office of the Administrator					
Office of the Administrator					
Headquarters	234,766	248,681	255,725	+7,044	+2.8%
NNSA Service Center	73,186	81,414	80,019	-1,395	-1.7%
Livermore Site Office	19,001	19,759	19,409	-350	-1.8%
Los Alamos Site Office	18,962	20,021	19,297	-724	-3.6%
Sandia Site Office	14,493	15,217	14,880	-337	-2.2%
Nevada Site Office	18,200	19,485	18,407	-1,078	-5.5%
Pantex Site Office	12,902	14,396	14,268	-128	-0.9%
Y-12 Site Office	15,278	16,022	15,819	-203	-1.3%
Kansas City Site Office	5,972	7,078	6,677	-401	-5.7%
Savannah River Site Office	5,314	6,194	5,559	-635	-10.3%
Subtotal	**418,074**	**448,267**	**450,060**	**+1,793**	**+0.4%**
Use of Prior Year Balances	-10,320	0	0	0	0.0%
Total, Office of the Administrator	**407,754**	**448,267**	**450,060**	**+1,793**	**+0.4%**
Congressionally Directed Projects					
NNSA Service Center	13,000	-	0	0	0.0%
Total, Congressionally Directed Projects	**13,000**	**-**	**0**	**0**	**0.0%**
Total, NNSA Office of the Administrator	**420,754**	**448,267**	**450,060**	**+1,793**	**+0.4%**

Office of the Administrator
Funding by Object Class

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request	$ Change	% Change
NNSA Office of the Administrator					
Office of the Administrator					
Salaries and Benefits	305,569	321,149	326,876	+5,727	+1.8%
Travel	15,686	15,495	15,777	+282	+1.7%
Support Services	23,238	23,256	21,308	-1,948	-7.9%
Other Related Expenses				+0	
Space and Occupancy Costs/WCF	32,572	44,261	43,643	-618	-1.6%
Information Technology	24,574	26,231	24,992	-1,239	-4.8%
Other Related Expenses	13,329	14,737	14,401	-336	-2.6%
Training	3,106	3,138	3,063	-75	-2.4%
Subtotal, Other Related Expenses	73,581	88,367	86,099	-2,268	-2.8%
Total, Office of the Administrator	**418,074**	**448,267**	**450,060**	**+1,793**	**+0.4%**
Use of Prior Year Balances	-10,320	0	0	0	+0.0%
Total, Office of the Administrator	**407,754**	**448,267**	**450,060**	**+1,793**	**+0.4%**
Congressionally Directed Projects					
Other Related Expenses	13,000	0	0	0	+0.0%
Total, Congressionally Directed Projects	**13,000**	**0**	**0**	**0**	**+0.0%**
Total, NNSA Office of the Administrator	**420,754**	**448,267**	**450,060**	**+1,793**	**+0.4%**

Support Services by Category

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Administrative support	12,913	12,496	10,538
Management support	2,146	2,582	3,481
Technical support			
Other technical support	2,728	2,478	2,545
Security support	2,547	2,470	1,725
ES&H technical support	987	748	352
Project management support	1,779	2,092	2,386
Facility representative support	138	390	281
Subtotal, Technical support	8,179	8,178	7,289
Total, Support Services	**23,238**	**23,256**	**21,308**

Other Related Expenses by Category

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Training	3,106	3,138	3,063
Space and Occupancy Costs			
Rental payments	13,728	20,129	19,168
Facilities and maintenance	4,248	9,997	9,073
Utilities	4,771	7,300	6,406
Office space	2,547	4,537	4,442
Internal Control	1,070	0	0
I-MANAGE	3,906	0	2,249
Supplies and materials	1,281	1,417	1,318
Equipment maintenance	663	886	636
Printing and production	358	355	351
Subtotal, Space and Occupancy Costs	32,572	44,621	43,643
Other Expenses			
International Offices	3,294	5,479	5,878
HBCU/HSIs	4,541	4,677	4,677
PCS moves	2,678	2,000	1,000
Other Services	2,804	2,209	2,834
Reception and representation	12	12	12
Subtotal, Other Expenses	13,329	14,377	14,401
Subtotal, Other Related Expenses	45,901	58,998	58,044
Information Technology	24,574	26,231	24,992
Total, Other Related Expenses	**73,581**	**88,367**	**86,099**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	1,280	1,308	1,337
Total, Capital Operating Expenses	**1,280**	**1,308**	**1,337**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	1,366	1,396	1,427	1,458
Total, Capital Operating Expenses	**1,366**	**1,396**	**1,427**	**1,458**

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

Congressionally Directed Projects

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	13,000	0	0

Description

Congress initiated a research and education partnership program with Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence within the Office of the Administrator appropriation in FY 2005 and has supported it nearly every year thereafter. The NNSA has established an effective program to identify national security research opportunities for these institutions so as to increase their participation in national security-related research and to train and recruit HBCU graduates for employment within the NNSA.

In FY 2012, the Office of the Administrator appropriation requests $4,677,051 to support HBCU activities. Additionally, the Weapons Activities appropriation plans to provide up to $6,000,000; the Defense Nuclear Nonproliferation appropriation plans to provide up to $3,000,000; and the Naval Reactors program plans to fund up to $1,000,000 of HBCU efforts in research areas applicable to program activities.

HBCU Funding History

Office of the Administrator

Fiscal Year	Congressionally Directed	Other HBCU Activities
2005	22,320	0
2006	3,500	0
2007	0	1,431
2008	22,140	3,463
2009	23,312	4,368
2010	13,000	4,145
2011	0	4,677
2012	0	4,677

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

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects			
• HBCU, ACE Program at Maricopa Community Colleges (AZ)	1,000	0	0
• HBCU, Morehouse College Energy Science Research and Education Initiative (GA)	2,000	0	0
• HBCU, South Carolina Math and Science Initiative (SC)	10,000	0	0
• HBCU, Wilberforce (OH)	0	0	0
• HBCU, Central State (OH)	0	0	0
• HBCU, Educational Advancement Alliance Graduate Program (PA)	0	0	0
• HBCU, Marshall Fund Minority Energy Science Initiative (MD)	0	0	0
Total, Congressionally Directed Projects	**13,000**	**0**	**0**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Approp ($000)
Congressionally Directed Projects	
No funding is requested for these activities in FY 2011 or FY 2012 under Congressionally Directed Projects.	0
Total, Congressionally Directed Projects	**0**

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 one ambulance and one aircraft; $7,629,716,000, to remain available until expended: Provided, That of the unobligated balances available under this heading, $40,332,000 are hereby permanently cancelled: Provided further, That no amounts may be cancelled from amounts that were designated by the Congress as an emergency requirement pursuant to the Concurrent Resolution on the Budget or the Balanced Budget and Emergency Deficit Control Act of 1985, as amended.

Explanation of Change

The FY 2012 Request provides an increase from the FY 2011 request. Increases are provided for stockpile support, science, and infrastructure in support of Department of Defense requirements and to support increased operational and construction cost estimates since the FY 2011 request.

Weapons Activities

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 CR	FY 2012 Request
Weapons Activities				
Directed Stockpile Work	1,564,290	1,898,379		1,963,583
Science Campaign	294,548	365,222		405,939
Engineering Campaign	149,679	141,920		143,078
Inertial Confinement Fusion Ignition and High Yield Campaign	457,486	481,548		476,274
Advanced Simulation and Computing Campaign	566,069	615,748		628,945
Readiness Campaign	106,744	112,092		142,491
Readiness in Technical Base and Facilities	1,810,279	1,848,970		2,326,134
Secure Transportation Asset	240,683	248,045		251,272
Nuclear Counterrorism Incident Response	223,379	233,134		222,147
Facilities and Infrastructure Recapitalization Program	95,575	94,000		96,380
Site Stewardship	63,308	105,478		104,002
Defense Nuclear Security	769,823	719,954		722,857
Cyber Security	123,338	124,345		126,614
National Security Applications	0	20,000		20,000
Congressionally Directed Projects	3,000	0		0
Use/Recission of Prior Year Balances	-81,830	0		0
Total, Weapons Activities	**6,386,371**	**7,008,835**	**7,008,835**	**7,629,716**

Public Law Authorization:

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

Outyear Appropriation Summary by Program*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Weapons Activities				
Directed Stockpile Work	2,111,439	2,327,859	2,529,992	2,630,707
Science Campaign	418,216	416,284	394,315	404,097
Engineering Campaign	168,418	165,898	159,449	158,693
Inertial Confinement Fusion Ignition and High Yield Campaign	476,381	471,668	485,237	495,026
Advanced Simulation and Computing Campaign	616,104	628,100	643,120	659,210
Readiness Campaign	130,753	130,754	133,706	135,320
Readiness in Technical Base and Facilities	2,484,259	2,742,504	2,729,657	2,734,890
Secure Transportation Asset	249,456	252,869	261,521	267,773
Nuclear Counterrorism Incident Response	219,737	232,680	236,045	242,205
Facilities and Infrastructure Recapitalization Program	94,000	0	0	0
Site Stewardship	104,699	175,370	207,488	212,706
Defense Nuclear Security	729,795	729,173	756,110	814,967
Cyber Security	125,416	125,321	126,898	130,003
National Security Applications	20,000	20,000	20,000	20,000
Total, Weapons Activities	**7,948,673**	**8,418,480**	**8,683,538**	**8,905,597**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts included for Weapons Activities from this DoD account are FY 2013, $433.172 million; FY 2014, $550.902 million; FY 2015, $584.900 million; and FY 2016, $637.933 million.

FY 2010 Budget Execution

(dollars in thousands)

	FY 2010 Appropriation	PY Balance/ General Reduction	Supplemental Appropriation	Reprogramming and Other Transfers	Total Adjustments	Final FY 2010
Weapons Activities						
Directed Stockpile Work	1,505,859	0	0	58,431	58,431	1,564,290
Science Campaign	295,646	0	0	(1,098)	(1,098)	294,548
Engineering Campaign	150,000	0	0	(321)	(321)	149,679
Inertial Confinement Fusion Ignition and High Yield Campaign	457,915	0	0	(429)	(429)	457,486
Advanced Simulation and Computing Campaign	567,625	0	0	(1,559)	(1,559)	566,069
Readiness Campaign	100,000	0	0	6,744	6,744	106,744
Readiness in Technical Base and Facilities	1,842,870	0	0	(32,591)	(32,591)	1,810,279
Secure Transportation Asset	234,915	0	0	5,768	5,768	240,683
Nuclear Counterrorism Incident Response	221,936	0	0	1,443	1,443	223,379
Facilities and Infrastructure Recapitalization Program	93,922	0	0	1,653	1,653	95,575
Site Stewardship	61,288	0	0	2,020	2,020	63,308
Defense Nuclear Security	769,044	0	0	779	779	769,823
Cyber Security	122,511	0	0	827	827	123,338
Congressionally Directed Projects	3,000	0	0		0	3,000
Use of Prior Year Balances	(42,100)	(42,100)		(39,730)	(39,730)	(81,830)
Total, Weapons Activities	**6,384,431**	**-42,100**	**0**	**1,937**	**1,937**	**6,386,371**

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

Benefits
Programs funded by the Weapons Activities appropriation benefit the nation by sustaining both the nuclear weapons stockpile and a nuclear security enterprise that is capable of employing world-class science, technology, and engineering capabilities on a broad array of national nuclear security priorities. The nuclear security enterprise is composed of physical infrastructure and facilities, human resources, and modern business processes which provide world-leading science, technology, and engineering capabilities that serve not only as national security assets, but also as important educational and community resources. While these are focused on nuclear weapons stewardship and maintenance of our nuclear deterrent, they are strongly leveraged for broader national security mandates and scientific innovation. Programs funded by the Weapons Activities appropriation are also integrated into the nation's homeland security structure through their support of safeguards and security and nuclear counterterrorism and incident response.

Annual Performance Results and Targets
The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

Major Outyear Priorities and Assumptions
The outyear requirements for the Weapons Activities total $33,956,288,000 for FY 2013 through FY 2016. The Secretaries of DoD and DOE agree that it is necessary to extend the life of the existing nuclear weapon systems, bolster the ST&E base, and modernize the supporting nuclear security enterprise infrastructure. Accomplishing these goals, will require sustained investments over the long term, as reflected in both the Future-Years Nuclear Security Program and the multi-year projections presented in the FY 2011 Stockpile Stewardship and Management Plan.

Weapons Activities Appropriation
The FY 2012 request for this appropriation is $7,629,716,000, an increase over the FY 2011 request. This level is sustained and then increased later in the outyears. Increased funding is requested for programs in direct support of the nuclear weapons stockpile, for scientific, technical and engineering activities related to maintenance, assessment and certification capabilities for the stockpile, and for critical infrastructure improvements. Stockpile Stewardship and Management Plan activities are funded within this appropriation.

The FY 2012 funding level reflects a continuing ramp-up that began with the FY2011 request. This continued ramp-up deviates from last year's request which envisioned steady-state funding for the preparatory work on major projects and activities in FY 2012 and FY 2013 to inform FY 2014 and beyond. This path proved overly conservative and did not account for new requirements as (a) specified in the NPR, (b) identified as the New START Treaty implications were better understood, and (c) our

Department of Defense (DoD) partners came to more fully understand their new obligations relative to the nuclear deterrent. The additional resources requested will address the evolved scope and mitigate newly recognized risks to ensure the continued safety, security, and reliability of the stockpile and successful modernization of the nuclear security enterprise.

Stockpile Support

Stockpile Support (Directed Stockpile Work, Readiness Campaign) is a key component of the Stockpile Stewardship and Management Program that ensures that we meet the commitments made by President Obama, in his April 5, 2009 Prague speech, that "…the United States will maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to our allies…". The FY 2012-FY 2016 budget proposal for Stockpile Support continues significant efforts to meet Administration and Secretarial priorities for the enterprise with the following emphases:

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

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request	FY 2013	FY 2014	FY 2015	FY 2016
Stockpile Support							
Directed Stockpile Work	1,564,290	1,898,379	1,963,583	2,111,439	2,327,859	2,529,992	2,630,707
Readiness Campaign	106,744	112,092	142,491	130,753	130,754	133,706	135,320
Total, Stockpile Support	**1,671,034**	**2,010,471**	**2,106,074**	**2,242,192**	**2,458,613**	**2,663,698**	**2,766,027**

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

- Produce sufficient quantities of W76-1 warheads to meet Navy requirements;
- Complete a full scope (nuclear and non-nuclear) life extension study of the B61-12 and preparing for first production unit in 2017 that meets all safety, security, use control, and reliability objectives;
- Continue the life extension study for the W78, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a)(2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524).
- Provide sufficient funds for warhead surveillance and for the science and technology that support stockpile assessment and certification in the absence of nuclear testing.

Effective stockpile management includes routine surveillance and replacement of limited life components. Since the average age of the weapons in the nuclear stockpile is close to 25 years, stockpile management also demands that steps be taken to extend the active life of the weapons systems.

Surveillance assesses the relative ability of a weapon system to meet a specified military attribute and provides the analytical foundation to plan the work necessary to assure that a given system is safe, secure and effective. As stockpiles are reduced in size, and the NNSA transforms the infrastructure to a capability-based capacity, the surveillance program plays a larger role in assuring that priority is given

to identifying and responding to potential problems with agility and effectiveness. A strong monitoring program regularly providing comprehensive state-of-the-weapon data is essential to sustain the stockpile. The FY 2012 request supports improved stockpile surveillance activities, including laboratory and component testing for specific weapons systems, support to the annual assessment and certification process, and development of new surveillance techniques. Weapons surveillance activities will ensure early knowledge and understanding of the status of each weapon system and increase the availability of data to aid in that understanding. The enhanced surveillance activities included in the FY 2012 budget will continue the efforts begun in FY 2011 to reposition the nuclear security enterprise to a sustainable surveillance approach for the future.

Many age-related changes affecting various nuclear warhead components are predictable and well understood. Limited life component exchanges are performed routinely to replace these components periodically throughout the lifetime of the weapon. Components such as power sources, neutron generators and tritium reservoirs deteriorate predictably and must be replaced before their deterioration adversely affects function or personnel safety. The NNSA is working with the DoD to align component production requirements with NPR size and composition for the stockpile.

Life extension activities reflect NPR direction. The W76 warhead LEP is well-underway, with first production unit accomplished in FY 2008, and delivery of all units to the Navy to be completed by FY 2017. The B61-12 study to determine the design parameters for its life extension will continue through 2012. This includes consideration of how to modify the Cold War era weapon system for enhanced margin against failure while increasing safety, and improving the security and use control. For example, insensitive high explosives could replace conventional high explosives. Additionally, modifications could be employed to provide greater reliability; and components and materials with known compatibility and aging issues could be replaced, providing better alternatives. With the expected Nuclear Weapons Council (NWC) Phase 6.3 approval in FY 2012, the funding from Stockpile Systems transferred to the LEP subprogram for the B61-12. A life extension study for the W78 is also underway and in order to reduce the number of warhead types it will consider the possibility of developing a common ICBM/SLBM warhead that will include the W88 platform. In all life extension studies, the NNSA will rely on fundamental and applied ST&E to improve its understanding of nuclear weapon behavior, and to assure the safety, security, and effectiveness of our nuclear deterrent supported by a reduced and more sustainable, efficient and appropriately-sized nuclear security infrastructure.

Science, Technology, and Engineering (ST&E)

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

rapidly changing priorities. The FY 2012-FY 2016 ST&E budget proposal meets Administration and Secretarial priorities for the enterprise with the following emphases:

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

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request	FY 2013	FY 2014	FY 2015	FY 2016
Science, Technology and Engineering							
Science Campaign	294,548	365,222	405,939	418,216	416,284	394,315	404,097
Engineering Campaign	149,679	141,920	143,078	168,418	165,898	159,449	158,693
Inertial Confinement Fusion Ignition and High Yield Campaign	457,486	481,548	476,274	476,381	471,668	485,237	495,026
Advanced Simulation and Computing Campaign	566,069	615,748	628,945	616,104	628,100	643,120	659,210
National Security Applications	0	20,000	20,000	20,000	20,000	20,000	20,000
Total, Science, Technology and Engineering	**1,467,782**	**1,624,438**	**1,674,236**	**1,699,119**	**1,701,950**	**1,702,121**	**1,737,026**

The integration of the NNSA multi-disciplinary national security science and technology capabilities assures that Nuclear Security Enterprise maintains the versatility to address urgent national needs on appropriate time scales. The Secretary, for example, challenged the Department to identify science and technology innovations that drive the economy, impact climate change and energy security, and enhance national security. The NNSA scientific, technology, and engineering base takes on additional strategic importance and must maintain its agile and responsive capabilities. As these roles are extensions of the core responsibility to maintain the nuclear deterrent, transparency into these capabilities and the investments made in them is critical.

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

The NNSA ST&E supports several key national priorities. The Administration is committed to the ratification of the Comprehensive Test Ban Treaty and the aggressive pursuit of nonproliferation goals,

including securing dangerous nuclear materials world-wide. Science and engineering advances are the foundation for achieving these goals. NNSA programs have, since 1992, assured confidence in the U.S. nuclear deterrent without nuclear testing and provided high confidence assessments of the capabilities of potential adversaries to guard against technological surprise. NNSA-developed technologies support treaty monitoring and verification, as well as, broader homeland security detection needs.

The science and engineering basis for assessing and certifying nuclear devices has systematic gaps that are being closed by application of advanced computing, materials research, and foreseeable advances in high energy density physics including fusion ignition. A Predictive Capability Framework identifies specific advances and expected time scales for resolution of questions regarding all aspects of the performance of nuclear weapons.

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

The applications of ST&E funded capabilities not only advance NNSA's nuclear program, but are increasingly used to support related national security and economic goals. The technical approaches for nuclear analysis and security issues developed in NNSA are useful to other national security, scientific, and economic programs. For example, stockpile analysis and assessment by the NNSA has driven advances in computing power that have enabled U.S. leadership and demonstrated progress on complex applied technical problems.

Computational powers, and the techniques for its application, have broad value that can also be applied to analysis of a wide range of national energy issues. For example, the approach taken for quantifying margins and uncertainty for establishing confidence bounds for systems that are not amenable to statistical testing methods is applicable in many engineering analyses and complex problems. Fusion ignition, under development for investigations of nuclear explosion physics, has potential for nuclear energy applications being analyzed within the Offices of Science and Nuclear Energy. Other parts of the DOE and other agencies require access to the NNSA's capabilities.

A final example of NNSA's nuclear program ST&E funded capabilities supporting related national security and economic goals is in materials under extreme environments. This area is an ongoing NNSA competence with a focus on developing new techniques, diagnostic methods, and data on materials behavior under extremes of temperature, pressure and strain rates. A particular new focus is on characterizing materials behavior under both static and dynamic conditions using advanced light sources and stockpile stewardship tools such as NIF, LANSCE, and Z, as well as the computational materials science enabled by the Advanced Simulation Computing platforms.

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

Infrastructure

The FY 2012 Request for Infrastructure (Readiness in Technical Base and Facilities, Secure Transportation Asset, Facilities and Infrastructure Recapitalization Program, and Site Stewardship) continues significant efforts to meet Administration and Secretarial priorities for infrastructure with the following emphases:

- Bringing the plutonium and uranium manufacturing infrastructure up to modern safety and security standards;
- Ensuring environmental compliance and energy and operational efficiency throughout the nuclear security enterprise, while modernizing, streamlining, consolidating, and sustaining the stewardship and vitality of the sites, and
- Reducing the deferred maintenance backlog for critical facilities that will not be replaced.

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request	FY 2013	FY 2014	FY 2015	FY 2016
Infrastructure							
Readiness in Technical Base and Facilities, Operations and Maintenance	1,526,375	1,449,954	1,705,624	1,907,125	1,922,025	1,935,825	1,957,146
Readiness in Technical Base and Facilities, Construction	283,904	399,016	620,510	577,134	820,479	793,832	777,744
Secure Transportation Asset	240,683	248,045	251,272	249,456	252,869	261,521	267,773
Facilities and Infrastructure Recapitalization	95,575	94,000	96,380	94,000	0	0	0
Site Stewardship	63,308	105,478	104,002	104,699	175,370	207,488	212,706
Congressionally Directed Projects	3,000	0	0	0	0	0	0
Use of Prior Year Balances	-81,830	0	0	0	0	0	0
Total, Infrastructure	**2,131,015**	**2,296,493**	**2,777,788**	**2,932,414**	**3,170,743**	**3,198,666**	**3,215,369**

The FY 2012 budget sustains the investment in construction of replacement plutonium research and uranium manufacturing facilities. Current plutonium research and uranium manufacturing facilities (Chemistry and Metallurgy Research facility at Los Alamos National Laboratory and Building 9212 at Y-12 respectively) have significant safety concerns that have been identified by the Defense Nuclear Facilities Safety Board and others, and these facilities need to be closed at the earliest feasible date. Until that time, continued operation requires stringent administrative and safety control measures, which affect the efficiency and cost of operations.

The NNSA will continue to oversee and maintain the physical plant infrastructure at government-owned, contractor-operated laboratories, NNSS, and production plants, according to applicable statutes, laws, agreements, and standards. The NNSA is continuing to improve its ability to provide insight and granularity of the costs required to operate and maintain nuclear security enterprise facilities. Work has been organized by capabilities provided, such as material operations, component production, fabrication and assembly, and testing. Infrastructure funding ensures environmental compliance and energy and operational efficiency throughout the nuclear security enterprise, while modernizing, streamlining, consolidating, and sustaining the stewardship and vitality of the sites.

The NNSA will continue to institutionalize responsible and accountable corporate facilities management processes and incorporate best practices from industry and other organizations. This includes implementation of a planning process that results in the submission of Ten-Year Site Plans that establish the foundation for the strategic planning of the facilities and infrastructure of the enterprise. 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.

Infrastructure investments play a critical role in revitalizing the nuclear weapons manufacturing and research and development enterprise. Investments improve the responsiveness and/or utility of the infrastructure and its technology base. The NNSA focuses its construction on two primary objectives: (1) planning, and prioritization of the projects required to support the weapons programs, and (2) development and execution of these projects within approved cost and schedule baselines.

The FY 2012 contains significant investments in CMRR-NF and UPF. The high priority of both projects was highlighted in the Nuclear Posture Review. Consistent with NNSA's increased emphasis on project management rigor, baseline cost and schedule will not be finalized until the projects achieve 90% design maturity. The projects are scheduled to achieve 90% design maturity in late FY 2012, and the Department will set the performance baseline in FY 2013. The increased funding level in the FY 2012-FY 2016 period is needed to support the required schedule of construction completion in FY 2020 and a ramp-up to full operations by FY 2023 for CMRR-NF and FY 2024 for UPF.

In FY 2012, funding will also support investments to shift production operations at the Kansas City Plant to a new leased facility (currently under construction) and specific projects at the Los Alamos National Laboratory (LANL), Pantex Plant, Sandia National Laboratories (SNL), and Y-12 National Security Complex. The Transuranic Waste Facility Project at LANL will allow the site to comply with an Order of Consent with the State of New Mexico which requires the cleanup and vacating of Technical Area 54. Projects for TA-55 Reinvestment Project Phase II support infrastructure system upgrades to extend the life of the existing facility at LANL. The High Explosive Pressing Facility project at Pantex will replace current facilities which are nearing the end of their service lives. The Test Capabilities Revitalization–Phase II Project at SNL will refurbish non-nuclear capabilities to support timely certification components for the B61 and future LEPs. The Nuclear Facility Risk Reduction Project at Y-12 will upgrade infrastructure systems in buildings 9212 and 9204-2E to ensure continuity of capability and continued safe operations until they are transitioned to UPF.

Security and Nuclear Counterterrorism

The FY 2012 Request continues to meet Administration and Secretarial priorities for Security and Nuclear Counterterrorism (Defense Nuclear Security, Cyber Security, and Nuclear Counterterrorism Incident Response) with the following emphases:

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

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request	FY 2013	FY 2014	FY 2015	FY 2016
Security and Nuclear Counterterrorism							
Defense Nuclear Security	769,823	719,954	722,857	729,795	729,173	756,110	814,967
Cyber Security	123,338	124,345	126,614	125,416	125,321	126,898	130,003
Nuclear Counterterrorism Incident Response	223,379	233,134	222,147	219,737	232,680	236,045	242,205
Total, Security and Nuclear Counterterrorism	**1,116,540**	**1,077,433**	**1,071,618**	**1,074,948**	**1,087,174**	**1,119,053**	**1,187,175**

The FY 2012 Request continues the FY 2010 approach to funding security costs which provides direct funding for the Defense Nuclear Security base mission program. The Defense Nuclear Security budget continues to provide physical s**e**curity protection from a full spectrum of threats. The budget request is based on risk-informed decisions and is fully consistent with the Department's Graded Security Protection (GSP) policy. The trend through the outyear period allows for maintaining a security protection posture compliant with the 2008 GSP, and will fund physical security system life-cycle replacement initiatives, as well as, installation of state-of-the-art access control, alarm detection and assessment, and other technologies needed to support the NNSA national security mission. Costs of routine security for WFO will continue to be provided via an allocable share of the Safeguards and Security expenses. Extraordinary security requirements for WFO projects will be direct charged to those customers.

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

Nuclear Counterterrorism and Incident Response funding supports emergency management and response activities that ensure a central point of contact and integrated response to emergencies requiring DOE assistance and expertise, including the Nuclear Emergency Support Team, which responds to nuclear terrorist threats.

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

The DOE WCF Board has extended the policy for using program funding to finance WCF activities. NNSA programs will continue in FY 2012 to fund a pro rata share by Appropriation of certain DOE Working Capital Fund activities. FY 2012 projected NNSA program allocations are as follows: DOEnet ($237,000) for DOE telecommunications services; Financial Statement Audits ($4,188,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($2,529,000) for procurement management; iManage ($3,679,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,396,000). The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2012 is projected at $38,268,000.

The NNSA Weapons Activities appropriation projected allocation of the DOE Working Capital Fund for FY 2012 is $8,049,000.

The Department has added $1,600,000 to Weapons Activities to support Department-wide efforts through the Working Capital Fund. These resources will fund an update to the Funds Distribution System and budget planning and execution efforts.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has an established program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the nuclear security enterprise. The majority of the efforts directly support program activities, and programs funded in the Weapons Activities appropriation plan to fund research with the HBCU totaling up to approximately $6,000,000 in FY 2012, in areas including engineering, material sciences, computational science, disaster modeling, and environmental sciences.

Directed Stockpile Work

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Directed Stockpile Work			
Life Extension Programs			
B61 Life Extension Program	0	0	223,562
W76 Life Extension Program	231,888	249,463	257,035
Subtotal, Life Extension Programs	**231,888**	**249,463**	**480,597**
Stockpile Systems			
B61 Stockpile Systems	114,195	317,136	72,396
W62 Stockpile Systems	2	0	0
W76 Stockpile Systems	65,451	64,521	63,383
W78 Stockpile Systems	52,167	85,898	109,518
W80 Stockpile Systems	20,107	34,193	44,444
B83 Stockpile Systems	36,689	39,349	48,215
W87 Stockpile Systems	53,848	62,603	83,943
W88 Stockpile Systems	42,743	45,666	75,728
Subtotal, Stockpile Systems	**385,202**	**649,366**	**497,627**
Weapons Dismantlement and Disposition	**95,786**	**58,025**	**56,770**
Stockpile Services			
Production Support	300,037	309,761	354,502
Research & Development Support	37,071	38,582	30,264
Research & Development Certification and Safety	189,174	209,053	190,892
Management, Technology, and Production	183,223	193,811	198,700
Plutonium Sustainment	141,909	190,318	154,231
Subtotal, Stockpile Services	**851,414**	**941,525**	**928,589**
Total, Directed Stockpile Work	**1,564,290**	**1,898,379**	**1,963,583**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Directed Stockpile Work				
Life Extension Programs				
B61 Life Extension Program	279,206	320,894	396,869	426,415
W76 Life Extension Program	255,000	255,000	255,000	260,099
Subtotal, Life Extension Programs	**534,206**	**575,894**	**651,869**	**686,514**
Stockpile Systems				
B61 Stockpile Systems	72,364	72,483	70,488	71,534
W62 Stockpile Systems	0	0	0	0
W76 Stockpile Systems	65,445	63,580	63,537	65,727
W78 Stockpile Systems	151,207	329,354	333,978	316,507
W80 Stockpile Systems	46,540	50,457	58,898	59,775
B83 Stockpile Systems	57,947	72,516	65,941	54,663
W87 Stockpile Systems	85,689	68,774	63,638	65,492
W88 Stockpile Systems	105,582	78,602	163,626	226,060
Subtotal, Stockpile Systems	**584,774**	**735,766**	**820,106**	**859,758**
Weapons Dismantlement and Disposition	**43,404**	**52,090**	**54,205**	**55,495**
Stockpile Services				
Production Support	319,805	320,614	332,371	341,203
Research & Development Support	31,059	31,824	33,116	33,904
Research & Development Certification and Safety	241,658	242,424	250,963	255,747
Management, Technology, and Production	199,080	207,290	215,468	222,137
Plutonium Sustainment	157,453	161,957	171,894	175,949
Subtotal, Stockpile Services	**949,055**	**964,109**	**1,003,812**	**1,028,940**
Total, Directed Stockpile Work	**2,111,439**	**2,327,859**	**2,529,992**	**2,630,707**

Mission

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

The nation's nuclear weapons stockpile consists of warheads with an average age of 25 years. A stockpile stewardship and management program ensures that all weapons in the stockpile remain safe, secure, and reliable. This includes maintenance, surveillance, assessment, and life extensions as necessary. The DSW program relays the state of health of the nuclear weapons stockpile through its memorandums on Annual Assessment to the President and bi-annual weapons reliability reports to the DoD. In addition, DSW supports nonproliferation goals and international commitments to eliminate militarily available nuclear materials through the dismantlement and disposition of retired weapons and weapons components.

The DSW program also interfaces with other organizations and their mission areas including Campaigns to coordinate component and manufacturing maturation to improve surety (safety, security, and use control), reliability, and survivability of the stockpile; fill critical knowledge gaps in order to ensure success of DSW mission; and provide the necessary tools and capabilities to assess and sustain the reliability and performance of the nation's aging stockpile. The Readiness in Technical Base and Facilities (RTBF) program provides the facilities and infrastructure, and the personnel who maintain them, are essential for being able to perform DSW work. In addition, the Secure Transportation Asset provides secure movement of weapons and weapons components to enable execution of the DSW missions.

The crosscutting mission of DSW increases the need for mature programmatic interrelationships beyond those within the Weapons Activities appropriation. Nonproliferation, Nuclear Energy, Environmental Management, and Homeland Security missions leverage technical capabilities such as those maintained within the materials processing enterprises of plutonium, uranium, and tritium sustainment. Specifically within DSW, the Plutonium Sustainment subprogram integrates with the overarching plutonium program plans, campaigns, facilities, and the technical base (personnel and skills) and provides the means to maintain necessary capabilities required for mission success. The DSW program sustains and retains the technical skills and infrastructure critical to the nation's ability to work with plutonium across a range of applications. The skills and infrastructure historically retained by the weapons program serve other national missions. Examples include: Pu-238 Heat Source production for the National Aeronautics and Space Administration, Advanced Nuclear Fuels development, production of parts and shapes for scientific experimental purposes, nuclear forensics support, capability development and demonstration and minimal production of plutonium oxide from surplus pits for mixed-oxide fuel, and a Pu-metal standards exchange program that distributes samples for analysis/calibration to participating labs, which includes the United Kingdom's Atomic Weapons Establishment (AWE) and the International Atomic Energy Agency (IAEA).

The DSW derives its nuclear weapons stockpile requirements from the President's NWSP. The DOE and DoD jointly convene the Nuclear Weapons Council (NWC) and develop recommended actions for presidential direction in the NWSP. The NWC also drives ongoing maintenance activities, warhead life extension needs, stockpile surveillance and assessment, and research and development (R&D) of new technologies needed to support the current and future stockpile. The DSW will, in coordination with the DoD: (1) provide unique skills, equipment, testers, and logistics to enable nuclear weapons operations; (2) develop, produce and replace limited life components; (3) conduct scheduled weapons maintenance; (4) conduct surveillance and evaluations to assess weapons reliability and to detect/anticipate potential weapons issues; (5) quantify margins and uncertainties in order to assess and certify the nuclear stockpile; (6) develop options for enhanced safety, security, and reliability for insertion into Life Extension Programs (LEP)/modifications/alterations; (7) efficiently extend the life of existing weapons systems through authorized modifications to correct technical issues and enhance safety, security, and reliability; (8) provide dismantlement and disposition of weapons and components for weapons retired from the stockpile; (9) compile and analyzes information during the Annual Assessment process to determine if problems exists, and (10) sustain the plutonium infrastructure to meet enduring national requirements unique to this special nuclear material.

Benefits

The DSW's four subprograms make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 36 and to the stockpile management program: (1) LEPs; (2) Stockpile Systems; (3) Weapons Dismantlement and Disposition; and (4) Stockpile Services:

Life Extension Program extends the lifetime of the nation's nuclear stockpile enabling that stockpile and the nuclear security enterprise to respond to threats of the 21st century without developing new weapon systems. Activities including R&D and production work are required to ensure weapons continue to meet national security requirements. LEPs not only extend the life of weapons, but provide opportunities to enhance surety by installing enhanced safety and security features.

Stockpile Systems directly execute sustainment activities for the active stockpile specific to the individual weapons systems (B61, W76, W78, W80, B83, W87, and W88). Sustainment activities include: weapons-specific R&D assessment and certification activities, weapons component qualification, limited life component exchange activities, surveillance and evaluation activities, maintenance, feasibility and safety studies, and military liaison work. Stockpile systems contribute to the technical basis for the NNSA's Annual Assessment through stockpile stewardship in the absence of nuclear testing. In addition, Stockpile Systems supports limited weapons refurbishments below the requirements for separate reporting as a LEP, and life extension studies prior to approval of full-scale engineering development.

Weapons Dismantlement and Disposition (WDD) activities enable the elimination of retired weapons and weapons components thereby reducing the security and maintenance burden of legacy warheads. WDD includes the dismantlement and disposition of retired weapons, weapons components, and associated infrastructure. Plutonium components removed from weapons remain in storage pending final disposition decisions (e.g., processing into oxides for the fabrication of mixed-oxide fuel). Success of the WDD program relies heavily on the Secure Transportation Asset, DSW Production Support, and RTBF to provide the base capabilities for all WDD activities.

Stockpile Services provides the foundation for all DSW operations that are not uniquely required by an individual weapon system. Stockpile Services supports all weapon systems and is the foundation and sustainment for all DSW operations to include: Production Support and R&D Support essential for plant and laboratory critical skills, material, limited life components (LLCs), limited life component exchanges (LLCEs), quality controls, and surveillance and evaluation activities for the nuclear stockpile; R&D Certification and Safety efforts; Management, Technology, and Production, providing quality engineering and plant management, technology, maintenance and/or replacement of weapons related equipment, and production services; and Plutonium Sustainment, enabling activities to achieve and maintain a cost-effective plutonium capability. The success of DSW in sustaining the U.S. nuclear stockpile relies on Stockpile Services to provide base capabilities to the LEPs, Systems, and WDD.

Planning and Scheduling

The DSW program/project plans include cost, scope, and schedule for program specific work activities. R&D and production documents contain detailed classified schedules. The Production and Planning Directive (P&PD) delineates current stockpile maintenance, refurbishment, and life extension efforts. These requirements are detailed more fully through individual weapons Program Control Documents and the Master Nuclear Schedule. The P&PD is a workload planning document for the NNSA that reflects the requirements from DoD on stockpile systems and quantities. From these DoD requirements,

NNSA assesses limited life component exchanges for routine maintenance operations and LEPs on major components (i.e., nuclear explosive packages and arming, fuzing and firing components, etc). Both the limited life components and the LEPs rely on the Campaigns for technology maturation to enhance the systems with respect to such issues as safety and use control.

Weapons Systems Cost Data
A classified annex, containing the Selected Acquisition Report for the W76 LEP and, if approved, starting in FY 2012 the B61 LEP, supplements the Weapons Activities portion of the budget.

Annual Performance Results and Targets
The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments
Life Extension Programs

- Completed 120 percent of Pantex's renegotiated production schedule of the W76-1/Mk4A weapon deliverables to the Navy for the Submarine Launched Ballistic Missiles (SLBM) and 100 percent of negotiated weapon deliveries. The W76-1/Mk4A LEP features include new Arming, Fuzing & Firing Assembly; Cables; 2X Acorn Gas Transfer System (GTS) refurbished Primary and Secondary; and replacement of high explosives and detonators.
- Executed the W76 LEP investments to reduce the risk of production delays. Specifically, certified an alternate material as risk mitigation for Fogbank production and replaced single point failure equipment at the production plants.

Stockpile Systems (B61, W76, W78, W80, B83, W87, W88):

- Delivered all scheduled LLCs (GTS reservoirs and neutron generators (NG)) and alteration kits to the DoD and Pantex to maintain the nuclear weapons stockpile.
- Assessed, as part of the B61-12 life extension study, non-nuclear and nuclear options with Air Force to ensure sustainment of the extended deterrence mission.
- Initiated nuclear technology development efforts and nuclear product realization teams for the B61-12 following approval of the full nuclear scope B61 life extension study reprogramming to ensure study completion remains on schedule.
- Conducted surveillance program via data collection from flight tests, laboratory tests, and component evaluations sufficient to assess stockpile reliability without nuclear testing.
- Completed all Annual Assessment Reports and Laboratory Director letters to the President
- Participated in a DoD led Common Warhead Requirements Working Group/Joint Requirements Working Group for the W78 LEP including the possibility of also using the resulting warhead on SLBMs to reduce the number of warhead types.
- Selected a common NG for the B61 and B83 that will reduce development, production, and maintenance costs.
- Completed planned Phase Gate Reviews (detailed assessments which provide a logical progression of meeting technical and programmatic work requirements and document risk-informed decisions for W87 and B83 NG developments.

Weapons Dismantlement and Disposition

- Exceeded scheduled Canned Subassembly dismantlement quantities at Y-12.
- Exceeded scheduled weapons dismantlement quantities at Pantex.
- Completed scheduled disposition of weapons components at Y-12, Kansas City Plant, and Pantex.
- Developed plans for all sites in the Enterprise to safely disposition material recovered during dismantlement.
- Completed scheduled Seamless Safety for the 21st Century (SS-21) activities to authorize processing for the W84.
- Completed scheduled SS-21 activities to authorize processing for the B53.

Stockpile Services

- Met scheduled multi-weapon surveillance requirements for Canned Subassembly, pit, NG, GTS, and detonator evaluations.
- Submitted Weapons Reliability Report to DoD (November and May).
- Completed Product Realization Integrated Digital Enterprise (PRIDE) deliverables to enable information sharing across the Enterprise for the W76 LEP production.
- Completed 40 percent of storage space reduction goal as planned.
- Performed Permissive Action Link tests to ensure safety of the nuclear weapon stockpile.
- Conducted experiments to better understand the reliability of the stockpile; updated computer models; and validated experimental results against predictions.
- Produced five W88 war reserve pits.

Major Outyear Priorities and Assumptions

The outyear projections for DSW total $9,599,997,000 for FY 2013 through FY 2016. The DSW will continue to provide a safe, secure, and reliable stockpile through: (1) W76 LEP full production; (2) the B61 LEP with NWC approval following the 6.2/6.2A study; and (3) the study of life extension options for the W78 and applicability to the W88, consistent with the principles of the Stockpile Management Program defined in Section 3113 (a) (2) of the National Defense Authorization Act of Fiscal Year 2010 (50 U.S.C. 2524) and the 2010 Nuclear Posture Review (NPR) Report.

Funding requested in FY 2012 and the outyears has increased under the LEP activity in anticipation of the NWC approval of the B61 LEP. The outyear funding request for the W78 increases due to a development effort with the assumption of an approved LEP. Further, the W88 Stockpile Systems profile includes increased funding for a replacement W88 Arming Firing and Fuzing (AF&F) system. The DSW will support the DoD as it implements the NPR recommendations by supporting projects such as the Analysis of Alternative for Long Range Stand-off capability.

The DSW plans increased investments in surveillance over the Future-Years Nuclear Security Program (FYNSP) consistent with the needs of reliability reporting and the Annual Assessment process. The out-year profile also includes funding to replace NGs for all stockpile weapons. Further, DSW will sustain dismantlements consistent with the goal of dismantling all weapons retired prior to the end of FY 2009 by 2022.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Life Extension Program	**231,888**	**249,463**	**480,597**

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

The production requirements for the B61 and W76 outlined in the 2010 NPR validate a need to continue production ramp up at the Pantex Plant, increase non-nuclear activities at the Kansas City Plant (KCP), and develop advanced surety technologies for the B61, as described in the following narratives on the B61 and W76 LEPs.

▪ **B61 Life Extension Program**	**0**	**0**	**223,562**

The B61 LEP extends the life of the B61 Mod 3, 4, and 7 nuclear bombs. The FY 2012 budget requests funds for the B61 Mod 12 (B61-12) in the LEP control level as activity shifts from a feasibility study to a full LEP. The B61-12 will replace end-of-life components, improve aircraft compatibility, implement improved safety and use control technologies to extend the bomb life for another 30 years. The NNSA plans completion of the First Production Unit (FPU) in FY 2017. The NNSA will deliver the refurbished bomb to the U.S. Air Force for integration with the B-2 Spirit bomber and to U.S. and North Atlantic Treaty Organization (NATO) forces utilizing Dual Capable Aircraft to enable the extended deterrence mission.

The FY 2012 mission scope includes: Phase 6.3 Development Engineering activities for (1) development of designs and continued maturation of technologies for new firing, arming and safing components, radar components, GTSs, NGs, permissive action link components and equipment, power supplies, thermal batteries, joint test assemblies, weapon trainers, and test and handling gear; (2) development of designs and technologies to refurbish the B61 primary with reuse of the existing B61 nuclear pit, reuse or remanufacture of the B61 Mod 4 canned subassembly, and consolidation of the B61 Mod 3, 4, and 7 into a single bomb Mod; (3) pending Phase 6.2 feasibility assessment and down-select decisions, implementation and maturation of enhanced surety technologies into the nuclear explosive package; (4) conduct

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

of qualification and certification activities including component and system testing, modeling/simulation work and hydrodynamic testing; and (5) system engineering and integration to ensure compatibility with modern aircraft such as the F-35 Joint Strike Fighter and the new Air Force provided tail subassembly.

▪ **W76 Life Extension Program**	**231,888**	**249,463**	**257,035**

The W76 LEP extends the life of the W76 warhead for an additional 30 years. Completion of the first production unit occurred in FY 2008. The Nuclear Posture Review (NPR) called for the completion of this program to be FY 2017. The Nuclear Weapons Council subsequently endorsed a change to the program to complete by the end of FY 2018, with production of the life-extended W76 warheads decreasing during FY 2018 in parallel with the production of life-extended B61 bombs increasing during FY 2018 for best utilization of manufacturing capability and capacity. The NNSA completes and delivers the reentry body assembly to the DoD for integration into the Trident II (D5) Strategic Weapon System. The Trident II (D5) is part of the SLBM force.

The FY 2012 mission scope includes: (1) program execution of the Annual Assessment and certification process of weapons subject to this LEP and continued efforts for improving the manufacturability of the components and reducing costs; (2) War Reserve production and life extension activities providing materials for the assembly of the reentry body assembly, including, components for the nuclear explosive package, AF&F assembly, 2X Acorn Gas Transfer System, Military Characteristics (MC)4380A Neutron Generator, and associated cables, elastomers, valves, pads, cushions, foam supports, telemetries, and miscellaneous parts; (3) continuation of the disassembly of W76-0 for the LEP feedstock; (4) alignment of required bays and cells for W76 operations at Pantex; (5) provision of components; materials; containers; special tooling; certification of test equipment at the Kansas City Plant (KCP); and (6) the hiring and training of personnel in order to scale-up production capacity and rate by the end of FY 2013 This funding request supports production rates contained in the FY 2009 Requirements and Planning Document (RPD) and schedules to meet the current deliverables in agreement with the Department of the Navy and in support of submarine deployment requirements.

Stockpile Systems	**385,202**	**649,366**	**497,627**

Stockpile Systems directly executes sustainment activities for the total (active and inactive) stockpile for the B61, W76, W78, W80, B83, W87, and W88 weapons; and provides critical state-of-health data required by the “National Defense Authorization Act for Fiscal Year 2003” (Public Law 107-314), mandating Annual Assessment to certify the stockpile without underground testing by establishing a credible health of a weapon system baseline. There are four major Stockpile Systems areas that require FY 2012 funding:

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

(1) Weapon Maintenance includes GTS and NG replacements as necessary in accordance with National Requirements Documents and/or Directive Schedules, day-to-day stockpile maintenance/repair activities, production and delivery of components for each weapon type, refurbishment and replacement of aging components, and major refurbishment activities to extend stockpile life;

(2) Weapon surveillance includes new material laboratory tests, new material flight tests, retrofit evaluation system laboratory and flight tests, stockpile laboratory tests, stockpile flight tests, quality evaluations, special testing, and surveillance of weapon systems to support assessment of the safety, security, and reliability of the nuclear weapons stockpile, which contribute to the Annual Certification to the President;

(3) Weapon Assessment and Support includes Stockpile R&D activities conducted in the following areas: maintain system certification, assess the safety, security and reliability of the nuclear weapons stockpile to form the basis of the Annual Assessment to the President which provides critical data certification in the absence of nuclear testing, respond to emerging problems or issues in a timely manner including resolution of Significant Finding Investigations-NNSA evaluates any report of a weapon anomaly and if necessary, opens a formal investigation;), support directive schedules, develop modern physics and engineering baselines, perform development and engineering to support refurbishments approved by the NWC, develop refurbishment technologies, maintain flexibility to respond to requirements, and maintain the capability to refurbish and design new weapons and weapons components as required; and

(4) Development Studies/Capability Improvements includes activities associated with technical basis improvements, technology maturation, system studies, and other surety advancements for the stockpile.

▪ **B61 Stockpile Systems**	**114,195**	**317,136**	**72,396**

The B61 family includes five modifications with two distinct categories which include the strategic category of the B61 Modifications 7 and 11, with the Modification 11 as the only active earth penetrating weapon, and the non-strategic category of the B61 Modifications 3, 4, and 10 used for the US extended nuclear commitment. The NNSA provides nuclear gravity bombs to the US Air Force for integration with the B-2 Spirit bomber and to US and NATO Dual Capable Aircraft.

• **B61 System Sustainment**	**59,456**	**65,495**	**72,396**

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required; execute repair

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with robust state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, these activities include: disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, and platform compatibility and testing activities;

(**3) Weapon Assessment and Support:** conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, Project Officer's Group (POG) and DoD safety studies; significant finding investigations; and

(**4) Development Studies/Capability Improvements:** conduct feasibility studies as required in conjunction with the DoD, execute replacement activities including: new container procurements for field component exchanges, system integration of the new common B61/B83 NG; and replacement of end-of-life B61 joint test assembly flight recorders and system-level laboratory testers.

▪ **B61 Phase 6.2/6.2A Study**	**54,739**	**251,641**	**0**

FY 2012 mission scope for the Phase 6.2/6.2A study will be complete, and pending the expected NWC authorization, funding for B61 Phase 6.3 Development Engineering transferred to the B61 LEP section.

▪ **W76 Stockpile Systems**	**65,451**	**64,521**	**63,383**

The W76-0 is a strategic warhead in the SLBM force. The United States Navy deploys this weapon on the Trident II (D5) Strategic Weapon System.

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required; execute repair, maintenance, and replacement of aging weapon components,

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, these activities include:

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, and platform compatibility and testing activities;

(3) Weapon Assessment and Support: conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, POG and DoD safety studies, significant finding investigations; and

(4) Development Studies/Capability Improvements: W76 studies and capabilities are focused toward the on-going LEP.

▪ **W78 Stockpile Systems**	**52,167**	**85,898**	**109,518**

The W78 is a strategic warhead integrated into the Mk12A re-entry vehicle. The United States Air Force deploys this weapon on the Minuteman III Intercontinental Ballistic Missile (ICBM). The program separates into two subcategories: (1) System Sustainment and (2) Life Extension Study.

▪ **W78 System Sustainment**	**52,167**	**59,898**	**58,431**

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required; execute repair, maintenance, and replacement of aging weapon components, procurement of new reservoir forgings and valves to replace GTSs and production of new NGs;

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with robust state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, these activities include: disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, and platform compatibility and testing activities, implementation of non-destructive laser gas sampling at Y-12 to enhance existing surveillance techniques,

(3) Weapon Assessment and Support: conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, POG and DoD safety studies and significant finding investigations; and

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

(4) Development Studies/Capability Improvements: conduct feasibility studies as required in conjunction with the DoD.

▪ **W78 Life Extension Study**	**0**	**26,000**	**51,087**

The W78 Study addresses the nuclear explosives package for commonality amongst the Mk12A re-entry vehicle/Mk5 re-entry body; and evaluation of safety and security enhancement options, extend service life, and alignment with the major DoD component (fuze) acquisition program. The study will also consider the option of developing a common ICBM/SLBM warhead that will include the W88.

FY 2012 mission scope includes: (1) begin Phase 6.2/2A of the W78 Life Extension Study (LES) consistent with direction in the Stockpile Management Program and the 2010 NPR; (2) evaluate the nuclear explosives package for commonality amongst the Mk12A re-entry vehicle and the Mk5 RBA, evaluate safety and security enhancements, extend service life, and align with major DoD component (e.g., fuze) acquisition program.

▪ **W80 Stockpile Systems**	**20,107**	**34,193**	**44,444**

The W80-1 is a strategic warhead integrated into the Air Launched Cruise Missile. The United States Air Force deploys this weapon on the B-52.

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required;

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with robust state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, to include: disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, and platform compatibility and testing activities;

(3) Weapon Assessment and Support: conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, POG and DoD safety studies, significant finding investigations; and

(4) Development Studies/Capability Improvements: conduct feasibility studies as required in conjunction with the DoD, provide NG subassembly and timer driver development lots as well as system qualification and transportation testing, design,

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

develop, and produce timers, detonators and NGs at Sandia National Laboratories to meet FPU in FY 2014, and complete RPD requirement to revisit LEP possibilities in conjunction with the DoD as well as NPR direction to pursue the same. The NG FY 2014 FPU is essential to ensure timely deliveries.

▪ **B83 Stockpile Systems**	**36,689**	**39,349**	**48,215**

The B83 nuclear weapon is a gravity bomb. The United States Air Force deploys this weapon on the B-2 Spirit bomber.

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required; execute repair, maintenance, and replacement of aging weapon components;

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with robust state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, these activities include: disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, and platform compatibility and testing activities;

(3) Weapon Assessment and Support: conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, POG and DoD safety studies, significant finding investigations; and

(4) Development Studies/Capability Improvements: conduct feasibility studies as required in conjunction with the DoD, execute design and development activities of a new electronic NG and GTS (including design, testing, and qualification) to meet a FPU in FY 2014.

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▪ **W87 Stockpile Systems**	**53,848**	**62,603**	**83,943**

The W87 is a strategic warhead integrated into the Mk21 re-entry vehicle. The U.S. Air Force deploys this weapon on the Minuteman III ICBM.

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required; execute repair, maintenance, and replacement of aging weapon components;

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with robust state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, to include: disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, platform compatibility and testing activities, production of weapon components expended during surveillance testing, and completion of material consolidation work at Y-12 to enable joint flight testing beyond FY 2012;

(3) Weapon Assessment and Support: conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, POG and DoD safety studies, significant finding investigations; and

(4) Development Studies/Capability Improvements: conduct feasibility studies as required in conjunction with the DoD, execute design and testing replacement activities for the NG.

▪ **W88 Stockpile Systems**	**42,743**	**45,666**	**75,728**

The W88 is a strategic warhead in the SLBM force. The United States Navy deploys this weapon on the Trident II (D5) Strategic Weapon System.

In accordance with National Requirements Documents and/or Directive Schedules, FY 2012 mission scope includes:

(1) Weapon Maintenance: produce LLCs/perform LLCEs on GTSs and NGs as required; execute repair, maintenance, and replacement of aging weapon components;

(2) Weapon Surveillance: conduct surveillance activities to provide the National Laboratory Directors with robust state-of-health nuclear weapon data necessary to complete Weapon Reliability and Annual Assessment Reports, to include: disassembly and inspection, system-level laboratory and joint flight testing, component and material evaluations, and platform compatibility and testing activities;

(3) Weapon Assessment and Support: conduct weapon assessment and certification activities necessary to complete Weapon Reliability and Annual Assessment Reports, to include: laboratory/site testing and analysis, trainer refurbishments, and POG and DoD safety studies, significant finding investigations; and

(4) Development Studies/Capability Improvements: conduct feasibility studies as required in conjunction with the DoD, provide laboratory and management expertise to

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

the POG and DoD Safety Studies, continue W88 AF&F development efforts (including consideration of commonality with the W78 and collaboration with the United Kingdom), complete design and pre-production efforts necessary to begin production in FY 2018, accomplish LLCE (GTS and NG) and AF&F work at Pantex.

Weapons Dismantlement and Disposition	**95,786**	**58,025**	**56,770**

Weapons Dismantlement and Disposition (WDD) is a critical element of NNSA's integrated effort to transform the enterprise and the stockpile. The WDD program element includes activities that enable or perform tasks to reduce the quantity of retired weapons or retired weapons components, including temporary staging, surveillance, complete disposition of retired weapons and weapons components, and the international commitment to disposition special nuclear material declared as excess to national security needs. Specific activities include weapons dismantlement, characterization of components to identify both hazards and classification issues, disposition of retired warhead system components, and surveillance of selected components from retired warheads. Other supporting activities specific to retired warheads include: conducting hazard assessments; issuing safety analysis reports; conducting laboratory and production plant safety studies; procuring shipping and storage equipment; declassification and sanitization of component parts; and supporting the Tri-laboratory office efforts on dismantlement activities. In addition, WDD relies on, enabling programs to complete its mission, including: Production Support for shipping, receiving, and equipment maintenance, RTBF for infrastructure sustainment and containers, and Secure Transportation Assets for movement of weapons and weapons components. The WDD program element will maintain associated component disposition, and when the scope exceeds the base capability provided by RTBF, support the recycling, recovery and storage of nuclear material.

The FY 2012 mission scope includes: NNSA's commitment to complete the dismantlement of all warheads retired as of FY 2009 by FY 2022. Pantex and Y-12 will continue to maintain through-put via efficiencies and the flexibility to use multi-shift operations when possible. The production sites will continue scheduled dismantlement operations of some of the more challenging stockpile systems which may result in a decreased number of dismantlements but a consistent level of effort due to the difficulty factor associated with the scheduled systems. These challenges present themselves in both the physical size of the weapons as well as the hazardous materials present and complexity of design. In accordance with current workload, Pantex will complete B53 dismantlements and initiate increased throughput of B83 dismantlement operations; Y-12 will nearly complete concurrent B53 canned subassembly dismantlements and ramp up to full scale B83 canned subassembly dismantlement activities. Investments in the W71 process and tooling will continue to ensure dismantlements prior to occupation of the Uranium Processing Facility at Y-12.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Stockpile Services	**851,414**	**941,525**	**928,589**

Stockpile Services provides the foundation for the research, development, and production capability and capacity within the nuclear security enterprise to meet DoD requirements. All enduring systems, LEPs, and dismantlements rely on Stockpile Services to provide the base development, production and logistics capability needed to integrate weapon delivery to the

DoD. In addition, Stockpile Services funds research, development and production activities for two or more weapons-types since these activities cannot be allocated to a specific weapon-type.

▪ **Production Support**	**300,037**	**309,761**	**354,502**

Production Support is the backbone for the manufacturing capability of the stockpile. Production Support includes those activities that provide the capability and capacity to support the Enterprise's production mission. Production Support funding not only sustains current DSW capabilities, but enables the modernization of the production capabilities to improve efficiency and to prepare manufacturing operations to meet future requirements. This mission requires close coordination with the Readiness Campaign, which is charged with development and initial deployment of new manufacturing and production capabilities.

The FY 2012 mission scope includes: (1) sustaining and modernizing engineering and manufacturing operations; (2) providing quality supervision and control; (3) performing tool, gauge, and test equipment procurement, maintenance, and inspection; (4) sustaining purchasing, shipping, and materials management and; (5) developing and maintaining electronic product-flow information systems. Collectively, these activities directly support implementation of systems engineering concepts and production integration. Production Support provides DSW with the base capability for conducting life extension work, stockpile surveillance, dismantlement work, NG production and detonator assembly production.

▪ **Research and Development (R&D) Support**	**37,071**	**38,582**	**30,264**

The R&D Support includes ongoing activities that directly enable the internal design laboratory R&D activities at that specific site, including management activities which support stockpile studies and programmatic work for multiple system and or non specific systems. R&D Support also provides the necessary administrative or organizational infrastructure to support internal design laboratory work.

The FY 2012 mission scope includes: (1) R&D infrastructure support at the national laboratories; (2) support of production facilities when issues are discovered and require national laboratory assistance in solving the issue; (3) assistance as part of Military Liaison when issues develop; (4) program management for multiple system activities;
(5) development and coordination of the integration of DSW, Campaigns, and RTBF

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

requirements; (6) national laboratory assignees to federal organizations; (7) facility taxes levied for building and capital use; and (8) support of quality assurance programs for multiple systems.

▪ **R&D Certification and Safety**	**189,174**	**209,053**	**190,892**

The R&D Certification and Safety provides the core competencies and capabilities for R&D efforts not directly attributable to a single specific warhead system. These activities conducted at the design laboratories and the Nevada National Security Site include the basic research required for developing NGs and GTSs, surveillance, and base capability for conducting hydrodynamic experiments, and an experimental program for plutonium and sub-critical experiments.

The FY 2012 mission scope includes: (1) perform nuclear safety R&D studies and weapons effects studies; (2) prepare and provide the infrastructure for conducting hydrodynamic tests in support of enduring stockpile systems and multiple system experiments; (3) continue to support NG development (electronic and small generator types) and GTSs; (4) continue to develop digital and analog arming and firing subsystems; hardware qualification; system certification and required computer modeling and simulation activities; (5) continue stockpile primary, secondary, chemistry, and materials systems analysis; annual assessments, development/introduction of modern surety features in support of LEPs; support for subcritical and other experiments at Nevada National Security Site which support dynamic plutonium experiments; (6) continue to implement the "Challenge Team" program within the National Laboratories. The NPR posited LEPs to sustain the stockpile, including full nuclear scope B61 and W78 LEPs. This enables transition of developed technologies from the Campaigns, including the Engineering Campaign, to bring nonnuclear technologies for GTSs, surety, radar, electronic and critical mechanical assembly components to a readiness level sufficient for consideration for use in the B61 LEP and subsequent application to future LEPs.

• **Management, Technology, and Production**	**183,223**	**193,811**	**198,700**

Management, Technology, and Production (MTP) is the backbone for certifying the safety, security, and reliability of the nuclear stockpile. The MTP activities provide the products, components and/or services for multi-weapon system surveillance (lab/flight test data collection and analysis), weapons reliability reporting to the DoD, DSW requirements tracking and implementation, management & operation, and stockpile planning. The MTP funding provides plant and laboratory personnel to sustain the stockpile to include surveillance, weapons requirements process improvements, engineering authorizations, safety assessments, use control technologies, containers, base spares, and transportation/handling gear for use in multiple weapons systems.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

The FY 2012 mission scope includes: (1) providing increased capabilities in surveillance, including increased core capabilities for laboratory and flight testing, analysis, data delivery and information data sharing; (2) supporting collaboration with the associated assessments and studies to ensure the stockpile remains safe, secure, and reliable; (3) improving safety and use control technologies for the W88 and B61 LEPs; (4) maintaining enterprise-wide, integrated product-realization information systems for design, engineering, manufacturing and quality control releases; (5) increasing military liaison activities associated with multiple weapon system responses; (6) accelerating the transformation and transition of DSW's requirements and integration system to provide sustained management & operations; (7) deploying applications for the NNSA Enterprise Secure Network as the common backbone for the Enterprise to exchange classified data, documents, drawings, and three-dimensional models (to maintain compatibility with existing weapons information systems and master nuclear schedules); and (8) execute feasibility studies in conjunction with the DoD (e.g., long-range standoff analysis of alternatives).

▪ **Plutonium Sustainment**	**141,909**	**190,318**	**154,231**

The Plutonium Sustainment program includes the technical skills, equipment and facilities to maintain the nation's plutonium manufacturing capability in support of the nuclear weapons stockpile. Additionally, the Plutonium Sustainment program supplements RTBF through a tax assessed based on the footprint utilized by the Plutonium Sustainment program in PF-4, as well as estimates of effluent and waste.

The FY 2012 mission scope includes: (1) support manufacturing modernization to include equipment and Industrial Engineering improvements to the manufacturing process; (2) maintain a base pit production capability; (3) support pre-production activities of a planned Defense Programs Power Supply mission. The Power Supply mission includes pre-production and facility improvements to support the assembly operation at Los Alamos National Laboratory. The base program capabilities include development to establish the capability to produce a second pit type, and development activities that include Los Alamos National Laboratory and Lawrence Livermore National Laboratory.

Total, Directed Stockpile Work	**1,564,290**	**1,898,379**	**1,963,583**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Life Extension Programs	
▪ **B61 Life Extension Program**	
▪ This is the first request of LEP funding for B61-12 (LES previously included within Stockpile Systems), to execute requirements associated with Phase 6.3, Development Engineering. Funded Phase 6.3 activities include: ramp-up of personnel and resources to fully staff product realization teams; development of detailed nuclear and non-nuclear component designs; system architectures and trainer/equipment designs; initiation of component and systems qualification activities, and advancement of detonator and nuclear safety options. The request represents a net decrease of $28,079,000 from the funding requested in FY 2011 (in the Stockpile Systems line) due to reallocation of funds to the Readiness Campaign to address production readiness requirement associated with down-select of technologies per expected NWC Phase 6.3 approval.	**+223,562**
▪ **W76 Life Extension Program**	
The increase funds personnel, materials, and tooling in order to continue scale-up to full production rate by the end of FY 2013 to meet the full production rate contained in the FY 2009 Requirement and Planning Document. Scale-up activities include engineering support from the sites to enable manufacturing and productivity improvements at the plants.	**+7,572**
Total, Life Extension Programs	**+231,134**

	FY 2012 vs. FY 2011 Request ($000)
Stockpile Systems	
▪ **B61 Stockpile Systems**	
The decrease results primarily from moving the B61 LES activities to the LEP in anticipation of NWC approval of B61 Phase 6.3 Development Engineering. The approval will complete the LES and enable a transfer of requirements to the B61 LEP funding line. The remaining B61 life extension activity decrease results from the reallocation of funds to the Readiness Campaign to address production readiness requirements. Within the overall B61 decrease, there is a B61 system sustainment increase of $6,901,000 which represents funding for design activities in FY 2012 to replace the joint test assembly flight recorder instrumentation and weapon evaluation test laboratory system tester.	**-244,740**
▪ **W76 Stockpile Systems**	
The decrease results from reduced production of the 1X Acorn Gas Transfer Systems and the MC4380A Neutron Generators. This is consistent with production schedule requirements.	**-1,138**
▪ **W78 Stockpile Systems**	
The net increase consists of a decrease in NG production consistent with USSTRATCOM operational requirements; and an increase for the W78 LES which represents the beginning of the feasibility study/option down-select (Phase 6.2/6.2a) process.	**+23,620**
▪ **W80 Stockpile Systems**	
The increase funds the NG subassembly, timer driver development lots, system qualification and transportation testing, and design, development, and production of timers, detonators and NGs at Sandia National Laboratories. This enables FPU in FY 2014.	**+10,251**

	FY 2012 vs. FY 2011 Request ($000)
▪ **B83 Stockpile Systems**	
The increase funds initiation of design activities to improve the GTS and reinvigorate canned subassembly surveillance to eliminate the backlog that has arisen due to special processing requirements.	**+8,866**
▪ **W87 Stockpile Systems**	
The increase funds the disassembly and inspection (D&I) and build of both a required joint flight test unit and system laboratory test bed; canned subassembly evaluation; the completion of material consolidation activities to enable the continuation of joint test assembly builds in FY 2013; component material evaluation and Robustness testing which is integral to the Surveillance Transformation Program; Firing Set Production including Firing Set Housing, Environmental Sensing Device (ESD), and Lightning Arrestor Connector (LAC) in support of surveillance rebuilds; stockpile assessment activities; and the completion of NG development. The increase funds the start of production in FY 2012 and ramp up to full production in FY 2013 of the NG. Ramp up activities include engineering support from Sandia National Laboratories and maintenance activities at the Pantex Plant to perform the exchange to meet USSTRATCOM operational requirements and the start of NG production to meet USSTRATCOM operational requirements.	**+21,340**
▪ **W88 Stockpile Systems**	
The increase funds additional component testing and component material evaluation in FY 2012 and will also fund closure of critical Significant Finding Investigations to attain technical data to complete the Annual Assessment and continue the W88 AF&F development efforts (including consideration of commonality with the W78, and collaboration with the United Kingdom).	**+30,062**
Total, Stockpile Systems	**-151,739**
Weapons Dismantlement and Disposition	
The decrease is a result of reduced characterization and disposition of legacy weapon components and component disposition of on-going dismantlement activity. Legacy weapon components will remain in storage onsite.	**-1,255**

	FY 2012 vs. FY 2011 Request ($000)
Stockpile Services	
▪ **Production Support**	
The increase funds necessary nuclear security enterprise manpower and specialized equipment to manufacture required NGs (new products) and detonators, and to complete multi-system surveillance requirements (laboratory/flight function and destructive testing) for the stockpile. The increase also funds emerging special Use Control System Studies and manufacturing readiness activities (new tooling, testers, and product/container acceptance) to support the stockpile life extension programs. The NPR drove additionally required mission scope and this increase over previous year funding levels results in part to recover schedule on the nuclear scope of the B61 LEP study.	**+44,741**
▪ **Research and Development Support**	
The decrease reflects less emphasis on updates to software computers and reduces the amount of program management funding.	**-8,318**
▪ **Research & Development Certification and Safety**	
The decrease reflects the reallocation of funding to higher priorities including Stockpile Systems activities.	**-18,161**
▪ **Management, Technology, and Production**	
The increase funds surveillance activities, including: systems testing, component testing, analysis, data delivery, and information data sharing.	**+4,889**
▪ **Plutonium Sustainment**	
The decrease reflects the completion of the W88 pit build. Efforts for preparation of future planned pit production missions and associated manufacturing facilities and process modernization activities will be reduced.	**-36,087**
Total, Stockpile Services	**-12,396**
Total Funding Change, Directed Stockpile Work	**+65,204**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	8,159	8,338	8,521
Capital Equipment	36,510	37,313	38,134
Total, Capital Operating Expenses	**44,669**	**45,651**	**46,655**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	8,708	8,900	9,096	9,296
Capital Equipment	38,973	39,830	40,706	41,602
Total, Capital Operating Expenses	**47,681**	**48,730**	**49,802**	**50,898**

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

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

Major Item of Equipment	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2010	FY 2011	FY 2012	Completion Date
SNM Vehicle, Y-12 National Security Complex	9,000	5,419	0	1,800	2,400	340	FY 2014
6 New Ovens #1, Y-12 National Security Complex	5,154	4,622	4,275	1,027	-680	0	FY 2011
6 New Ovens #2, Y-12 National Security Complex	5,199	5,147	4,205	942	0	0	FY 2011
QE Environmental Chamber, Y-12 National Security Complex	2,896	1,914	1,884	500	-470	0	FY 2011
Gas Mass Spectrometer, Y-12 National Security Complex	1,792	1,787	2,100	-313	0	0	FY 2010
LTTD Oven, Y-12 National Security Complex	3,281	2,281	0	813	670	500	FY 2013
Dismantlement Lathe #3, Y-12 National Security Complex	4,700	4,200	0	2,200	2,000	0	FY 2012
Total Major Items of Equipment				**6,969**	**3,920**	**840**	

Science Campaign

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Science Campaign			
Advanced Certification	19,269	76,972	94,929
Primary Assessment Technologies	82,838	85,723	86,055
Dynamic Materials Properties	86,371	96,984	111,836
Advanced Radiography	28,489	23,594	27,058
Secondary Assessment Technologies	77,581	81,949	86,061
Total, Science Campaign	**294,548**	**365,222**	**405,939**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Science Campaign				
Advanced Certification	97,229	103,271	82,000	84,174
Primary Assessment Technologies	88,893	85,894	88,368	88,831
Dynamic Materials Properties	114,980	114,170	106,398	114,620
Advanced Radiography	26,816	26,528	27,421	26,473
Secondary Assessment Technologies	90,298	86,421	90,128	89,999
Total, Science Campaign	**418,216**	**416,284**	**394,315**	**404,097**

Mission

The Science Campaign develops our nation's scientific capabilities and experimental infrastructure used to assess the safety, security, reliability, and performance of the nuclear explosives package (NEP) without reliance on further underground testing. The Science Campaign provides this assessment by developing certification and assessment tools and the experimental platforms to inform, validate, and provide confidence in our essential predictive capabilities. Its science-based approach provides the fundamental knowledge needed to: (1) provide a quantitative measure of confidence in weapons performance; (2) address and reduce uncertainties in our predictive capabilities, (3) predict the performance of the NEP as components age; (4) inform decisions for Stockpile Stewardship Programs; and (5) exercise readiness capabilities through experiments and assessments.

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

The Science Campaign supports the training and development of the scientific and technical workforce that will replace the current stockpile stewards who have underground testing experience. The pipeline for recruiting is fostered by supporting peer-reviewed academic research in core disciplines that are of special interest to the stockpile stewardship program. Topical areas include materials under dynamic

conditions and in extreme environments, hydrodynamics, low-energy nuclear science, and high-energy-density science.

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

The Predictive Capability Framework is the method used to plan and integrate the Science Campaign with the other Stockpile Stewardship programs. The Science Campaign provides experimental data used to explore, inform and validate models in the ASC simulation codes. These physical data and methodologies lend confidence to calculations that are performed to meet commitments for understanding the impact of aging on weapons systems, closing Significant Finding Investigations, and performing annual assessments and certifications. The pace of work under the Science Campaign is timed to support milestones, shared with the ASC Campaign, to release substantially improved simulation codes for primaries and secondaries. These shared milestones require the incorporation of improved physics models, which require the experimental exploration and validation provided by the Science Campaign. These improved physics models include validated models for plutonium equation of state (EOS) and constitutive properties. The Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility is used as a validation tool for mock primaries. The high energy density physics facilities and other materials characterization facilities support this and other stockpile science and technology issues.

The Science Campaign supports scientific research activities in partnership with other national and international sponsors. During FY 2010, the Science Campaign pursued various collaborations with the Office of Science's Basic Energy Sciences for the application of the Advanced Photon Source and the Linac Coherent Light Source for stockpile relevant science. This approach has and will continue to extend our science capability.

Benefits

The Science Campaign is composed of five subprograms. The unique contributions of each subprogram to Government Performance and Results Act (GPRA) Unit Program Number 37 are summarized below:

The *Advanced Certification* subprogram integrates certain scientific and technological advances from the stockpile stewardship programs, and develops data from crosscutting studies and integrated experiments (including hydrodynamic and subcritical experiments) in order to: (1) improve the weapons certification process; (2) refine computational tools and methods; (3) promote the advancement of the physical understanding of surety mechanisms; (4) ensure further exploration of failure modes; (5) conduct manufacturing process assessments; and (6) anticipate technological surprise. In FY 2011, an increase was requested to support advanced certification efforts in failure modes, including stockpile, and non-stockpile designs, to utilize the major stockpile stewardship experimental capabilities to examine options for modernized surety.

The *Primary Assessment Technologies* subprogram, in conjunction with the ASC Campaign, develops the tools, methods, and knowledge required to certify the nuclear safety and nuclear performance of any primary to the required level of Department of Defense performance without nuclear testing. This subprogram also supports the design of hydrodynamic and subcritical experiments. These experiments, together with experiments using relevant simplified geometries, are used to tie high-fidelity experimental results to data obtained from the database of historic full-scale underground nuclear tests.

The *Dynamic Materials Properties* subprogram generates fundamental materials data and provides the validation data for physics-based models that describe and predict the behaviors of weapon materials in extreme conditions of temperature, stress, strain, and strain rates. This subprogram also includes part of the scope of work associated with sub-critical experiments at the Nevada National Security Site (NNSS).

The *Advanced Radiography* subprogram develops advanced technologies for static and dynamic imaging of imploding mock primaries to experimentally validate computer simulations of the implosion process and associated physical phenomena. This subprogram also develops driver technologies to meet the radiographic requirements and dynamic material property requirements defined in the Primary and Secondary Assessment Plans.

The *Secondary Assessment Technologies* subprogram, in conjunction with the ASC Campaign, develops the tools, methods, and knowledge required to certify the nuclear performance of secondaries without nuclear testing. This includes developing modern tools needed to identify weapon failure modes, margins and performance relevant to stockpile systems.

The Science Campaigns subprograms support the Stewardship Science Academic Alliances (SSAA) program that provides financial assistance to approximately 40 academic institutions in two areas of unique relevance to weapon science: low-energy nuclear science and materials under extreme conditions. Academic alliances in high-energy-density physics are funded by the Science Campaign and the Inertial Confinement Fusion and High Yield (ICF) Campaign.

The Science Campaign also collaborates with Basic Energy Sciences, Fusion Energy Sciences and Nuclear Energy in support of the Department's Materials in Extreme Nuclear Technology Environments crosscut. The behavior of materials in extreme radiation environments is one of the key issues limiting the lifetime of today's fission reactors and is also a significant technical requirement for future fission and fusion technologies. This initiative would result in significant improvements in our understanding of radiation damage, potential mitigation schemes, and the design of novel materials with enhanced radiation resistance. The goals of this initiative include doubling the lifetime of materials in current nuclear technologies, increasing confidence in plutonium lifetime estimates, and prediction and design of new materials behavior for future nuclear technologies. The effort has focused on a set of research themes that have substantial near-term results and provide a suite of tools to support the long-term development of validated predictive simulation capability for materials in extreme radiation environments.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments
Advanced Certification

- Successfully designed and executed two, dual-axis hydrodynamic tests at DARHT exploring surety mechanisms and options for retrofitting the current stockpile.
- Conducted a first ever early assessment of a proposed re-use option for a future LEP.
- Obtained Equation of State (EOS) data required to evaluate surety options.
- Demonstrated the quantitative effect of model-form uncertainty on prediction uncertainty (QMU development goal).
- Accomplished a complete catalog of observed failures in historical underground tests and the associated first generation explanations of mechanisms, metrics, and thresholds without testing.
- Demonstrated the validity of an expanded application of a metric for primary failure to multiple device classes.
- Successfully explained a series of three related historic underground tests. Based on this analysis, proposed a new QMU metric for the failure mechanism and proposed a threshold on that metric. Supported the use of this new metric through the analysis of a suite of simulations of a class of devices.

Primary Assessment Technology

- Reached resolution on a long-standing discrepancy in the understanding of fission-spectra induced fission-product yields. This improved understanding of the issue brings the radiochemical interpretation of the number of fissions for a fissioning system made by Los Alamos (LANL) and Lawrence Livermore National Laboratory (LLNL) into agreement.
- Acquired EOS data on Sandia National Laboratories' (SNL) Z machine relevant to a stockpile issue.
- Tested a new fission chamber - the Parallel Plate Avalanche Counter-in the Los Alamos Neutron Science Center (LANSCE) Weapons Neutron Research beam and resulted in improving the timing of fission events by an order of magnitude.
- Replacing a 40+ year old method, a tool was created to assess the uncertainty associated with radiochemical information; the tool was generated in 2009 and validated and initiated in 2010.
- Completed multiple (classified) weapons physics experiments on proton radiography (pRad) at LANSCE.

Dynamic Materials Properties

- Completed the Barolo Experimental Series Contractor Operational Readiness Review (ORR) and Federal ORR for Category 3 nuclear operations in the U1a.05 drift at the NNSS.
- Completed experiments and preliminary simulations to demonstrate the effect of shock geometry on spallation. Results demonstrate strong dependency between shock-wave profile and stress-state.
- Completed a series of thermal explosion experiments on PBX-9501 and PBXN-9, HMX-based explosives pressed to a low density.

- Received an R&D 100 award from R&D magazine, for LANL research activities that led to the development of a new way to make a type of explosive that is both insensitive and environmentally friendly.
- Accomplished significant progress in the area of static high pressure including: measurement of the strength of vanadium up to pressures approaching a megabar, studies of thermal effects on the EOS of plutonium at moderate pressures, measurement of the melt curve of tin using designer anvil resistive heating and conductivity diagnostic, and measurements of the EOS change in plutonium due to artificial aging.
- Made progress preparing for the first plutonium shot on the refurbished Z; the shot was made November 18, 2010.
- Provided a significant body of experimental data using Z on materials of interest, including the strength of beryllium and tantalum.

Advanced Radiography

- Published Bayesian Interference Engine (BIE) analysis of scatter rejection of DARHT I "Bucky grid" and completed BIE analysis of DARHT I error propagation.
- Built and installed four out of five-camera array for DARHT II. The first camera was fielded on the first dual axis hydro at DARHT.
- Utilized the first module of the continuous imager (MOXIE) on a pRad experiment. This device won a R&D 100 award from R&D Magazine in FY 2010.
- Maintained operational readiness of the Cygnus radiographic system and optimized the VISAR (Velocity Interferometer System for Any Reflector) diagnostics by reducing the noise and increasing the light efficiency by a factor of three.

Secondary Assessment Technologies

- Executed the first NIF experiments for the stockpile stewardship mission.
- Demonstrated the ability to calculate system output with Uncertainty Quantification within predefined ranges of data.
- Conducted four joint experiments on Z to provide data in support of a major energy balance milestone.
- Resolved, by working in a collaborative effort between LLNL and LANL, a long-standing discrepancy in simulations of secondary performance. This resolution provides the basis for future LEP options and improves confidence in stockpile assessments.

Major Outyear Priorities and Assumptions

The outyear requirements for the Science Campaign total $1,632,912,000 for FY 2013 through FY 2016. The Science Campaign will improve predictive capability by FY 2020. The major steps on this path include: fundamental multi-phase Pu EOS and constitutive properties models for primary implosions by FY 2012; models for full primary operation by FY 2015; and models of full secondary performance by FY 2018. Current outyear projections for Advanced Certification are based on present understanding of future stockpile certification needs. This is particularly focused on developing methodologies and data for certification of improved surety options. This effort will require additional subcritical experiments.

The Science Campaign is planning future activities to answer key questions on time scales consistent with transformation of the nuclear security enterprise. The NNSA is reviewing several outstanding high-level issues, such as: the LANSCE Decadal Risk Mitigation Plan; the challenging program related to initial conditions for boost (2015); a critical decision point for the status of DynEx (scheduled for 2015); nuclear experiments (i.e. experiments conducted in nuclear facilities, ranging from gas guns to subcritical experiments at NNSS) and related challenges; the high-energy density (HED) 3-year plan and the priorities for weapons science data from HED platforms; management of hydrodynamic experiments and the need to provide the capabilities required to support broader national security missions; the requirement to maintain test readiness capabilities as directed by Presidential Decision Directive 15. Activities affected by transformation across the nuclear security enterprise include high explosives research across the Enterprise, plutonium R&D activities in Superblock at LLNL and managing the balance between research and manufacturing activities at TA-55.

The Science Campaign will continue to improve each of the major elements in our Advanced Certification subprogram in the Science Campaign and ramp up in design, maintenance, and experimental support to a level consistent with regular conduct of more frequent and less expensive subcritical experiments. This result will be enhanced R&D for features benefiting the safety and security of the stockpile.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Advanced Certification	**19,269**	**76,972**	**94,929**

Advanced Certification develops tools that support the current stockpile as well as a future stockpile that may encompass substantial new safety and surety features. Advanced Certification therefore provides a strong focal point for key science, technology and engineering deliverables that enable future life extension certification activities. The elements are: certification methodology; safety and security feature certification; the use of nearest neighbors and failure modes in certification; certification aspects of manufacturing and engineering process solutions. Advanced Certification integrates scientific and technological advances from stockpile stewardship with input from continuing studies in order to: improve the weapons certification process; refine computational tools and methods; advance the physical understanding of surety mechanisms; understand failure modes; assess new manufacturing processes; and anticipate technological surprise.

In FY 2012, activities include modeling and experiments addressing failure modes, as well as developing rigorous, peer-reviewed linkage of requirements to the associated certification needs for the weapons lifecycle under relevant conditions. Other activities include the use of the DARHT facility for hydrodynamic experiments to examine options for modernized surety; a strong program on understanding scaling and surrogacy; elements of the National Boost Initiative related to certification; and the effect of manufacturing and process variables on certification. Also supported is the analysis of failure modes and margin-to-failure ratios, including stockpile and non-stockpile designs. This effort also supports intelligence community issues and involves close coordination with other government agencies in national security. Failure mode analysis is fundamental to stewardship and extension of this analysis to other designs will contribute to counterterrorism and counter-proliferation assessments.

Support will be provided for each of the major subtasks of Advanced Certification – Methodology, Near-neighbor Definition, Manufacturing and Engineering Process Solutions, Advanced Surety Certification, and Failure Modes. Specifically supported are the quantification of the effects of surety features, investigation of efficacy options, manufacturing of hydrodynamic experiments, product based certification, the certification of reuse options, and the support of the National Boost Initiative (primarily supported by Primary Assessment Technologies). Support experiments are used to inform various computational validation suites that are primarily supported in Advanced Scientific Computing; hydrodynamic experiments conducted at the Dual Axis Radiographic Hydrodynamic Test facility to examine options for modernized surety; analysis of failure modes and margin-to-failure ratios, including stockpile, non-stockpile, and potential proliferant designs.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

The budget request enables the completion of work to address essential facility maintenance requirements necessary to meet critical milestones described in the Predictive Capability Framework (PCF). The PCF is the path for providing certification capabilities in the future and provides a framework for integrating science, technology and engineering efforts DP-wide.

The FY 2012 budget request also supports subcritical experiments required for improving predictive capability of performance calculations for nuclear weapon primaries. A JASON study will be initiated to evaluate future scaled and surrogate experiments. This component of Advanced Certification principally supports the design and execution of subcritical experiments that require the participation of much of the nuclear security enterprise to execute successfully. This includes designers and engineers at the National laboratories, manufacturing and fabrication at the laboratories and other sites, transportation and handling, and experimenters and diagnosticians at the NNSS. This will also support the required experiments necessary to calibrate advanced diagnostics and ensure soundness of experiment design. Major experiments using Pu will be conducted at the NNSS. Hydrodynamic experiments using surrogate materials will be conducted at the Dual-axis Radiographic Hydrodynamic Test facility at Los Alamos National Laboratory (LANL) and the Contained Firing Facility at Lawrence Livermore Laboratories' (LLNL) Site 300. The development of transformational diagnostic capabilities that support these experiments will occur at LANL, LLNL, Sandia National Laboratories (SNL), and NNSS.

Primary Assessment Technologies	**82,838**	**85,723**	**86,055**

Primary Assessment Technologies provides capabilities needed for strengthening assessment for stockpile primaries, for enabling a broad range of options for future LEPs, and for underwriting improvements in weapons safety and security. These capabilities also provide the foundation for national security missions concerned with assessment of foreign or improvised weapons.

In 2012, the following major activities will be conducted within the scope of Primary Assessment Technologies: the evaluation of aging effects on the predicted certifiable service lifetime of pits; experiments to provide materials data and improved understanding of implosion hydrodynamics at laboratory firing sites and pRad at LANSCE; nuclear data measurements with the prototype Time Projection Chamber at LANSCE. These experiments are aimed at improving our understanding of criticality, safety, and performance through precision determination of the fission cross section for plutonium. Basic advances in our treatment for high explosives and improved metrics for assessing calculations of primary implosions will be delivered in support of a 2012 Level 1 Milestone. Lastly, a principal focus will remain on the planning and coordination provided by the National Boost Initiative. This is a tri-lab effort to develop a predictive capability for the boosting process in stockpile primaries.

Primary Assessment Technologies also contributes to funding the Stewardship Science Academic Alliances (SSAA). The SSAA program provides financial assistance to approximately 40 academic institutions in two areas of unique relevance to weapon science: low energy nuclear science and materials under extreme conditions.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Dynamic Materials Properties	**86,371**	**96,984**	**111,836**

Dynamic Materials Properties develops the fundamental knowledge and physics-based models that describe and predict the behaviors of weapon materials in environments of extreme conditions of temperature, stress, strain, and strain rates.

In 2012, the following activities will begin or continue under Dynamic Materials Properties: developing the aging and process-aware fundamental plutonium multi-phase EOS and other properties, especially high-priority data identified as required for the FY 2015 Initial Conditions milestone associated with National Boost Initiative. Acquiring the data required to understand the role of plutonium and surrogate materials in fundamental physics mechanisms will continue to be the principal activity of the subprogram. These experiments will be conducted at laboratory facilities including the Inertial Confinement Fusion (ICF) facilities, as well as at DOE/Science synchrotron radiation national user facilities. Other materials data (as detailed in the classified Primary and Secondary Assessment Plans) will be conducted at LANSCE, Z and other laboratory facilities under this sub-program. A series of tests will be executed on JASPER and other gas and powder gun facilities under pressures and temperatures and with different loading characteristics to provide information important to the improvement of EOS models. In studies of high explosive behavior, size scaling will be performed to directly measure late-time kinetic effects in insensitive high explosives and conventional high explosives. Key materials data on polymers, foams and other materials will also continue to be generated and analyzed. Another key element of Dynamic Materials Properties will focus on informing decisions on investment for future experiments (from small-scale to integral) and related pegposts for the Predictive Capability Framework. Key, peer-reviewed integral experiments that inform our understanding of the initial conditions established in a primary, with a focus on the dynamic response of plutonium will also be conducted.

Dynamic Materials Properties also funds the SSAA Program. The SSAA program provides financial assistance to approximately 40 academic institutions in two areas of unique relevance to weapons science: low energy nuclear science and materials under extreme conditions.

Advanced Radiography	**28,489**	**23,594**	**27,058**

Advanced Radiography develops the sources and diagnostics used by the enterprise to develop and optimally utilize the tools required to perform radiographic and dynamic materials experiments. The majority of the work will be accomplished at DARHT, Site 300, Sandia Area IV, NNSS, and pRad at LANSCE. Containment of explosively-driven experiments will be a continuing focus and will enable these experiments to have a minimal impact on the environment. The development of radiographic requirements and advanced analysis of radiographic information will be pursued to establish the need for future radiographic capabilities.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

In FY 2012, this subprogram will continue to support the early stages of development of advanced radiographic technologies, especially as required for hydrodynamic experiments, dynamic plutonium experiments, and scaling and surrogacy experiments, as defined in the Primary Assessment Plan. The subprogram will also continue the development of the next-generation camera for the pRad facility at LANSCE.

Secondary Assessment Technologies	**77,581**	**81,949**	**86,061**

Secondary Assessment Technologies provides capabilities underpinning improved assessment for stockpile secondaries. These improvements are used to strengthen the certification process, to enable consideration of a broad range of options for future LEPs, and to provide a sound basis for quantifying threats posed by non-stockpile weapons.

In 2012, one major focus of the subprogram includes the successful completion of the long-standing energy balance problem with validation experiments at NIF and Z. The focus is now beginning to shift to developing and validating other aspects of performance. Over the next few years, starting in 2012, a series of experiments described in the three year High Energy Density Physics experimental plan will be conducted. These experiments are aimed at reducing key uncertainties in secondary performance through improvements in fundamental physical data used by simulation codes. Improved computational models of secondary performance will be developed and used to reduce uncertainties in calculations of critical aspects of performance. Our ability to quantitatively predict weapons outputs will be strengthened through updating models based on historical tests and quantifying key science uncertainties and their impact on these assessments. Finally the secondary assessment plan will be updated to reflect the significant progress over the past two years.

Total, Science Campaign	**294,548**	**365,222**	**405,939**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Advanced Certification	
The increase will support the quantification of the effects of surety features, investigation of efficacy options, manufacturing of hydrodynamic experiments, product-process based certification, the certification of reuse options, and support the National Boost Initiative. The increase will also support a JASON study of the scaled experimental program developed for improving predictive capability of performance calculations for nuclear weapon primaries	**+17,957**
Primary Assessment Technologies	
The increase will fund additional efforts in support of the National Boost Initiative and scaling (and surrogacy) studies. There is an offsetting decrease resulting from the transfer of materials studies on Sandia Z machine to Dynamic Materials Properties.	**+332**
Dynamic Materials Properties	
The increase will fund materials studies in support of the National Boost Initiative and accelerates dynamic Pu experiments that support scaling/surrogacy efforts in Advanced Certification. There is also an increase resulting from the transfer of materials studies on Sandia's Z machine to Dynamic Materials Properties from Primary Assessment Technologies. The increase will further support materials work in extreme environments executed in cooperation with the DOE Office of Science, DOE Energy, and DOE Environmental offices.	**+14,852**
Advanced Radiography	
The increase will support work in two areas: (i) radiographic performance improvements at U1a at NNSS; and, (ii) the development and maturation of key detector and source technologies at multiple sites.	**+3,464**
Secondary Assessment Technology	
The increase will primarily fund the development of weapons physics experiments to be performed at Trident at LANL and NIF.	**+4,112**
Total Funding Change, Science Campaign	**+40,717**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	9,220	9,423	9,630
Total, Capital Operating Expenses	**9,220**	**9,423**	**9,630**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	9,842	10,059	10,280	10,506
Total, Capital Operating Expenses	**9,842**	**10,059**	**10,280**	**10,506**

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

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Completion Date
TA-53 pRad, LANL	2,100	1,964	0	0	1,070	741	FY 2013
Total Major Items of Equipment				**0**	**1,070**	**741**	

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

Engineering Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Engineering Campaign			
Enhanced Surety	41,928	42,429	41,696
Weapons Systems Engineering Assessment Technology	17,977	13,530	15,663
Nuclear Survivability	20,980	19,786	19,545
Enhanced Surveillance	68,794	66,175	66,174
Total, Engineering Campaign	**149,679**	**141,920**	**143,078**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Engineering Campaign				
Enhanced Surety	51,922	50,810	47,649	48,773
Weapons Systems Engineering Assessment Technology	21,233	21,502	21,244	21,699
Nuclear Survivability	24,371	25,691	26,079	26,318
Enhanced Surveillance	70,892	67,895	64,477	61,903
Total, Engineering Campaign	**168,418**	**165,898**	**159,449**	**158,693**

Mission

The Engineering Campaign provides the modern tools and capabilities needed to ensure the safety, security, reliability and performance of the United States nuclear weapons stockpile. It provides the fundamental and sustained engineering basis for stockpile certification and assessments that are needed throughout the entire lifecycle of each weapon. The Engineering Campaign funds activities that assess and improve fielded nuclear and non-nuclear engineering components without further underground testing. Additionally, this Campaign increases the ability of the National Nuclear Security Administration (NNSA) to predict the response of weapon components and subsystems to harsh environments and to the effects of aging. In accordance with the 2010 *Nuclear Posture Review Report*, the Engineering Campaign directly supports "strengthening the science, technology, and engineering (ST&E) base needed for conducting weapon system LEPs, maturing advanced technologies to increase weapons surety, qualification of weapon components and certifying weapons without nuclear testing, and providing annual stockpile assessments through weapons surveillance."

Benefits

The Engineering Campaign is comprised of four focused subprograms. The unique contributions of each subprogram to Government Performance and Results Act (GPRA) Unit Program Number 38 are summarized below:

The *Enhanced Surety* subprogram develops advanced initiation, use-denial, and power management options, and integrated surety solutions for consideration for the next insertion opportunity into a stockpile weapon system. This ensures that new, improved levels of use-control (or denial of

unauthorized use) are achieved and that modern technology advancements are integrated within nuclear weapons safety and security.

The *Weapons Systems Engineering Assessment Technology* subprogram provides scientific understanding, experimental capability, diagnostic development and data required to qualify components and full weapon assemblies. This subprogram forms a key link between engineering sciences and computational simulation, and between testing and evaluation in both normal and abnormal environments that are essential to the weapon program qualification activities.

The *Nuclear Survivability* subprogram provides the tools and technologies necessary to design and qualify components and subsystems to meet requirements to withstand radiation, space, and other hostile environments. This work includes development of radiation-hardened components and modernized tools for weapon system analysis.

The *Enhanced Surveillance* subprogram provides component and material lifetime assessments to support weapon refurbishment decisions. These lifetime assessments include both the experimental accelerated aging tests and assessment of aged components from the stockpile including the computational verification of component and material aging. This information is used for material, component and systems that are used to assess the current and future state of weapons in the enduring stockpile. In addition, this subprogram develops advanced diagnostics and predictive capabilities for early detection and assessment of stockpile aging concerns. These advanced diagnostics are able to identify potential issues that previously could not have been identified through prior diagnostics/surveillance methods thus enabling a better understanding of the current state of the stockpile. Advanced diagnostics include non-destructive diagnostics that could potentially allow tested components to be candidates for re-use. Based on advanced diagnostics data, the number of destructive component tests can potentially be reduced as the aging models improve.

The Engineering Campaign activities are closely integrated with Directed Stockpile Work (DSW), the Advanced Simulation and Computing (ASC) Campaign, the Readiness Campaign, the Science Campaign, Readiness in Technical Base and Facilities (RTBF), and our counterparts at the United Kingdom's Atomic Weapons Establishment. Examples of these integrations are provided below:

- DSW provides the requirements for modeling and simulation capability and establishes the corresponding schedule for Engineering Campaign deliverables that support Life Extension Programs (LEPs) and other planned refurbishments of stockpile systems.

- Many of the decisions by the ASC Campaign to develop or improve scientific models are the direct result of insights gained by technology maturation that occurs in the Engineering Campaign (e.g. development of modeling and simulation of a new material, enhancements to current models due to greater understanding of aging phenomena). In addition, the ASC Campaign provides validation and verification requirements for advanced codes to the Engineering Campaign which, in turn, uses the codes to design and execute experiments to generate data required in the validation of the computational tools.

- The Readiness and Engineering Campaigns coordinate investments in parallel with the ASC and the Science Campaigns to manage weapon technology and component maturation development

activities for the nuclear security enterprise in time to meet mission requirements. The Component Maturation Framework (CMF), a corollary process to the Predictive Capabilities Framework, provides a construct for integration across programs and campaigns for maturing technologies and providing manufacturing capabilities for planned insertion of components into LEPs. Components tracked by the CMF for maturation include neutron generators, gas transfer systems, joint test assemblies, and other non-nuclear and nuclear components or subsystems required to support the enduring and transformed stockpile. The CMF contributes to the overall process of coordination between Campaigns to facilitate increasing the technology readiness level (TRL) of new technologies from design to successful testing in relevant environments, and aids in preparation necessary for full scale production.

- The engineering science basis for enhanced surveillance and nuclear survivability assessments depends on aging and relevant changes in material properties data provided by the Dynamic Materials Properties subprogram of the Science Campaign. Along with baseline data for related tests and analysis methodologies, the Science Campaign input includes margin/uncertainty criteria and sensitivities of performance material properties used to develop aging models and lifetime assessment tools.

- Integration between the Engineering Campaign and RTBF ensures that the proper investment is made in experimental, computational, and component manufacturing infrastructure needed to meet the milestones of the Campaign, in support of DSW. Examples of these facilities include the Test Capability Revitalization Phase II, the Ion Beam Laboratory, and the Microsystems and Engineering Sciences Applications facility.

- The United States and the United Kingdom enjoy longstanding partnerships in the form of Joint Working Group (JOWOGs). Ongoing programs within each country leverage laboratory efforts to reduce costs and capitalize on existing synergies. In some instances, collaboration between the two countries and their laboratories results in Enhanced Collaborations to address specific topics of interest.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

Enhanced Surety

- Completed environmental testing and demonstrated that the transportation attachment device used in the SafeGuard Transporter successfully survived the normal environments without issues;
- Sandia National Laboratories (SNL) successfully completed bullet number five on the *Defense Programs Getting the Job Done in FY 2010* list to "demonstrate technologies required to field an integrated surety system by September 2010", approximately three months ahead of schedule, by maturing, to TRL 6, command and control system technologies applicable to a NNSA transportation application;

- Successfully completed and tested at Los Alamos National Laboratory (LANL) a full-size re-entry vehicle/body (RV/RB) mock-up of the Checkerboard Demonstration Project;
- SNL successfully fabricated and tested a vacuum compatible thermoelectric module for the Tritium Thermoelectric Generator (TTG);
- Completed six tests of the highest priority surety sensor technology with excellent and predicted results;
- Completed the first deuterium test load for the TTG heat source vessel; and
- Successfully filled titanium tritide heat source at Savannah River Site and Beginning of Life heat measurement were as predicted.

Weapons Systems Engineering Assessment Technology

- Collected cell foam validation data, in a geometry relevant to the fireset for the B61;
- Mock assembly for modeling and characterization of high-explosive assembly stress state characterization was completed and assembly data was collected; and
- Completed assessment of advanced quantitative tracking concept with embedded strong turbulence mitigation technologies.

Nuclear Survivability

- Implemented the unstructured mesh capability for radiation transport calculations;
- Blind data gathered previously on the Sandia Pulse Reactor-III and at the White Sands Missile Range Fast Burst Reactor aided in the assessment of Qualification Alternatives to the Sandia Pulse Reactor (QASPR) results for a prototype silicon circuit; and
- Demonstrated high precision techniques to assess the potential impact on radiation hardness during overall system lifetime. A spin-off of the R&D was then established as a surveillance protocol now being conducted on select W76-1 parts.

Enhanced Surveillance

- Demonstrated new capabilities for next system tester (W87) at the Weapons Evaluation Test Laboratory (WETL);
- Demonstrated the methodology for the estimation of an integrated lifetime of a Nuclear Explosive Package (NEP) component; in this case a lifetime was established for a W88 primary, advancing our lifetime estimates beyond the pit lifetimes produced in 2006;
- Completed the development of four diagnostics to TRL 6, including: 1) Schlieren imaging for detonators, 2) Acoustic Resonance Spectroscopy for pit application, 3) Computer Tomography (CT) reconstruction and image analysis tools for application to CoLOSSIS and other CT data, and 4) Nondestructive Laser Gas Sampling system for application to canned sub-assemblies (CSAs);
- Deployed assembly sensors and improvised diagnostic probes on hydrotests to more accurately assess hydrodynamic behavior;
- Identified a candidate for next-generation x-ray scintillator and fabricated test part at 1-inch scale;
- Tested a prototype in-situ water sensor and briefed the results to the potential user community;
- Submitted S5370 silicone polymer aging model for publication in open literature;
- Demonstrated the preconditioning capability for the W80;
- Developed an age-aware fireset electrical model that included connector and bondpad-bondwire corrosion, the model was used to predict failure criteria for various degradation nodes;

- Provided input for the annual assessment and Technical Basis Stockpile Transformation Planning on components and material aging for each weapon system;
- Developed next generation component and material evaluation capabilities for additional weapon component surveillance.
- Developed and validated nominal, high and low performance models for each device in B61 Firing Set (these models allow simulations of variability in the firing set with temperature tracking allowing simulation throughout the B61 Stockpile-to-Target Sequence (STS) temperature environment);
- Completed Quantification of Margins and Uncertainties-based lifetime assessment for the W88 NEP;
- Improved component aging models for CSAs, polymers, high explosives (HE), and initiation systems were developed or used to support lifetime assessments, and the initial framework to incorporate aging signatures into quantitative predictive models for assessing uncertainties was developed;
- Initiated development of robust failure criteria for CSA materials;
- Completed material outgassing with x-ray and neutron radiation;
- Completed final report on Nuclear Magnetic Resonance ProFiler for surveillance of select silicon pad and cushion; and
- Developed methodology for ultrasonic inspection of reservoir for W76-0.

Major Outyear Priorities and Assumptions

The outyear requirements for the Engineering Campaign total $652,458,000 for FY 2013 through FY 2016. With the upcoming LEPs, an opportunity exists to improve the safety, security, and use control of the stockpile as well as its reliability and performance through the application of modern technologies and advanced materials. Before this can occur it is important to understand both how materials perform and the impact of material aging through application of advanced capabilities developed in the enhanced surveillance subprogram. Outyear funding will partially recoup a previous delay in completion of QASPR and restore funding for all other nuclear survivability assessment capability modernization. Outyear funding will also support the need for additional experiments to validate qualification tools; subsystem engineering model validation experiments; accelerating the maturation of surety technologies; and developing, assessing, and validating aging impacts of new technologies in support of future LEP and weapon alterations. In accordance with the 2010 *Nuclear Posture Review Report*, the Engineering Campaign will support a "full scope life extension, including surety – safety, security, and use control – enhancements, for the B61 nuclear bomb" as well as support the "study of LEP options for the W-78 ICBM warhead, including the possibility of using the resulting warhead also on SLBMs to reduce the number of warhead types."

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Enhanced Surety	**41,928**	**42,429**	**41,696**

Enhanced Surety pursues a multi-technology approach to develop viable technology insertion options meeting weapon system designers' specifications. The goal of this approach is to improve the safety (to prevent accidental detonation), security (to expand physical protection boundaries), and use control (to permit only authorized use) of our nuclear weapons stockpile. This approach is applicable to other future envisioned refurbishments and stockpile improvement projects needed, meeting both NNSA and Department of Defense (DoD) requirements. Multi-technology development and integration opens the design space and offers opportunity for synergistic improvements to other weapon components.

In FY 2012, the subprogram will continue its focus on maturing technologies for viable insertion opportunities. A power management option for future LEPs will be delivered. A demonstration of a fully functional integrated surety solution, which integrates external surety elements with the weapon, will be completed; consequently, the weapon will have an increased capability to react to external stimuli thus better addressing current threat scenarios. Development and certification of Multi-Point Safety options for the next insertion opportunity will continue at LANL and Lawrence Livermore National Laboratory (LLNL) through both LEP support and technical maturation efforts with some continued effort through the enhanced collaborations with the United Kingdom incorporating system integration through SNL. LANL and LLNL will also continue to explore alternative safety, security, and use control options.

In FY 2012, this subprogram will accomplish the following:

- Pursue system implementation of the Integrated Surety Solution technologies for RV/RB systems through collaborations with LANL, LLNL, and SNL for next insertion opportunities;
- Develop next generation highest priority use denial technology focusing on the next insertion opportunity;
- Conduct investigations at LANL and LLNL on Multi-Point Safety material compatibility and stability;
- Develop system integration and engineering concepts of the Multi-Point Safety options for the next insertion opportunities through collaborations with LANL, LLNL, and SNL and by maturing key Multi-Point Safety technologies;
- Continue development of advanced power management technology focusing on integrated device performance and long-term evaluation; and
- Develop next generation stronglink(s) and firing set system for the next insertion opportunity (e.g. W78 LEP).

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Weapons Systems Engineering Assessment Technology	**17,977**	**13,530**	**15,663**

This subprogram objective establishes the capability to predict engineering margins by integrating numerical simulations with experimental data and uses engineering computational models in collaboration with the ASC Campaign to predict weapon system response to all three STS environments: normal, abnormal, and hostile. 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. Through tests and evaluations, this subprogram also supports manufacturing the development of critical components and subsystems; e.g., neutron generators, gas transfer systems, and microsystems.

In FY 2012, the subprogram will focus on producing data sets for model validation in support of current weapon alterations and modifications, providing an extensive set of (thermal, mechanical, shock, etc) validation regimes to qualify the B61 and future LEPs. Combined efforts between the ASC Campaign's Verification and Validation and Physics and Engineering Models subprograms form the foundation of the subprogram, and provide validated modeling and simulation capability for multi-scale and multi-physics problems encountered in qualification and certification activities.

Specific work to be accomplished in FY 2012 includes:

- Completing fire model validation with data sets for spatially resolved thermal radiation emission and absorption loads in a fire for B61 postulated environments;
- Demonstrating hybrid (computational/experimental) structural response modeling for normal aeromechanical loading environments for B61 LEP relevant environments and responses;
- Continuing to develop non-intrusive instrumentation;
- System development testing and high explosive structural property measurements supporting model development for improved assessments of structural response will be performed; and
- Assessing margins for insensitive high explosive main charge materials in both normal and abnormal environments.

Nuclear Survivability	**20,980**	**19,786**	**19,545**

The modern analysis capabilities developed by the Nuclear Survivability subprogram will enable quicker and more accurate assessment of the potential impacts of scheduled refurbishments (LEPs, alterations, and modifications); weapon replacement activities; surveillance discoveries; natural aging; and the introduction of new materials, technologies, or component designs. The scope of the subprogram includes developing scientific models for understanding radiation effects; generating experimental data to validate computational tools; understanding radiation-hardened design strategies; evaluating new and evolving stockpile candidate technologies for radiation hardness capabilities in a generalized, weapon-relevant configuration; studying radiation hardening aging phenomena for the

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

enduring stockpile; and improving laboratory radiation sources and diagnostics to support code validation and hardware qualification experiments.

The NNSA continues to work closely with the DoD to maintain a robust and nuclear survivable stockpile. In close coordination with the DoD, the subprogram develops the tools to calculate the output and performance of modern weapons needed to define some of the most stressing and damaging nuclear environments. This computational capability supports both threat assessments and effectiveness assessments which are necessary to support planned LEPs, alterations and modifications. Planned improvements in modeling capabilities are transformational and will allow quicker response in analyzing both threats and warhead survivability issues.

In FY 2012, the focus of the Nuclear Survivability subprogram will be the continued development of nuclear survivability assessment capabilities (models, simulations, experiments, testing, and experts to perform analysis). One example of a capability under development is the Qualification of Alternatives to the Sandia Pulse Reactor (QASPR) program, which will provide the capability to qualify radiation hardened electronics to hostile environments without additional testing at the Sandia Pulse Reactor III. The focus of this program has shifted from qualification of circuits containing legacy bipolar junction transistors to more modern heterojunction bipolar transistors. Inclusion of modern electronics in Arming, Firing, and Fuzing (AF&F) circuits will enable increased surety, improved reliability through decreased parts count, and increased margin due to the intrinsic radiation hardness of the advanced materials.

In FY 2012, this subprogram will accomplish the following:

- Demonstrate through the QASPR program the capability to predict the response of heterojunction bipolar transistors, the preferred technology path for circuit designers for the B61 LEP and W88/78 AF&F refurbishment;
- Complete initial analyses of B61 LEP components and subsystems to identify and prioritize needed follow-on intrinsic radiation susceptibility R&D and to quantify exposure levels external to the weapon;
- Conduct material irradiation experiments at Sandia's Gamma Irradiation Facility and Low Dose Rate Gamma Irradiation Facility to investigate total lifetime exposure effects and at LANL's high-fidelity source to investigate effects at war reserve-like conditions for the B61 LEP, future LEPs and alterations;
- Support the material down-select for a radiation hardening material for the W88 AF&F refurbishment application;
- Conduct R&D in advancing materials science, thermomechanical shock, and thermostructural response directly applicable to the W78 LEP;
- With ASC, provide coupled cable and cavity system-generated electromagnetic pulse predictive tools to support W88/W78 refurbishments of electrical and electronic subsystem design; and
- Demonstrate an advanced terminal protection device for the AF&F/cable interface for the W88.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Enhanced Surveillance	**68,794**	**66,175**	**66,174**

This subprogram provides stockpile aging and lifetime assessments, develops aging models and technologies needed for early identification of stockpile aging concerns. Enhanced Surveillance conducts the lifetime assessments needed to provide the technical basis for enduring stockpile refurbishment planning. The subprogram evaluates new and reused materials to be used in refurbished weapons to support age-aware LEP design and certification and to increase longevity for a more sustainable stockpile. Enhanced Surveillance develops new diagnostics and methods, including non-destructive techniques and new component and material evaluation. The subprogram develops embedded sensors to achieve timely, less invasive and more cost-effective surveillance. Finally, the subprogram contributes current weapon aging information for annual assessment reports.

In FY 2012, the subprogram will provide updated results on weapon aging for the annual assessment reports; conduct planned experiments and modeling to support lifetime estimates; provide initial canned sub assembly (CSA) component lifetimes for one weapon type; deliver improved aging models, experimental methods, and predictive tools for selected materials and components; and continue work to understand aging mechanisms and effects for the earliest possible detection of age-related changes that could impact weapon performance, reliability, and safety. Emphasis will be focused on activities that represent long-term investment needs that enable a science-based surveillance methodology. This subprogram will continue to enable high priority stockpile aging and lifetime assessments to support critical issues for annual assessment, significant finding investigations, stockpile refurbishment and transformation planning.

In FY 2012, this subprogram will accomplish the following:

- Complete an Enhanced Surveillance stockpile aging and lifetime assessment report to support the annual assessment process and the Technical Basis for Stockpile Transformation and Planning;
- Deploy the next suite of CSAs and case diagnostics for surveillance;
- Deploy the improved predictive capabilities for CSAs, cases, high explosives (HE), detonators, and non-nuclear components and materials to support assessment and certification;
- Promote the most promising sensors to shelf life units and continue development of embedded evaluation elements to TRL6 for applications;
- Install the next suite of Gas Transfer Systems diagnostics for surveillance transformation;
- Establish initial NEP component lifetimes for W76/78, and W87;
- Demonstrate the scale up of ionic liquid re-crystallization of TATB to 10kg lots, and
- Modernize WETL System Tester Capabilities.

Total, Engineering Campaign	**149,679**	**141,920**	**143,078**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Enhanced Surety	
The decrease reflects an adjustment to RV/RB technology maturation to focus on maturing and integrating high priority near-term technologies for the B61 LEP in Weapons Systems Engineering Assessment Technology.	**-733**
Weapons Systems Engineering Assessment Technology	
The increase reflects the need for validation-related testing required for the B61 LEP and future refurbishments. An extensive set of data is needed to validate models and develop computational tools essential in qualifying the B61. This data includes spatially resolved thermal radiation emission and absorption measurements; aeromechanical loading; and high explosive structural property measurements.	**+2,133**
Nuclear Survivability	
The slight decrease in nuclear survivability reflects an adjustment on development and assessment of tools and technologies required to implement the upcoming B61 LEP in Weapons Systems Engineering Assessment Technology.	**-241**
Enhanced Surveillance	
The funding is essentially the same, but reflects a focus on aging and lifetime studies that have an immediate impact to the impending LEPs/alterations/modifications as well as the continued support for the annual assessment process. Although some surveillance diagnostics will be placed on hold, the primary focus will remain on work needed to maintain the capability to predict the lifetime of weapons systems components.	**-1**
Total Funding Change, Engineering Campaign	**+1,158**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2010 Actual Appropripation	FY 2011 Request	FY 2012 Request
General Plant Projects	-4	-4	-4
Capital Equipment	6,094	6,228	6,365
Total, Capital Operating Expenses	**6,090**	**6,224**	**6,361**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	-4	-4	-4	-4
Capital Equipment	6,505	6,648	6,794	6,943
Total, Capital Operating Expenses	**6,501**	**6,644**	**6,790**	**6,939**

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

Inertial Confinement Fusion Ignition and High Yield Campaign

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Inertial Confinement Fusion Ignition and High Yield Campaign			
Ignition	106,575	109,506	109,888
Support of Other Stockpile Programs	0	0	0
Diagnostics, Cryogenics, and Experimental Support	72,144	102,649	86,259
Pulsed Power Inertial Confinement Fusion	4,992	5,000	4,997
Joint Program in High Energy Density Laboratory Plasmas	4,000	4,000	9,100
Facility Operations and Target Production	269,775	260,393	266,030
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**457,486**	**481,548**	**476,274**

Outyear Funding Profile by Subprogram[a]

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Inertial Confinement Fusion Ignition and High Yield Campaign				
Ignition	74,410	65,000	60,000	55,000
Support of Other Stockpile Programs	35,590	45,000	50,000	55,000
Diagnostics, Cryogenics, and Experimental Support	76,267	70,159	70,517	69,617
Pulsed Power Inertial Confinement Fusion	5,000	5,000	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	9,500	9,500	9,500	9,500
Facility Operations and Target Production	275,614	277,009	290,220	300,909
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**476,381**	**471,668**	**485,237**	**495,026**

Mission

The Inertial Confinement Fusion (ICF) Ignition and High Yield Campaign provides the experimental capabilities and scientific understanding in high-energy density physics necessary to maintain a safe, secure, and reliable nuclear weapons stockpile without underground testing. Science-based weapons assessments and certification requires advanced experimental capabilities that can create and study matter under extreme conditions that approach the high energy density (HED) environments found in a nuclear explosion. The ICF Campaign provides this capability through the development and use of advanced experimental tools and techniques, including state-of-the-art laser and pulsed power facilities. The demonstration of ignition in the laboratory will provide important information to support assessment and certification of the stockpile, and it is the most important component of the ICF

[a] Outyear funding profile does not include adjustments in response to the FY 2013 change in Self-Constructed Asset Pool (overhead rate at Lawrence Livermore National Laboratory). These adjustments will be reflected in the FY 2013 President's Budget.

Campaign and a major goal for National Nuclear Security Administration (NNSA) and the U.S. Department of Energy (DOE).

The ICF Campaign supports the NNSA's Stockpile Stewardship Program (SSP) through three strategic objectives:

- Achieve thermonuclear ignition in the laboratory and develop it as a routine scientific tool to support stockpile stewardship.[a]

- Develop advanced capabilities, including facilities, diagnostics, and experimental methods that can access the HED regimes of extreme temperature, pressure, and density required to assess the nuclear stockpile.

- Maintain the U.S. preeminence in HED science and support broader national science goals.

Virtually all of the energy from a nuclear weapon is generated while it is in the HED state. High energy density physics (HEDP) experiments conducted at ICF facilities are required to validate the advanced theoretical models used to assess and certify the stockpile without nuclear testing. The National Ignition Facility (NIF) extends HEDP experiments to include access to thermonuclear burn conditions in the laboratory, a unique and unprecedented scientific achievement. The NIF, located at the Lawrence Livermore National Laboratory (LLNL), was built to demonstrate thermonuclear ignition in the laboratory. The NIF is a 192-beam, high-energy, high-power laser system capable of delivering up to 1.8 megajoules (MJ) of energy in a pulse of a few nanoseconds duration. The NIF provides NNSA extraordinary opportunities for scientific progress and discovery in the areas of thermonuclear ignition and matter under extreme HED conditions. Creating laboratory conditions of extreme densities and temperatures relevant to HED phenomena occurring in nuclear detonation is one of the most challenging requirements for science-based weapons assessment and certification.

Other advanced HED experimental capabilities within the ICF Campaign include the pulsed power Z-machine at Sandia National Laboratories (SNL) and the Omega Laser Facility at the University of Rochester's Laboratory for Laser Energetics (LLE). The Z-machine was refurbished to provide increased precision, more shot availability, and higher current. These performance levels of the Z-machine are required for weapons materials measurements. The Omega Laser Facility at LLE combines the 60-beam, 30-kilojoule ultraviolet OMEGA compression laser system with the high-energy, short pulse capability of the OMEGA Extended Performance (EP) laser system. The OMEGA EP laser system can be used to produce high energy x-rays for the advanced radiography capability needed for many weapons physics experiments.

The three largest HED facilities, NIF, OMEGA, and Z, are essential components of the SSP infrastructure and are the central tools to investigate thermonuclear ignition, HED weapons issues, and

[a] Thermonuclear ignition is an explosive, self sustained nuclear fusion reaction that once initiated, continues until the fuel is exhausted ("burned") or dispersed. Thermonuclear ignition is often referred to as ignition and thermonuclear burn or fusion ignition. Nuclear fusion reactions are at the core of the processes that power the Sun and other stars. Achieving ignition by compressing and heating deuterium (D) and tritium (T) atoms (i.e. the thermonuclear fuel) to millions of degrees Celsius has never been demonstrated in the laboratory.

basic HED science. The following table shows the distribution of experimental shot opportunities planned for FY 2012 by category of experiments for the three facilities. These are approximate distributions that will be adjusted based on the needs of the SSP and the final distribution is subject to decisions made under the existing facility governance plans.

FY 2012 Planning Assumption for Experimental Shots by Category for the Major HED Facilities

Category		NIF	OMEGA	Z
National Ignition Campaign (NIC)				
	Ignition Development	55%	15%	0%
	Platform Development	5%	15%	0%
	Diagnostic Development	5%	15%	0%
Weapons HEDP		20%	25%	66%
Advanced Fusion Concepts		0%	0%[a]	22%
Basic HED Science Users Programs, and other National Nuclear Security applications		15%	30%	12%

The National Ignition Campaign (NIC) is a multi-site integrated effort focused on achieving thermonuclear ignition in the laboratory and is the largest program element within the FY 2012 ICF Campaign. Its objectives are to perform experiments aimed at achieving ignition on the NIF in FY 2012 and, if ignition is achieved, to develop a reproducible platform for ignition and HED applications by the end of FY 2012. This represents extension of the cryogenic Tritium-Hydrogen-Deuterium (THD) experiments to a full equi-molar mix of Deuterium and Tritium (DT) for ignition experiments. Through FY 2012, the entire effort in the Ignition subprogram and about 75 percent of the Facility Operations and Target Production subprogram is devoted to the NIC. This includes all ignition experimental activity at the NIF, a large ignition preparatory effort at OMEGA, and the development and fabrication of complex ignition targets. Most of the funding in FY 2012 within the Diagnostics, Cryogenics and Experimental Support subprogram is devoted to the NIC. The NIC will transition the NIF to routine facility management and operations by the end of FY 2012. The participants in the NIC are LLNL, LLE, Los Alamos National Laboratory (LANL), SNL, and General Atomics (GA).

In response to a Government Accountability Office (GAO) review in FY 2010, NNSA has formed a NIC Review Panel to analyze the progress of the NIC and to advise NNSA and the NIC partners on the scientific and technical challenges facing the NIC.

Early experimental work at the NIF has focused on assessing uncertainties in the physics understanding of ignition and optimizing or “tuning” the important parameters (e.g., laser beam pointing and wavelengths). This provided information such as the coupling efficiency of the laser energy to the target and the ablation rate and symmetry of the capsule as the implosion proceeds. The first layered cryogenic capsule implosion occurred in September 2010 using a mixture of tritium-hydrogen-deuterium fuel. The first ignition attempt using a 50:50 mixture of deuterium-tritium is anticipated in

[a] In FY 2012, Advanced Fusion Concepts experimental proposals continue to compete for shot time on OMEGA through the Basic Science Users Programs.

early FY 2012. Experiments that vary the important parameters and obtain data to validate physics models in the burning plasma regime will follow. These efforts will further the understanding of ignition and allow a reproducible ignition platform to be optimized for SSP applications.

The ICF Program is using experience acquired in the initial NIF experiments and those on OMEGA and Z to refine its plans and the logistics required to implement them. In some cases, installation and certification of key equipment on the NIF during FY 2010 took longer than originally anticipated. In August 2010, ignition tuning and diagnostic calibration campaigns resumed with laser energies up to 1.2 MJ in full-scale ignition hohlraums, including the first layered cryogenic capsule implosion experiment on the NIF on September 29, 2010. The research program is responding rapidly to the results obtained to modify the target, diagnostics, and laser parameters to improve the implosion performance.

Ignition and thermonuclear burn will allow routine access to physical regimes hitherto unavailable in the laboratory. The demonstration of thermonuclear ignition will be of major importance for DOE's energy and fundamental science missions.

Benefits

Each of the 6 subprograms within the ICF Campaign makes unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 39.

- The *Ignition* subprogram supports research to achieve thermonuclear fusion in the laboratory and includes advanced theoretical modeling, systems engineering, target and experimental design, and experimental execution.

- The *Support of Other Stockpile Programs* subprogram develops and uses HED/ICF experimental capabilities and personnel to resolve important stockpile questions in cooperation with other components of the Office of Stockpile Stewardship. Consistent with NNSA's priorities, the request for funding in this subprogram is delayed to focus on the highest priority, achieving ignition on the NIF. As indicated in the Outyear Funding Profile by Subprogram, funding will be requested in FY 2013, after the completion of the NIC. This subprogram was used extensively through FY 2007 until the ICF focus was applied specifically to the quest for ignition.

- The *Diagnostics, Cryogenics, and Experimental Support* subprogram supports the advanced technological development needed for the first ignition experiments on the NIF and for the execution of weapons-based HED experiments. Efforts include the design, development, and engineering of a complex array of diagnostic and measurement systems, including the NIF cryogenic target system. After completion of the NIC, there will be continued investments in diagnostics to ensure the measurements needed to meet QMU-derived requirements.

- The *Pulsed Power Inertial Confinement Fusion subprogr*am supports the assessment of pulsed power as a means to achieve thermonuclear fusion in the laboratory, including computational target design, experiments, and experimental infrastructure.

- The *Joint Program in High Energy Density Laboratory Plasmas (HEDLP)* subprogram funds academic programs through a joint solicitation with DOE's Office of Science to steward the study of

laboratory HED plasma physics. This includes the HED physics activities and the National Laser Users' Faci*lity (NLUF) program at LLE.*

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

The ICF Campaign shares performance measures and joint milestones with the Science Campaign, providing experimental data required to validate physics models that are the basis of weapons simulation design codes. These codes along with the advanced, high-performance computing platforms developed within the Advanced Simulation and Computing (ASC) Campaign are used for the annual assessment and certification of the U.S. nuclear stockpile. The ASC Campaign provides advanced simulation codes and computer platforms for analyzing ignition designs and high yields requirements and for simulating complex target designs. The ICF, Science, and ASC Campaigns are all part of the Office of Stockpile Stewardship in Defense Programs and coordination among the Campaigns is achieved, in part, through the Predictive Capability Framework (PCF) that provides planning, prioritization, scheduling, and linkage of the major weapons assessment activities. The data analysis methodologies, models and simulation codes developed by the Office of Stockpile Stewardship support the analysis performed to meet Directed Stockpile Work (DSW) commitments, including maintenance, research and development, understanding the impact of aging weapons systems, closing Significant Finding Investigations (SFIs) identified from surveillance or other sources, and certifying refurbished devices resulting from DSW's Life Extension Program (LEP).

The ICF Campaign and the Office of Fusion Energy Sciences sponsor the Joint Program in High Energy Laboratory Plasmas (JPHEDLP). The ICF capabilities also serve DOE's missions to develop advanced energy systems (Office of Fusion Energy Sciences), to further our understanding of fundamental science (Office of Basic Energy Sciences), and to maintain the world's preeminent HED workforce.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

National Ignition Campaign (NIC)

- Successfully demonstrated the ability to drive and symmetrically compress a surrogate germanium-doped plastic (CH-Ge) fuel capsule in a hohlraum at point-design scale with energies up to 1.2 MJ.
- Demonstrated hohlraum x-ray drive temperatures of about 300 electron volts (eV) during initial NIC experiments, meeting the requirements for ignition.
- Demonstrated the complex integration of the subsystems required for an ignition campaign, including a target physics design, the laser, target fabrication, cryogenic fuel layering and target positioning, target diagnostics, control and data systems, tritium handling, and personnel and environmental protections systems by performing the first integrated cryo-layered capsule experiment on the NIF,

with 1 MJ of laser energy imploding a capsule containing a mixture of THD (tritium-hydrogen-deuterium) fuel.

- Produced areal densities of 0.3 grams per square centimeter during layered cryogenic deuterium-tritium (DT) implosion experiments on OMEGA, the highest value measured in the laboratory before the first NIF THD implosion. This is an important precursor to demonstration of ignition on the NIF.
- Formed a NIC Review Panel to review the progress of the NIC via individual member reports and to advise NNSA and the NIC partners on ignition activities through the end of the NIC in FY 2012.

Diagnostic Development and Installation

- Constructed and calibrated the first set of ignition nuclear diagnostics. This included the LLE-developed Neutron Time of Flight systems that will be vital to the first ignition experiments.
- Installed the Magnetic Recoil Spectrometer (MRS) on the NIF. Conceived by the Massachusetts Institute of Technology (MIT), the MRS measures the areal density in cryogenic target implosions. The LLE led the design and construction of this important diagnostic in collaboration with LLNL and MIT.
- Expanded role of SNL in nuclear and x-ray diagnostics for the NIF. The total DT neutron yield diagnostic was built and installed and used on low-fusion-yield experiments during FY 2010.
- Prototyped the two-frame neutron imaging system for the NIF. Among other roles, this collaborative diagnostic effort, led by LANL, will provide key imaging of down scattered neutrons in ignition and near-ignition implosions.
- Designed and built a fiducial laser system for the NIF that provides an on-shot temporal calibration of a diagnostic used to measure implosion velocity with a precision of 2 percent (LLE lead).
- Performed polar drive diagnostic commissioning shots on the NIF. Polar drive produces predictable high neutron yield shots that are vital in the development and calibration of nuclear diagnostics at the NIF.
- Ensured that the initial ignition diagnostics are available as required and provided important new ideas for advanced diagnostics through a LLNL-led series of international workshops.

Target Development and Production

- Fabricated and delivered by GA, more than 5,000 fully characterized target components, including many of the critical components and sub-assemblies of first-of-a-kind gas filled cryogenic targets shot during the energetics campaign on the NIF.
- Developed a new polishing/ablation process for producing ultra-smooth plastic CH-Ge capsules. A collaborative effort between GA and LLNL, the new process provides nearly 10x tighter specifications for surface finish.

National Ignition Facility (NIF)

- Made significant progress in preparing the NIF and associated systems to support ignition experiments, including installing safety systems and shielding to handle high neutron yields, tritium and other hazardous materials. Management Prestart Reviews were conducted for operation with hazardous materials and neutron production.

- Improved the precision, overall performance, and reliability of the NIF laser systems through tuning over several hundred shots at high energy. These shots were used to recalibrate beam diagnostics and refine the modeling parameters for both the injection and main laser systems as well as the final optics systems for energy and pulse shape. Other laser shots were used to improve pointing accuracy, validate focus at target chamber center, and develop strategies for managing its configurations.
- Installed and commissioned an ignition cryogenic target positioner on the NIF.
- Commenced experiments for NIF users, including, radiation transport HED experiments in support of the SSP, the first University Use Program experiments studying the astrophysics of super novae by the University of Michigan, and the first radiation effects experiments.
- Received eighty-six proposals in response to a solicitation for HED science experiments on the NIF. The proposals were reviewed by LLNL's Science on NIF Review Committee.

Omega Laser Facility

- Performed 1,707 target shots at the Omega Laser Facility in FY 2010 that were rated as effective in producing the data desired by the users (>95% of all shots). Users included scientists from LANL, LLE, LLNL, and various universities and companies through the National Laser Users' Facility (NLUF) Program, as well as the United Kingdom's Atomic Weapons Establishment and France's Commissariat a l'Energie Atomique.
- Hosted by LLE, the second Omega Laser Facility User's Group (OLUG) Workshop, which was attended by 115 scientists, including 45 students and postdocs, representing NNSA, 31 universities, laboratories, and private industry, with representation from five different countries.
- Installed new diagnostics on the OMEGA Extended Performance (EP) laser system to measure the intensity contrast of the laser pulse on each shot. The intensity contrast is the ratio of the peak intensity to the intensity that hits the target before the main pulse.
- Designed a fourth harmonic probe beam for OMEGA's EP laser system. The probe will be used to measure the characteristics of the plasmas created by the laser system and the details of high intensity petawatt laser interactions with targets.

Z Facility

- Conducted more than 130 experiments on Z in support of the ICF, Science, and Engineering Campaigns, including a few laboratory astrophysics experiments. Users, determined by a formal proposal based process, included scientists at LANL, LLNL, SNL, the Atomic Weapons Establishment (United Kingdom), and several universities (University of Texas at Austin, Ohio State University, and University of Nevada, Reno).
- Developed a 25-kilovolt x-ray backlighting source using the Z-Petawatt laser. The backlighter will be used to diagnose plasma conditions within imploding targets on Z.
- Prepared Z for high-priority experiments to obtain plutonium data on the facility. New hardware was designed, procured, installed, and tested and the operations crew was trained on procedures and use of the new equipment to ensure safe operation with minimal risk. A series of non-plutonium tests was conducted to requalify the containment system components to make engineering improvements and to confirm the readiness of Z for experiments. This effort involved both the ICF and Science Campaigns and relied on considerable expertise from LANL for plutonium operations.

- Met the requirement for January 2011 tests of an important stockpile component by producing, in a joint effort with Science Campaign, 85 kilojoules (kJ) of stainless steel K-shell emission on Z.

Pulsed Power ICF

- Obtained spectroscopic data of the temperature and density conditions in pulsed power ICF targets on Z and compared stagnating plasma conditions with computer simulations.
- Completed a series of experiments on Z to evaluate an advanced fusion concept that increases energy coupling efficiency by using magnetic pressure to compress the fuel directly through and compared the data with simulations.
- Performed the first fully kinetic, collisional, electromagnetic simulations of the time evolution of imploding z-pinch fusion plasma (the first simulations of this type for any fusion plasma).

Joint Program in High Energy Density Laboratory Plasmas (HEDLP)

- Conducted the solicitation of the National Laser Users' Facility (NLUF) Program for access to the Omega Laser Facility in FY 2011 and FY 2012.
- Studied the evolution of astrophysical jets by directly comparing new telescope observations with experiments performed on the OMEGA laser system. The results were reported in the *Astrophysical Journal* by a team led by P. Hartigan of Rice University. This is the first time that new astrophysical images from the Hubble Space Telescope were obtained for the express purpose of comparing to laboratory experimental data.
- Achieved the highest positron production rate in a laboratory setting to date. The experiment conducted by H. Chen of LLNL used a 1 kJ, 10 picosecond OMEGA EP laser pulse incident on a thick gold target. Approximately 10^{12} positrons were detected in a nearly mono-energetic 20 mega electron volts (MeV) beam emitted from the rear side of the target.
- Published in *Science* (C.K. Li, MIT) the results of an experiment probing x-ray–driven implosions with charged particles. Three types of spontaneous electric fields were discovered with time-gated proton radiographic imaging and spectrally resolved proton self-emission, providing insight into x-ray–driven implosions.

Major Outyear Priorities and Assumptions

The outyear requirements for the ICF Campaign total $1,928,312,000 for FY 2013 through FY 2016. The achievement of ignition and thermonuclear burn and its application to the major unresolved weapons physics issues will remain the highest priority of the ICF Campaign. Once the NIC has successfully achieved ignition and thermonuclear burn in the laboratory, subsequent experiments will develop a reproducible ignition platform to address important weapons physics questions.

One of the objectives of the NIC is to transition the NIF to routine operations for ignition and other HED experiments in support of the SSP by the end of FY 2012. Capabilities will include: data systems supporting experimental operations; optics and targets management systems; target production capability for the baseline ignition platform and some HED targets for SSP experiments; a second operational cryogenic target positioner; a core set of optical, x-ray, neutron, and radiographic diagnostics sufficient to support initial ignition, HED, and other user applications during routine facility operations; the ability to support classified operations; and, continuous phase plates (CPPs) required for the ignition experiments and the manufacturing capability to develop and fabricate additional CPPs. Beginning in

FY 2013, a significant portion of the Program effort will be devoted to using HED/ICF tools, including ignition conditions and methods to address stockpile assessment and certification issues. This will include work in materials dynamics, plutonium equation-of-state and constitutive properties, hydrodynamics, x-ray opacities, and understanding the boost process. This work requires an increasingly sophisticated array of diagnostics, including those that can operate in the ignition or near-ignition environment. These diagnostics must be developed to take full advantage of NIF ignition by obtaining the data required to address stockpile certification issues.

To plan for this transition and to coordinate the weapons work on the three HED facilities, the Office of Stockpile Stewardship formed a new planning body, the HED Council. In FY 2010, the HED Council oversaw development of a three year implementation plan describing the program of HED physics experiments required to satisfy critical Stockpile Stewardship needs. A major goal of the three-year plan is to provide for the transition of the NIF to principal use for supporting Stockpile Stewardship. By 2013, approximately 65 percent of available shots on the NIF are planned to address specific Stockpile Stewardship needs.

The ICF Campaign will continue to fund the operations of its HED physics capabilities, both facilities and technical expertise, to support current and future needs of the NNSA's national security mission. These needs may include advanced ignition concepts such as fast ignition or various forms of direct drive or other HED capabilities. Changes in LLNL's Self-Constructed Asset Pool rate may require NNSA to balance funding levels between ICF and other Programs. Basic HED research may expand in response to various priorities, such as energy initiatives. Following the achievement of thermonuclear ignition, the NNSA will reevaluate the relative importance of these potential missions and the roles of the various ICF Campaign program elements and facilities to meet national needs and priorities.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Ignition	**106,575**	**109,506**	**109,888**

This subprogram is the central focus of the effort to demonstrate thermonuclear ignition in the laboratory and develop its use to address key weapons issues. It includes experimental programs on the NIF, OMEGA, and Z to understand and diagnose ignition conditions, experimental design, the development of specific, experimental methods focused on achieving ignition and systems engineering improvements. This effort is supported by detailed theoretical designs and simulations (in 2- and 3-dimensions) of the performance of ignition targets. Ignition target design is closely coupled with the ASC and the Science Campaign.

The FY 2012 effort is part of the National Ignition Campaign. In FY 2011, the NIC will perform a series of experiments to tune the ignition target design and install and qualify the target diagnostics required for ignition, taking into account the results of the initial experiments performed in FY 2009 and FY 2010. In the first half of FY 2012, the NIC will attempt to compress, implode, and ignite a layered 50:50 deuterium-tritium fueled capsule with a ~1.3 megajoule energy NIF pulse based upon the results of the tuning campaigns. After the results of the initial ignition attempt are determined, the NIC will refine the experimental tuning campaigns, including experiments with tritium-rich, hydrogen, and deuterium fuel (THD) to optimize the performance of 50:50 deuterium-tritium fueled capsule implosions with the goal of achieving ignition and demonstrating a reliable and repeatable ignition platform with as large a performance margin as possible.

If the first ignition attempt is successful, tuning campaigns will be used to develop a robust ignition platform; however if the first attempt does not achieve ignition, tuning campaigns will be used to refine the laser and target performance to demonstrate ignition and subsequently to develop a robust ignition platform. The results of the FY 2010/2011 tuning campaigns and the FY 2012 initial ignition attempt will provide guidance for the subsequent tuning campaigns. The tuning campaigns optimize the individual components that govern the ignition physics. These components include hohlraum energetics, symmetry, and shock timing. The level of x-ray radiation that drives the target, control of laser plasma instabilities, and hot electron preheating are part of the energetics campaign. The symmetry campaign sets the laser beam pointing, relative power, relative wavelength, and hohlraum geometry to generate a spherically symmetric implosion. The shock timing campaign tunes the laser pulse shape and x-ray drive history to launch an appropriately timed series of shock waves that compress the target as required for ignition. The THD implosions measure the integrated performance of layered cryogenic capsule implosions to verify the results of the individual tuning campaigns. Other physics issues are tuned in smaller campaigns.

The first three parts of the tuning campaigns are somewhat interdependent and so iteration among them and the results of the THD implosions are required to verify the tuning. After

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

verification, additional 50:50 deuterium-tritium implosions will be carried out to achieve and optimize ignition. The detailed plan will be updated using the results of prior campaigns.

An important component of the achievement of the goals of the NIC will be ongoing support experiments at OMEGA. Crucial operations include re-calibration, tuning, and adjustment of diagnostics and the development of new or refined experimental techniques and diagnostics. Research on the development of the Polar Drive ignition alternative for the NIF will continue on OMEGA. This will include Polar Drive cryogenic target implosions and the validation of the Multi-FM beam smoothing technique.

The Ignition subprogram will closely collaborate with the Science Campaign effort to perform vital HED (non-ignition) weapons physics experiments on the NIF and OMEGA in FY 2012.

Diagnostics, Cryogenics, and Experimental Support	**72,144**	**102,649**	**86,259**

This subprogram develops specialized technologies needed for ignition and HED experiments on ICF facilities. It includes the design and engineering of a complex array of diagnostic and measurement systems and the associated information technology subsystems needed for data acquisition, storage, retrieval, visualization, and analysis. The data generated will be used to tune the ignition design and to provide key information required by other SSP experiments. Installation and calibration of the diagnostic systems required for the achievement of ignition on the NIF will peak in FY 2011.

In FY 2012, the request will continue to support stockpile stewardship questions by developing advanced diagnostics that can operate in the harsh environment created by an igniting target, necessary. The advanced diagnostic effort will focus on incorporating new techniques as they are developed and adding new capabilities as required. The harsh environment created by an igniting target will require advanced diagnostics that can operate in very high neutron and x-ray fluxes. These important tools are required on a schedule specified by certification and assessment plans. Long lead times are required for the design, development, fabrication, installation and activation of these diagnostics that are needed starting in FY 2013. These diagnostics must be developed to take full advantage of NIF ignition and other HED facility capabilities by obtaining the data required to address stockpile certification issues. Experimental concepts will be tested on the Omega Laser Facility.

The Diagnostics, Cryogenics and Experimental Support subprogram includes design and construction of the NIF cryogenic target system. This effort will also peak in FY 2011 but continue in FY 2012 to address a very complex experimental system that is required to produce a precise frozen layer of deuterium-tritium nuclear fuel on the inner wall of an ignition capsule.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Other FY 2012 activities include: the development and activation of optical systems required to produce the spatial beam smoothing needed in ignition experiments and subsequent weapons physics campaigns, and integration and experimental commissioning of the NIF target area.

Pulsed Power Inertial Confinement Fusion	**4,992**	**5,000**	**4,997**

This subprogram funds computational target design, experiments, and experimental infrastructure to assess pulsed power as a means to achieve thermonuclear fusion in the laboratory. In FY 2012, activities will continue to focus on using the new diagnostics (such as neutron and x-ray imaging) to demonstrate consistent fusion plasma conditions that can be used for a variety of applications. Magnetic implosions that directly drive the target will remain a focus of the research activities in FY 2012.

Joint Program in High Energy Density Laboratory Plasmas	**4,000**	**4,000**	**9,100**

High Energy Density Laboratory Plasmas (HEDLP) is a joint program with the DOE's Office of Science to support basic high energy density physics research. This subprogram provides support for external users at the Omega Laser Facility through the National Laser Users' Facility (NLUF) Program and a joint solicitation for HEDLP research to be performed at universities and DOE laboratories. It includes some of the HED-related Stockpile Stewardship Academic Alliances funding and other ICF funded university programs.

In FY 2012, 12-30 percent of the NIF, OMEGA, and Z facility time will be devoted to basic HED science experiments. Many of the researchers who carry out this work are from Universities and receive funding through the Joint program. For example, eleven university-based research teams will perform experiments on the Omega Laser Facility through NLUF, in research areas such as laboratory astrophysics, properties of materials under extreme conditions, and high intensity laser-matter interactions. This supports the intellectual vitality of the program and the pipeline of future graduates available to be recruited by NNSA laboratories.

Facility Operations and Target Production	**269,775**	**260,393**	**266,030**

This subprogram supports operations of ICF facilities including NIF, OMEGA, and Z, in a safe and secure manner, and supports fabrication of the very sophisticated targets required for ignition and ignition-related weapons physics experiments.

More than 300 shots are planned on the NIF in FY 2012 and there will be a continuing strong requirement for ICF and SSP work on the OMEGA and Z facilities. It is anticipated that there will be more than 1,500 shots on the Omega Laser Facility and more than 150 on the Z facility.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Accomplishment of the full agenda of weapons SSP deliverables is only possible with these 3 facilities working together. Funds to support Z experiments are also requested in the Science Campaign budget. Improved efficiency of operations at the NIF is anticipated as experience is gained in operating the facility. In FY 2012, all NNSA HED facilities will move towards operation as user facilities. One responsibility of a user facility is to be responsive to user requests for enhanced facility performance and capability. This subprogram supports capability enhancement in response to user requests.

Other activities carried out in the Facilities Operations and Target Production subprogram include: (1) support for shot directors and operational staff at all the NNSA facilities, (2) maintenance and ongoing facility improvements, (3) support staff for the final optics inspections system and its associated optics conditioning, initiation and mitigation processes to increase the lifetime of optics exposed to ultraviolet light at NIF, (4) operation of the Electra Laser at the Naval Research Laboratory to support future Inertial Fusion Energy (IFE) research, depending on the results of the National Academy of Sciences ongoing IFE review, and (5) at Headquarters, funding for support for the Campaign, including external reviews.

Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**457,486**	**481,548**	**476,274**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Ignition	
The funding increase supports the intense activity to achieve ignition and the development of a robust NIF ignition platform consistent with the current version of the NIC Execution Plan. The increase supports experiments on OMEGA that are essential to this effort. This activity includes real-time experimental data analysis and theoretical interpretation.	**+382**
Diagnostics, Cryogenics, and Experimental Support	
The decrease is consistent with NNSA's plan for a one-time increase in FY 2011 to prioritize diagnostic installation and activation at the NIF to achieve ignition. In FY 2012 and beyond, the focus will be on incorporating new techniques and adding new capabilities as required at a slightly reduced and targeted pace for diagnostic installation and activation at the NIF.	**-16,390**
Pulsed Power Inertial Confinement Fusion	
No funding change.	**-3**
Joint Program in High Energy Density Laboratory Plasmas	
The increase provides an additional $1,600,000 for the next 3-year cycle of the solicitation for the Joint Program and $3,500,000 for a cooperative agreement with the University of Nevada, Reno into this budget element.	**+5,100**
Facility Operations and Target Production	
The increase funds operations and ICF target research and development that support efforts on inertial fusion performed in cooperation with the DOE Office of Science.	**+5,637**
Total Funding Change, Inertial Confinement Fusion Ignition and High Yield Campaign	**-5,274**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	20	20	21
Capital Equipment	5,515	5,636	5,760
Total, Capital Operating Expenses	**5,535**	**5,656**	**5,781**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	21	22	22	23
Capital Equipment	5,887	6,017	6,149	6,284
Total, Capital Operating Expenses	**5,908**	**6,039**	**6,171**	**6,307**

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

Advanced Simulation and Computing Campaign

Funding Schedule by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Advanced Simulation and Computing Campaign			
Integrated Codes	140,882	165,947	160,945
Physics and Engineering Models	61,189	62,798	69,890
Verification and Validation	50,882	54,781	57,073
Computational Systems and Software Environment	157,466	175,833	181,178
Facility Operations and User Support	155,650	156,389	159,859
Total, Advanced Simulation and Computing Campaign	**566,069**	**615,748**	**628,945**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Advanced Simulation and Computing Campaign				
Integrated Codes	160,170	163,287	167,194	171,377
Physics and Engineering Models	69,567	70,922	72,617	74,434
Verification and Validation	56,794	57,899	59,284	60,767
Computational Systems and Software Environment	170,462	173,782	177,937	182,389
Facility Operations and User Support	159,111	162,210	166,088	170,243
Total, Advanced Simulation and Computing Campaign	**616,104**	**628,100**	**643,120**	**659,210**

Mission

The Advanced Simulation and Computing (ASC) Campaign provides leading edge, high-end simulation capabilities to meet the requirements of weapons assessment and certification, including weapon codes, weapons science, computing platforms, and supporting infrastructure. The ASC Campaign serves as the computational surrogate for nuclear testing to determine weapon behavior. The ASC Campaign underpins the Annual Assessment of the stockpile, and is an integrating element of the Predictive Capability Framework.

The ASC simulations are central to our national security and play an essential role in simulating device performance to ensure that systems in the stockpile meet all specifications in the "stockpile-to-target sequence." Our ability to model the extraordinary complexity of nuclear weapons systems is essential to establishing confidence in the performance of our aging stockpile. In the absence of testing, only through ASC simulations and above ground experiments can the National Nuclear Security Administration (NNSA) determine the effects of changes to the systems on which deterrence relies.

The ASC tools are also used to address areas of national security beyond the U.S. nuclear stockpile. Through coordination with other government agencies, ASC plays an important role in supporting nonproliferation, emergency response, nuclear forensics and attribution activities. Resources have been used to characterize special nuclear material (SNM) and improvised devices. There is a growing effort to enhance the capabilities of these tools to enable the identification of a perpetrator or supporting states through forensic analysis of post-explosion radionuclide debris. The ASC simulation capabilities have been used by Department of Homeland Security (DHS) to assess various mitigation strategies.

Benefits
The ASC Campaign is comprised of five subprograms that support activities in the areas of weapon codes, weapon science, computational infrastructure, and computing center operations. Each subprogram is a unique contributor to Governmental Performance and Results Act (GPRA) Unit Program Number 40.

The ASC Program's primary customer is Directed Stockpile Work (DSW). ASC codes and computing infrastructure support DSW work such as design, analysis, baselining, and Significant Findings Investigations (SFI) resolution. Stockpile work, science and simulation are bound together through the Predictive Capability Framework (PCF). In the context of simulation, predictive capability can best be understood in contrast to baseline models that were carefully calibrated to the underground test results and which employed sophisticated approaches to interpolation within the underground data or minimal extrapolation from tested regimes. As long as the calculated configurations were close to the as-tested regime, one could be confident in the results. When refurbishment and aging are also included, the simulations must be able to provide accurate results for weapon behavior away from the baseline. NNSA must use models and numerical representations of the physics and engineering that most accurately capture the reality of this extended space.

The PCF is a scientific roadmap that captures the technical underpinnings needed to deliver a predictive capability to the nuclear security enterprise. Participants in the PCF include Science Campaign, ASC, Engineering Campaign, DSW Research & Development, and Inertial Confinement Fusion Ignition and High Yield Campaign. The PCF identifies a list of long-term goals that link the progress in the predictive capabilities to the progress in the five enabling capabilities, four of which (theory/model capabilities, code/algorithm capabilities, computational facilities, and Verification & Validation (V&V) capabilities) are developed by the ASC program. With the completion of major new experimental facilities and increased utilization of peta-scale level computing, the PCF launches a new phase of science-based stockpile stewardship aligned to the challenges of an aging and changing stockpile.

Annual Performance Results and Targets
The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

Predictive Capability

- Sandia National Laboratories (SNL) released version 4.16 of its SIERRA engineering mechanics simulation code, which incorporates a consolidated thermal-fluid-aero simulation capability and new capabilities in failure modeling, contact and implicit-explicit algorithm interoperability. SIERRA 4.16 has also made significant improvements in robustness and is now deployed throughout the nuclear security enterprise as well as at the United Kingdom's Atomic Weapons Establishment and in major Department of Defense (DoD) installations.

- Sandia released Trilinos version 10.0, which will provide significant improvement for solvers and massively parallel infrastructure needs for engineering mechanics and simulations. The new release includes new infrastructure for uncertainty quantification (UQ) and for coupling to DAKOTA, SNL's UQ and optimization framework.
- Los Alamos National Laboratory (LANL) resolved a major long-standing uncertainty in weapons physics simulation known as the "energy balance" problem. A broad range of experimental data, from both modern experimental facilities and the legacy underground test database, were used to validate the simulation capabilities of the ASC codes to represent the applicable physics with sufficient fidelity.
- Launched the Predictive Capability Assessment Project (PCAP) to develop metrics for quantitatively assessing improvement in predictive accuracy of ASC simulation tools in coordination with the Science Campaigns and DSW R&D.
- Commenced a collaborative project between LANL and the Lawrence Livermore National Laboratory (LLNL) to better determine the plutonium fission neutron spectrum, via new measurements at the Los Alamos Neutron Science Center (LANSCE) accelerator and improved theory predictions that will have a significant impact on our understanding of weapons criticality, and is of importance also to the broader nuclear energy community.
- Developed a new multi-scale strength model for Tantalum and implemented into ASC codes at LLNL.

Simulation for the Stockpile

- Sandia's RAMSES code suite was used for the first-ever blind comparison to experimental data of the predicted response of a weapon-related silicon circuit in a short-pulsed neutron environment. Important features of the response, including non-linear threshold effects, were predicted with uncertainty quantification.
- Completed a comprehensive Qualification of Margins and Uncertainties (QMU) assessment of thermal safety for the B61 stockpile system. A Sandia study team integrated multiple failure modes within a probabilistic network framework to provide a system level assessment of probability of loss of assured safety for a thermal safety scenario.
- A LANL ASC simulation code was used to quickly investigate the anomalous results from a DARHT hydro test in December 2009 which disagreed with the predictions of several ASC simulation codes.
- Demonstrated that a physics algorithm, developed by a team of experienced weapons designers working on the Roadrunner supercomputer at LANL, optimized to take full advantage of the IBM cell processors, was uniformly about ten times faster than the standard algorithm on real problems of interest. This enabled the Roadrunner supercomputer at LANL to preform large-scale weapon physics calculations that will continue to provide unprecedented insight into the performance of the nuclear explosives package.
- Used high resolution 3-D simulations of the B83 at LLNL to conclude that an effect encountered in stockpile to target sequence operation resulted in a minimal impact on yield.

High-Performance Computer Platforms

- Awarded the contract to deliver the next tri-lab capability supercomputer, Cielo, to Cray, Inc. The design, procurement and deployment of Cielo were accomplished by a joint partnership between

LANL and SNL. Cielo will be more than ten times as powerful as the Purple machine which it replaces as the tri-lab capability computing platform.

- LANL's Roadrunner supercomputer is now accredited for full operations in the classified computing environment.
- Performed advanced application preparation work at LLNL for Sequoia and demonstrated capabilities through science runs before transition of Dawn to classified computing. Deployed and supported the Sequoia hardware environment including file systems, archival storage, visualization clusters, and networking infrastructure, as well as the software environment.
- Planned for the next capacity tri-lab procurement and common computing software environment and supported the systems software and tools on the current systems.

ASC Collaborations

- Red Storm architecture team was selected as a winner of a Federal Laboratories Consortium's 2010 Award for Excellence in Technology Transfer.
- Formalized collaboration on a joint technology roadmap and strategy for reaching exascale computing in the next ten years between SNL, LANL, and Oak Ridge National Laboratory (ORNL).
- In a collaborative effort with DOE's Office of Science established the six-lab Exascale Steering Committee, consisting of LANL, LLNL, SNL, ORNL, Argonne and Lawrence Berkeley national laboratories, for the purpose of identifying exascale applications and technology for DOE missions and to scope out the tenets of an Exascale Initiative. Multiple Scientific Grand Challenge Workshops were held one on national security, as well as workshops to focus on major technology and architecture challenges and cross-cutting technologies.

Major Outyear Priorities and Assumptions

The outyear projections for the Advanced Simulation and Computing (ASC) Campaign total $2,546,534,000 for FY 2013 through FY 2016. Simulation will continue to be pervasive throughout the nuclear weapons enterprise. ASC will continue to support annual assessments, certification, and SFI resolution through provision of simulation codes and high-performance computing resources. The laboratories will accelerate the application of verification and validation activities into software development and simulation; we will continue efforts to move the existing culture toward a more rigorous approach to certification, one that relies more heavily on explicit incorporation of margins and performance uncertainties. Final deliveries of existing platforms procurements will take place. The ASC budget shifts throughout the outyears are largely the result of shifts in the Integrated Codes subprogram that reflect marginal changes in work involving specialized lab code projects that addresses the improvement of weapons system simulations and corresponding peer review.

The age of our stockpiled weapons and the dearth of designers with test experience in the nuclear security enterprise make it a National imperative that we maintain the technical expertise, apply scientific rigor to the code development process, and understand the physical processes that are being modeled. The out-year request will continue to address the critical skills at the National Laboratories that provide foundational simulation capabilities needed for future Life Extension Programs, significant findings investigations and a Comprehensive Test Ban Treaty environment.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Integrated Codes (IC)	**140,882**	**165,947**	**160,945**

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

The FY 2012 activities include the following: develop coupled multi-physics capabilities for device simulation based on scientific representation of device behavior with a reduced reliance on calibration to underground test data; produce more accurate numerical methods for treating complex geometries in 2D and 3D computer codes; develop the capability to simulate effects of replacement components and analyze various Stockpile-to-Target Sequence scenarios and modifications; accelerate code performance through more powerful numerical algorithms and improved approximations; maintain interactions with academic colleagues in computer science, computational mathematics, and engineering; conduct basic research relevant to the ASC Campaign in computer science, scientific computing, and computational mathematics; and continued support of the CSGF program.

The request supports the code development at the level needed for robust peer review as we move to support the implementation of the Comprehensive Test Ban Treaty. The request assures viable programs at both physics labs to fully support peer review for refurbishments, SFIs, modifications, and annual assessments as deemed necessary by the Subject Matter Experts (SMEs). It also positions the code developers to efficiently and effectively execute the ASC Code strategy for a rich, sustainable portfolio of simulations codes for the Enterprise and the continued drive toward predictive simulation. New capabilities will address the needs of the B61 LEP including engineering design for performance in normal environments as well as migrating ASC production codes to more efficient computing environments.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Physics and Engineering Models (PEM)	**61,189**	**62,798**	**69,890**

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

The FY 2012 activities include: develop and implement the Equation of State and constitutive models for materials within nuclear devices; improve understanding of phase diagrams and the dynamic response of materials; continue physics-based modeling on the aging of key materials; explore fundamental chemistry models of high explosives; improve representation of corrosion, polymer degradation, and thermal-mechanical fatigue of weapons electronics; improve models of melting and decomposition of foams and polymers in safety-critical components; support of the Stockpile-to-Target-Sequence requirements by improving models of microelectronic and photonic materials in hostile environments.

The request supports a model development portfolio for scientific exploration in key areas towards achieving predictive simulation capability including: nuclear physics, atomic physics, equation of state, materials, material aging, high explosives, mix and burn, and engineering performance. The request will also supports advanced models for high explosives, material strength, and equation of state to address the initial conditions for boost, Predictive Capability Framework peg posts, and improvements in nuclear data and hydrodynamics to address boost.

Verification and Validation (V&V)	**50,882**	**54,781**	**57,073**

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

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

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

In FY 2012, V&V will focus on UQ assessments that include: integral V&V assessment; application of the Predictive Capability Assessment Project methodology to a stockpile system; expansion of the Primary Metric Project test suites to include more relevant Nevada National Security Site events; and further development of the Secondary Calculational Assessment Methodology Project.

Computational Systems and Software Environment (CSSE)	**157,466**	**175,833**	**181,178**

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

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

The FY 2012 activities include continuing acquisition of Sequoia at LLNL and Cielo at LANL (with SNL) and beginning acquisition of capacity systems TLCC2 through the Tri-laboratory Linux Capacity Cluster. Maintenance will continue on LANL's Roadrunner and the Sequoia Initial Delivery system at LLNL. The ASC Campaign will continue to operate high-performance capacity computing scalable units to meet growing demands especially in the area of modern (QMU-based) weapons certification and assessment. The CSSE will also maintain a common, usable, and robust application-development and execution environment for ASC-scale applications and platforms; produce an end-to-end, high-performance I/O, networking-and-storage archive infrastructure encompassing ASC Campaign platforms and operating systems, large-scale simulations, and data-exploration capabilities. The ASC Campaign will provide a reliable, available, and secure environment for distance computing through system monitoring and analysis, modeling and simulation, and technology infusion. Development and deployment will continue on high-performance tools and technologies to support visual and interactive exploration of massive and complex data. The Campaign will provide system management of the ASC Campaign computers and their necessary networks and archival storage systems. This includes the deployment of effective data management, extraction, delivery, and

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

archiving, as well as efficient remote or collaborative scientific data exploitation. Continued development and deployment of scalable data manipulation and rendering systems that leverage inexpensive, high performance commodity graphics hardware will continue. Additionally, ASC will stimulate research and development efforts through advanced architectures that explore alternative computer designs, promising dramatic improvements in performance, scalability, reliability, packaging, and cost.

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

The request will initiate a strategy for a more persistent and portable computing environment for users to transition seamlessly between current production systems to future architectures. Over the next five to seven years, computational science at the laboratories will go through a growth spurt beginning with production access to a 20-Petaflop system. To accommodate this transition, computer science investments are needed in system software and tools, input/output, storage and networking, post-processing and a common computing environment.

The request initiates funding for an R&D effort addressing the technologies required to build and operate exascale supercomputers, that operate at one million trillion operations per second, or a one thousand fold increase over petascale. 'Exascale' denotes the next generation of high performance computers that are foreseen to address critical national security problems. In FY 2012, investments include critical technologies, such as low-power memory, and advanced interconnect optics. Likewise, the request supports investments in new software programming models for operating at these high speeds in basic functions such as storage techniques, file systems, and performance tools.

Facility Operations and User Support	**155,650**	**156,389**	**159,859**

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

The scope of the User Support function includes planning, development, integration and deployment, continuing product support, and quality and reliability activities collaborations. Projects and

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

technologies include computer center hotline and help-desk services, account management, web-based system documentation, system status information tools, user training, trouble-ticketing systems, and application analyst support.

The FY 2012 activities maintain continuous and reliable operation and support of production computing systems and all required infrastructure to operate these systems on a 24-hour a day, 7-day a week basis, with an emphasis on providing efficient production quality stable systems. Facility Operations operate laboratory ASC computers and support integration of new systems ensuring that the physical plant has sufficient resources, such as space, power, and cooling, to support future computing systems. User Support provides the authentication and authorization services used by applications for the purposes of remote access and data movement across ASC-related locations. The ASC Campaign will also develop and maintain a wide-area infrastructure (e.g., links and services) that enable remote access to ASC applications, data, and computing resources, to support computational needs at the plants permitting distant users to operate on remote computing resources as if they were local. The subprogram will provide analysis and software environment development, support for ASC laboratory computers and provide user services and helpdesks for ASC laboratory computers.

The request will fund investments in people and equipment to enhance system and environment administration and operations, network capability, power and user support services. These investments will transition the national laboratories from a high performance computing environment in which users view peta-scale computing as a novel tool to one where running jobs on a 20-Petaflop system is routine.

Total, Advanced Simulation and Computing Campaign	**566,069**	**615,748**	**628,945**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Integrated Codes	
The decrease reflects some consolidation of the code projects within the ASC program in order to maintain verification and validation activities.	**-5,002**
Physics and Engineering Models	
The increase supports a model development portfolio towards achieving predictive simulation capability for scientific exploration in key areas – including nuclear physics, atomic physics, equation of state, materials, high explosives, mix and burn, and engineering performance. The increase will also address critical skill shortfalls at the laboratories to provide foundational simulation capabilities needed for future Life Extension Programs, significant findings investigations and a Comprehensive Test Ban Treaty environment.	**+7,092**
Verification and Validation	
The increase will address uncertainty quantification and individually address the key factors contributing to simulation certainties.	**+2,292**
Computational Systems and Software Environment	
The increase reflects funding for initial investments in an initiative to begin researching and developing the technologies required to build exascale supercomputers. The increase is also offset by adjustments in the funding profiles for the Cielo, Sequoia, and Tri-laboratory capacity procurements that were accelerated in FY 2011, thereby reducing their FY 2012 requirements.	**+5,345**
Facility Operations and User Support	
The increase is consistent with the cost cycle to operate and maintain the existing computing centers of the nuclear security enterprise at the national laboratories as new platforms are installed and older systems are retired.	**+3,470**
Total Funding Change, Advanced Simulation and Computing Campaign	**+13,197**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	1,211	1,238	1,265
Capital Equipment	72,760	74,361	75,997
Total, Capital Operating Expenses	**73,971**	**75,599**	**77,262**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	1,293	1,321	1,350	1,380
Capital Equipment	77,669	79,378	81,124	82,909
Total, Capital Operating Expenses	**78,962**	**80,699**	**82,474**	**84,289**

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

Readiness Campaign

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Readiness Campaign			
Stockpile Readiness	5,670	18,941	0
High Explosives and Weapon Operations	4,583	3,000	0
Nonnuclear Readiness	19,625	21,864	65,000
Tritium Readiness	68,245	50,187	77,491
Advanced Design and Production Technologies	8,621	18,100	0
Total, Readiness Campaign	**106,744**	**112,092**	**142,491**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Readiness Campaign				
Stockpile Readiness	0	0	0	0
High Explosives and Weapon Operations	0	0	0	0
Nonnuclear Readiness	65,000	65,000	65,000	65,000
Tritium Readiness	65,753	65,754	68,706	70,320
Advanced Design and Production Technologies	0	0	0	0
Total, Readiness Campaign	**130,753**	**130,754**	**133,706**	**135,320**

Mission

The Readiness Campaign operates the capability for producing tritium to maintain the national inventory needed for the nuclear weapons stockpile and selects and matures production technologies that are required for manufacturing components to meet the Planning and Production Directive (P&PD)[a] schedule and war reserve requirements.

The P&PD is developed through Directed Stockpile Work (DSW) to determine the requirements and schedules necessary to maintain a safe, secure, and reliable nuclear deterrent. To meet these requirements, technologies need to be developed for new materials, manufacturing, acquisition, inspection, and testing for replacement components inserted in a nuclear bomb and ballistic missile weapons in the field, weapons returned for refurbishment, and for joint test assemblies. Production technology maturation is critical so that the nuclear security enterprise can manufacture reliable components using non-legacy materials and produce new weapon features for enhanced surety. The Readiness Campaign mission is dedicated to investing in technologies that will be used in multiple weapon system applications and that are common across the Nuclear Security Enterprise sites in order to conserve development resources and reduce production uncertainty. The Readiness Campaign goals for FY 2012 and out years are aligned with NNSA strategy, which is driven by the *2010 Nuclear Posture Review* direction and the *Stockpile Stewardship and Management Plan program of record*.

[a] The Production and Planning Directive (P&PD) is described under the Directed Stockpile Work (DSW), Planning and Scheduling Section.

The Readiness Campaign capabilities are integral to completing weapons system component design and manufacturing. Successful completion of DSW milestones for war reserve production relies upon the timely introduction of production capabilities funded under the Readiness Campaign. To coordinate the timed delivery of new manufacturing capabilities with first use scheduled weapon activities, Readiness Campaign program managers integrate technology planning and prioritization with weapon program plans during annual planning meetings and ad hoc meetings throughout the planning cycle.

The Readiness and Engineering Campaigns coordinate investments in parallel with the Advanced Simulation and Computing and the Science Campaigns to manage weapon technology and component maturation development activities in time to meet mission requirements. The *Component Maturation Framework*,[a] a corollary process to the *Predictive Capabilities Framework*, provides a construct for the complex integration across programs and campaigns for maturing technologies and providing manufacturing capabilities for planned insertion of components into Life Extension Programs (LEP), Limited Life Component Exchanges (LLCE), or Joint Test Assemblies (JTA) Readiness Campaign planning also considers Readiness in Technical Base and Facilities (RTBF) facility acquisition schedules to coordinate selection and insertion of production capabilities to reduce facility lifecycle costs.

The tritium portion of the mission continues to direct resources to optimize the life-cycle management of tritium to meet national security needs. The Readiness Campaign coordinates with Department of Defense (DoD) on determining Post-Nuclear Posture Review (NPR) Stockpile requirements, and continues to provide annual updates to DoD on the tritium production status. The NNSA will meet future tritium requirements through a combination of harvesting tritium obtained from dismantled nuclear warheads and irradiating tritium-producing burnable absorber rods (TPBAR). Readiness will also optimize its planning, execution, and resource allocations to improve, where practical, the availability of tritium and its byproducts.

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

Benefits

Within the Readiness Campaign, there are five subprograms: Stockpile Readiness, High Explosives and Weapon Operations, Nonnuclear Readiness, Tritium Readiness, and Advanced Design and Production Technologies; each make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 41, the stockpile, and the nuclear security enterprise. Collectively, these five subprograms provide key technology-based capabilities needed to manufacture weapons and sustain the manufacturing infrastructure.

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

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[a] The Component Maturation Framework is described in additional detail in the Engineering Campaign section of the budget submission.

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

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

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

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

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

Stockpile Readiness

- The Microwave furnace to be used for the material recycle and recovery process at Y-12 was installed after passing the Factory Acceptance Test.

High Explosives and Weapon Operations

- Deployed Advanced High Explosive Gauging Techniques, which addressed acceptance of small lots with minimum product loss and, at the same time, reduced overall manufacturing cycle time and waste.
- High Explosive Certification, Qualification, and Reacceptance (HECQA) revised the triamino-trinitrobenzene (TATB) military specifications defined by the joint NNSA/DoD Memorandum of Agreement to develop commercial suppliers of TATB.

Nonnuclear Readiness

- Deployed Neutron Generator (NG) Testers, which assures neutron generator test capability by modernizing testers as required to support NG production and shelf-life programs.

- Rapid Design Commercial, off-the-shelf (COTS) deployed vendor patch to production to address longstanding issue related to workflows that allows for quick response to future National Security missions through rapid design and manufacturing of electrical systems.

Tritium Readiness

- Consolidated 368 Tritium-Producing Burnable Absorber Rods (TPBARs) from Cycle 9 of the Watts Bar Nuclear reactor Unit 1 (WBN1).
- Shipped 364 TPBARs in two batches to the Tritium Extraction Facility (TEF) for extraction.
- Shipped four TPBARs from to Pacific Northwest National Laboratory (PNNL) for Post Irradiation Examinations (PIE).
- Commenced irradiation of 240 MK 9.2 TPBARs in Cycle 10 at WBN1.
- Extracted the first batch of 284 Cycle 9 TPBARs at the TEF.
- Commenced fabrication of 544 TPBARs plus spares for WBN1 Cycle 11.
- Commenced PIE for Cycle 9 TPBARs and recent Advanced Test Reactor (ATR) samples.
- Conducted conceptual design review for planned ATR tests on pellet performance.
- Completed award of WesDyne Phase 2 second 5-year period.
- Completed award of Bare Cladding contract to procure stainless steel tube stock.
- Developed a prototype for a reactor cooling system water management process model.

Advanced Design and Production Technologies

- Advanced Initiation Systems advanced the technology for the delivery of a preliminary plan for a solventless process for polyimide slappers.
- Collaborative Authorization for the Safety-Basis Total Lifecycle Environment (CASTLE) deployed version 2.0 to Pantex which assisted in the W84 Hazard Analysis Report (HAR) Submission and approval and completion of the B83 Hazard Analysis Task Team (HATT) documentation.

Major Outyear Priorities and Assumptions

The outyear funding for the Tritium Readiness Subprogram totals $270,533,000 for FY 2013 through FY 2016. The priority for the Tritium Readiness subprogram will be to maintain the tritium production infrastructure at a minimum sustaining rate to ensure a capability is available in the event that future resources are allocated to ramp up production to support the requirements of the post-Nuclear Posture Review stockpile. The minimum sustaining rate will include fabrication and irradiation of not more than 240 TPBARs per cycle; the design agent, PNNL, will curtail development and test activities but continue to support irradiation of TPBARs at Tennessee Valley Authority (TVA) to satisfy Nuclear Regulatory Commission requirements for technical oversight; and the TEF will continue in Responsive Operations mode and conduct one extraction per year.

The outyear funding for Nonnuclear Readiness totals $260,000,000 for FY 2013 through FY 2016. The priority for this subprogram is to deploy manufacturing technologies required to meet scheduled first production units and sustained production for the near-term (FY 2014 through FY 2022) Life Extension Programs and Limited Life Component Exchange Programs. This scope of work corresponds to Performance Measure 1 (Long-term Output) in the Annual Performance Measures and Results Table above. Actions to restore funding in the outyears for projects in the Stockpile Readiness, High Explosive and Weapon Operations and Advanced Design and Production Technology are being assessed against overall stockpile requirements and the potential for supporting the work in other areas of the Weapon Activities budget.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Stockpile Readiness	**5,670**	**18,941**	**0**

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

High Explosives and Weapon Operations	**4,583**	**3,000**	**0**

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

Nonnuclear Readiness	**19,625**	**21,864**	**65,000**

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

All funds in the requested budget will be used to address production readiness requirements and scope associated with down-select of technologies as a result of expected Nuclear Weapons Council Phase 6.3 approval for the B61 LEP. By introducing common components that meet the requirements for multiple weapon systems, NNSA can leverage available funding to accomplish required development and production for stockpile sustainment.

In FY 2012, the Nonnuclear Readiness program will mature manufacturing technologies to support manufacture of limited life components(e.g. Gas Transfer Systems and electric neutron generators) for all limited life component exchanges and the B61 LEP. Requested funding will also mature electrical component manufacturing for JTA telemetry, detonators, switches, and radars, which will see first use in the B61 LEP.

The FY 2012-FY 2016 effects will focus on maturation of manufacturing capabilities for major component assemblies, which includes the intent stronglink, the arming, fusing, and firing assembly integration, AFS and radar readiness, firesets, impact fuze trajectory stronglinks, rolomites, structural foams, battery assemblies, switches, antenna and nose assembly, controllers, cables and connectors, and surety components that are necessary to meet safety, security, and reliability goals for the nuclear stockpile and required by the B61 LEP and future LEPs, Alts, and Mods.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Tritium Readiness	**68,245**	**50,187**	**77,491**

The Tritium Readiness subprogram operates the Departmental capability for producing tritium to maintain the national inventory needed for the nuclear weapons stockpile. Irradiation of TPBARs in TVA's Watts Bar nuclear reactor began in October 2003. Plans are being initiated to make additional production capacity available by gaining NRC approval for increasing the effluent release limit at Watts Bar Unit 1, with a contingency option to use TVA's Sequoyah Unit 1 and 2 reactors to meet tritium production requirements specified in the Nuclear Weapons Stockpile Plan signed annually by the President.

In FY 2012, the Tritium Readiness subprogram will continue to pay irradiation fees for 544 TPBARs in Watts Bar Unit 1 to complete Cycle 11; provide an annual settlement for TVA procurements of heavy equipment for the Watts Bar reactor where the lowest cost foreign vendors will not sell equipment for tritium production; procure nuclear reactor fuel to support the core design for Cycle 12; begin procurement of an approximately 500,000 gallon holdup tank to assist with management of reactor coolant system water releases to the Tennessee River; and continue steps to ensure that Sequoyah Units 1 and 2 are in the appropriate condition to serve as a contingency option for tritium production, should increased production in Watts Bar Unit 1 not be realized.

The subprogram will provide technical production support to the TVA operation by having the Pacific Northwest National Laboratory acting as the design authority to ensure of sufficient technical oversight. In addition, the subprogram will continue efforts at the Advanced Test Reactor to evaluate options for design improvements to the lithium aluminate pellets to reduce in-reactor tritium permeation of the TPBAR design. The subprogram will maintain the TEF in Responsive Operations mode and conduct one TPBAR extraction activity as well as support capital projects for direct stacking of gases, abatement of a harmful isotope detected in gas output (Zinc-65); repair to the damaged rail on the large shield door; and begin replacement of obsolete automated process control software. The subprogram will continue to conduct a Supplemental Environmental Impact Statement to support TVA licensing for increasing TPBAR irradiation quantities that must be approved by the NRC before irradiation in FY 2016 and will provide technical and management support.

FY 2012 funds will be expended at commercial vendors to support fabrication and assembly of TPBARs, the fuel and irradiation costs at the tritium production reactors, and for transportation of the irradiated TPBARs, currently in reactor, to the Savannah River Site for ultimate extraction. In addition, funds already on contract will be expended to receive component parts for future assembly of TPBARs. Total fabrication and assembly time for TPBARs is approximately a two to three year process. Funding, as part of a comprehensive Tritium execution strategy, is placed on a long-lead contracts so as to build a reasonable inventory of parts and TPBARs, manage risk throughout the commercial tritium supply chain, enable TPBARs to be available at their required insertion time point and control the costs of the Tritium subprogram.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

The subprogram will also continue to direct resources to optimize the life-cycle management of tritium to meet other national security needs. While the Tritium subprogram does not have primary responsibility for these other national security needs, it will optimize its planning, execution, and resource allocations to improve, where practical, the availability of tritium and its byproducts. As an example, because of the national security interests in helium-3, an associated byproduct of tritium, the Tritium subprogram will continue responsive management of its capabilities and other assets to meet this critical need.

Advanced Design and Production Technologies	**8,621**	**18,100**	**0**

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

Total, Readiness Campaign	**106,744**	**112,092**	**142,491**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Stockpile Readiness	
Funding decreased to align with NNSA priorities to sustain the stockpile and provide funds for maintaining production in the Tritium Readiness subprogram.	**-18,941**
High Explosives and Weapon Operations	
Funding decreased to align with NNSA priorities to sustain the stockpile and provide funds for maintaining production in the Tritium Readiness subprogram.	**-3,000**
Nonnuclear Readiness	
The increase will fund the maturation of manufacturing technologies associated with mechanical components for the arming, fusing, and firing (AF&F) major component assembly, JTA telemetry, detonators, switches, and radars associated with the B61 LEP.	**+43,136**
Tritium Readiness	
Funding increased for irradiation fees and reactor fuel to support the increase of tritium production from 240 TPBARs per cycle to 544 TPBARs per cycle; repairs and improvements at the TEF and for initial procurement and installation of a large water management tank at TVA's Watts Bar reactor.	**+27,304**
Advanced Design and Production Technologies	
Funding decreased to align with NNSA priorities to sustain the stockpile and provide funds for maintaining production in the Tritium Readiness subprogram.	**-18,100**
Total Funding Change, Readiness Campaign	**+30,399**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	5,700	5,825	5,953
Capital Equipment	7,920	8,094	8,272
Total, Capital Operating Expenses	**13,620**	**13,919**	**14,225**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	6,084	6,218	6,355	6,495
Capital Equipment	8,454	8,640	8,830	9,024
Total, Capital Operating Expenses	**14,538**	**14,858**	**15,185**	**15,519**

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 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Completion Date
Microwave Deployment, Y-12 National Security Complex	17,721	14,628	11,496	2,335	797	0	FY 2012
Coordinate Measuring Machine # 3, Y-12 National Security Complex	5,510	5,200	5,700	-500	0	0	FY 2010
Total Major Items of Equipment				**1,835**	**797**	**0**	

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

Readiness in Technical Base and Facilities

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Readiness in Technical Base and Facilities			
Operations of Facilities			
Kansas City Plant	117,895	186,102	156,217
Lawrence Livermore National Laboratory	86,083	80,106	83,990
Los Alamos National Laboratory	338,479	318,464	318,526
Nevada National Security Site	79,326	80,077	97,559
Pantex	131,227	121,254	164,848
Sandia National Laboratory	103,618	117,369	120,708
Savannah River Site	131,129	92,722	97,767
Y-12 National Security Complex	228,601	220,927	246,001
Institutional Site Support	120,041	40,970	199,638
Subtotal, Operations of Facilities	1,336,399	1,257,991	1,485,254
Program Readiness	72,873	69,309	74,180
Material Recycle and Recovery	69,224	70,429	85,939
Containers	23,321	27,992	28,979
Storage	24,558	24,233	31,272
Subtotal, Operations and Maintenance	**1,526,375**	**1,449,954**	**1,705,624**
Construction	283,904	399,016	620,510
Total, Readiness in Technical Base and Facilities	**1,810,279**	**1,848,970**	**2,326,134**

Outyear Funding Schedule by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Readiness in Technical Base and Facilities				
Operations of Facilities	1,655,922	1,673,863	1,681,568	1,699,396
Program Readiness	88,900	89,511	90,780	91,504
Material Recycle and Recovery	104,940	102,782	105,021	106,642
Containers	25,016	23,997	24,809	25,396
Storage	32,347	31,872	33,647	34,208
Subtotal, Operations and Maintenance	**1,907,125**	**1,922,025**	**1,935,825**	**1,957,146**
Construction	577,134	820,479	793,832	777,744
Readiness in Technical Base and Facilities	**2,484,259**	**2,742,504**	**2,729,657**	**2,734,890**

Mission

The Readiness in Technical Base and Facilities (RTBF) Program provides state-of-the-art facilities and infrastructure equipped with advanced scientific and technical tools to support the National Nuclear Security Administration (NNSA) operational and mission requirements. The RTBF Program accomplishes this mission by achieving the following goals:

- Operate and maintain the nuclear security enterprise program facilities in a safe, secure, efficient, reliable, and compliant condition;
- Provide facility operating costs for utilities, equipment, maintenance and environment, safety, and health (ES&H);
- Maintain critical skills through personnel, training and salaries; and
- Plan, prioritize, and construct state-of-the –art facilities, infrastructure, and scientific tools within approved baseline costs and schedule.

The RTBF program provides unique contributions to the Government Performance and Results Act Unit Program Number 42.

Benefits

The RTBF program achieves this mission so that NNSA program facilities are operationally ready to execute NNSA missions in: Stockpile Stewardship (i.e. Campaigns), Stockpile Management (i.e., Directed Stockpile Work, DSW), Nuclear Nonproliferation, Naval Reactors fuel, and Emergency Operations. Work scope and costs include program facility operations; facility and equipment maintenance; ES&H activities; the capability to recover and recycle plutonium, highly-enriched uranium, and tritium to support a safe and reliable nuclear stockpile; and specialized storage and containers sufficient to support the requirements of the weapons stockpile.

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

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

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

The RTBF Operations and Maintenance subprogram provides an important infrastructure and capability foundation for all NNSA sites. The production plants (Y-12, KCP, SRS, and PX) and NNSS are especially dependent on RTBF funding. The RTBF Operations and Maintenance FY 2012 budget ranges from approximately 32 percent to 69 percent of the total Defense Programs budget at these five

sites. Whereas, at the three national weapons laboratories, RTBF Operations and Maintenance FY 2012 funding covers approximately 10 percent to 24 percent of the total Defense Programs budget. Providing and maintaining a sustainable infrastructure is crucial to the success of the nuclear security enterprise.

The RTBF Construction subprogram is important to the continuity of capabilities for nuclear weapons manufacturing and research and development mission requirements. Construction investments support design and construction of facilities that support the nuclear security enterprise, improving the responsiveness and/or functionality of the infrastructure and its technology base.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- Exceeded corporate facility availability goals of 95 percent.
- Achieved the industry target of 5 percent Facility Condition Index (FCI) for mission-critical facilities.
- Provided transportation container support for DSW and NNSA missions to support Life Extension Program (LEP) and Stockpile Stewardship programs.
- Completed the Highly Enriched Uranium Materials Facility (HEUMF) at Y-12, and completed material relocation and storage four months ahead of schedule.
- Completed construction on schedule for the Chemistry and Metallurgy Research Replacement (CMRR) Radiological Laboratory/Utility/Office Building (RLUOB) at the Los Alamos National Laboratory (LANL).
- Completed construction ahead of schedule and under budget for Fire Stations #1 and #2 at the Nevada National Security Site (NNSS).
- Completed construction on time and under budget for the TA-55 Reinvestment Project Phase I at LANL.
- Downgraded buildings 9201-5 (originally constructed in 1944 as part of the Manhattan Project) and 9720-38 at Y-12 to below a Category 3 Nuclear Facility.
- Packaged 76 percent and shipped 73 percent of all Category I/II materials from Lawrence Livermore National Laboratory (LLNL) consistent with the profile to achieve de-inventory in FY 2012.
- Successfully moved the 80,000 pound Tandem van de Graaff accelerator to the new Ion Beam Laboratory at Sandia National Laboratories (SNL).
- Met Low Level Waste treatment and disposal goals at LLNL.
- Completed the Critical Experiments Facility (CEF) Operational Readiness Review.
- Signed the lease agreement with the developer for the new Botts Road Facility at KCP and started construction work at the site.

- Repaired, in collaboration with the U.S. Air Force, critical sections of the Tonopah Test Range roads.
- Received certification, jointly with Environmental Management, for the 9979 Type A(F) packaging to allow shipping of fissile material.
- Completed Primary Stripper #1 Project, which replaced corroded piping and depleted zeolite beds at Savannah River Site (SRS).
- Led the remediation of cleanup activities at Pantex (PX) to return the plant to operations after the site was damaged by a severe thunderstorm with heavy rains resulting in significant flooding of the facilities.
- Signed and finalized a joint agreement between the U.S. and France to refurbish and jointly fund and operate criticality experiment facilities to meet two broad technical needs: establish a capability for fissionable solution experiments and horizontal split table critical experiments.

Major Outyear Priorities and Assumptions

The outyear projections for RTBF total $10,691,310,000 for FY 2013 through FY 2016. The Operations funding during the four-year period supports the investment needed to address the continued aging of the NNSA complex. Support for the existing infrastructure continues to be a challenge due to its deteriorated condition and escalating requirements and costs associated with nuclear facility safety and compliance. The Operations and Maintenance budget request will sustain minimum operations capability at most sites in the FY 2013 through FY 2016 time frame.

Outyear funding is requested to achieve minimum operations support, particularly in light of the increase in work scope for all Weapons Activities' programs, especially Stockpile Stewardship and Stockpile Management activities (e.g., increased surveillance and the planned B61 LEP and potential LEPs on the W78 and W88). In addition to support for planned Life Extension programs, RTBF investments will be prioritized and integrated with Science Campaign experimental plans to ensure continuity of science capabilities at LANSCE and DARHT and PF-4 at Los Alamos, and gas guns and subcritical experiment infrastructure at NNSS.

Increased construction resources will fund planned scope for the CMRR and UPF projects to ensure future continuity of plutonium and uranium capabilities. Increased funding levels for CMRR and UPF in FY 2012 – FY 2016 reflect best available information at 45 percent design maturity for both projects, and incorporate bounding cost estimate data from independent reviews and government contingency. The funding request for FY 2012 supports achieving 90 percent design maturity for both projects in FY 2012, which will allow the Department to set performance baselines in FY 2013. In addition to CMRR and UPF funding, increased construction funding in FY 2013 through FY 2016 supports priority infrastructure capabilities at Pantex, Y-12, Los Alamos and NNSS.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Operations of Facilities	**1,336,399**	**1,257,991**	**1,485,254**

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 of the entire nuclear security enterprise. Operates the program infrastructure and facilities in a safe, secure, reliable, and "ready for operations" manner. The RTBF Operations of Facilities subprogram provides and sustains core capabilities, including: material operations capability, such as plutonium, uranium, tritium and high explosive materials; component production, fabrication, and assembly capability; testing capability, such as environmental testing, special nuclear and non-nuclear material testing; and site mission and infrastructure support.

The NNSA tracks, manages, and justifies the RTBF Operations of Facilities portion of the President's Budget Request using a recently revised Work Breakdown Structure (WBS). The RTBF Operations of Facilities WBS has been redesigned to provide better insight and granularity of the costs required to operate and maintain nuclear security enterprise facilities. The new WBS is organized by capabilities provided, such as material operations, component production, fabrication and assembly, and testing. At the most detailed level of the Operations of Facilities WBS, all identified capabilities are separated into three distinct categories: Operations, Capability Risk Reduction, and Transformation. These categories contain all activities performed at specific sites, including: facilities management; maintenance; utilities; environment, safety and health; capital equipment; emergency operations; waste management; maintenance of the Authorization Basis for each facility per 10CFR830, National Environmental Policy Act activities; and, general plant projects. "Operations" includes daily operations, infrastructure, corrective and some preventive maintenance, and staffing requirements. The "Capability Risk Reduction" category includes activities associated with sustaining equipment, systems, facilities, or capabilities to sustain their performance or good operating condition, as well as activities that ensure current capabilities will meet safety requirements, sustain effectiveness and/or extend the life of that capability. Finally, the "Transformation" category includes all activities related to reducing Site footprints, related security requirements, the hazard/safety categorization of a facility/capability or the development/start-up of a new or replacement capability. The majority of the budget request supports "Operations" and reflects an infrastructure that provides a minimum-operations capability state of readiness.

The RTBF Operations of Facilities budget request generally supports minimum-operations capability conditions of RTBF funded facilities, infrastructure and capabilities. Under a "minimum-operations" level of operation, base operations are sufficient to sustain the capability through the fiscal year, assuming the absence of significant upset conditions or emergent requirements.

Operations of Facilities also funds general infrastructure support activities such as General Plant Projects (GPP) and Other Project Costs (OPCs) for line item construction projects. However in the

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

FY 2012 request, the line items for the CMRR and UPF projects will display Total Project Costs (TPCs), which includes Construction and OPCs.

• **Kansas City Plant (KCP)**	**117,895**	**186,102**	**156,217**

RTBF Operations of Facilities at KCP offers capabilities in support of the nuclear security enterprise, such as: manufacturing and acquisition of non-nuclear parts; and production capabilities including electronics, machining, and plastics.

In FY 2012, funding will support continued operation and required maintenance costs at the current facility and continued transition into a new facility with minimum disruptions as laid out in the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) transformation plan. Funding for KCRIMS supports critical capital purchases and unique facility upgrades for utility and interior requirements.

Also in FY 2012, efforts will continue on execution of the comprehensive project plan to establish a Kansas City based Supply Chain Management Center to gain efficiencies and savings from consolidation of procurement systems, supplier management, contracting agreements.

▪ **Kansas City Plant - Bannister Road**	**68,008**	**78,525**	**85,217**

In FY 2012, funding will support continued operation and required maintenance costs at the current facility. In anticipation of the move to a new facility, KCP is being operated in a "run to replacement" mode, where maintenance for continued safe operations will be performed, and selected facility and equipment maintenance will be allowed to grow until the replacement facility at Botts Road is operational.

▪ **Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS)**	**49,887**	**107,577**	**71,000**

In FY 2012, funding will support continued transition into a new facility with minimum disruptions as laid out in the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) transformation plan. Funding includes approximately $5,000,000 for the KCRIMS lease and $65,000,000 for the relocation of equipment and personnel to the new Botts Road facility. The request for KCRIMS includes the restoration of $20,000,000 that was utilized as a source to support the FY 2010 B61 reprogramming request.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Lawrence Livermore National Laboratory (LLNL)**	**86,083**	**80,106**	**83,990**

The RTBF Operations of Facilities at LLNL supports the nuclear security enterprise by providing the capability to perform plutonium, tritium and high explosive operations; environmental tests; and regulated site-wide comprehensive waste management.

In FY 2012, activities to be funded include: weapon assessment and certification; LEP research, development and design; plutonium research and technology programs; tritium recovery/loading and target manufacturing; high explosives experimental synthesis, formulation, processing, assembly and testing; Nuclear Counterterrorism research, experimentation, and emergency support; DOE's Nuclear Criticality Safety Training Course; and packaging design, maintenance and certification.

• **Los Alamos National Laboratory (LANL)**	**338,479**	**318,464**	**318,526**

The RTBF Operations of Facilities at LANL provides a number of capabilities in support of the nuclear security enterprise, including: plutonium production, research and development; chemistry and metallurgy research; weapons engineering tritium capability; beryllium operations; high explosives production, assembly, development and firing; component production and fabrication; stored and newly generated radiological waste operations; and non-nuclear testing, which includes both the Los Alamos Neutron Science Center (LANSCE) Linear Accelerator and the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT).

In FY 2012, major RTBF funded facilities, capabilities and activities include: the engineering, manufacturing systems and methods shops; tritium; dynamic experimentation; LANSCE; waste management; Nuclear Materials Technology (TA-55); Chemistry and Metallurgy Research (CMR); and beryllium technology. In addition, RTBF supports solid waste risk reduction activities (including the processing of stored new generation transuranic (TRU) waste at Area G in support of a Consent Order issued by the New Mexico Environmental Department), TA-55 Seismic and Fire Safety Engineering, CMR Risk Mitigation and Consolidation and Radioactive Liquid Waste Facility System upgrade/replacement. Funding is also included for the Los Alamos Pueblo Project (approximately $800,000 per year). In cases where replacement facilities are planned, such as the CMRR facility, the program is allowing deferred maintenance to grow. RTBF will also develop and implement Authorization Basis modifications needed to reduce the risk and extend the life of the CMR until the CMRR facility is operational. The CMR hazard reduction activities will be funded in FY 2012 to continue to reduce hazards and maintain the facility until the mission work can be transferred to the CMRR, which is scheduled to be fully operational in FY 2023.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Nevada National Security Site (NNSS)**	**79,326**	**80,077**	**97,559**

The RTBF Operations of Facilities at NNSS provides core capabilities in support of the nuclear security enterprise, including: Security Category I/II Special Nuclear Material handling and storage; National Criticality Safety Program's Critical Experiments Facility; large scale underground sub-critical plutonium experiments; LEP research, development and design; high hazard, scientific experiments with special nuclear materials (e.g. dynamic plutonium experiments); large high explosive charge experiments and testing; Nuclear Counterterrorism research, experimentation, and emergency support; DOE's Nuclear Criticality Safety Program; and legacy environmental cleanup commitments.

In FY 2012, funding provides for the operation of the Device Assembly Facility (DAF) (including Critical Experiment Facility (CEF) enduring operations) and ensures that the U1a complex, the Joint Actinide Shock Physics Experimental Research (JASPER) Facility, the Big Explosives Experimental Facility (BEEF) and Baker site achieve minimum-operations capability to support Stockpile Stewardship missions. The requested funding operates and maintains the remainder of NNSS in a minimum-operations capability condition while maintaining safe, secure transportation and handling, and providing for experimenters and diagnosticians at the NNSS.

• **Pantex Plant**	**131,227**	**121,254**	**164,848**

The RTBF Operations of Facilities at Pantex provides the following capabilities for the nuclear security enterprise: weapon assembly, disassembly, and surveillance in support of the LEPs; high explosives synthesis, formulation, and machining in support of production; and Special Nuclear Material non-destructive evaluation and requalification. The request allows the Pantex Plant to support the increased workloads associated with weapon program activity, including increases in LEPs, surveillance and dismantlement activities; and allows the site to function at the minimum-operable state of readiness by providing for facility management and staff support to perform plant and maintenance engineering, facility utilization analysis, modification and upgrade, and facilities planning. In addition to the general requirements noted above, these funds are crucial to maintaining critical safety systems in support of Nuclear Weapons activities such as linear accelerator maintenance, Radiation Alarm Systems, Fire Suppression Systems, and high explosive (HE) machining capabilities. To support the site's weapon capabilities, RTBF funds Pantex in the performance of the following activities: the collection and treatment of wastewater; steam distribution and condensate return; electrical distribution; natural gas distribution; compressed air; and water production, treatment, distribution to support domestic, industrial, and fire protection needs; and safety and health assurance including Radiation Safety, Nuclear Explosive Safety, Occupational Medicine, Industrial Hygiene, and Industrial Safety.

The FY 2012 request funds risk reduction activities, continues recovery from the FY 2010 flood event, and provides a minimum-operable state of readiness at the site. Improvements to facilities

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

such as the HE manufacturing facility are also included as Pantex awaits construction of new HE operations facilities.

• **Sandia National Laboratories (SNL)**	**103,618**	**117,369**	**120,708**

The RTBF Operations of Facilities at SNL provides multiple capabilities in support of the nuclear security enterprise, including: nuclear weapon assessment and certification; weapon component design, testing and manufacturing, including LEPs; major environmental testing; Microelectronics and Engineering Sciences Applications; engineering and material sciences; remote testing ranges for joint test assemblies; and waste management activities. The dominant cost driver for these capabilities is the staff required to keep the mission critical capabilities operational.

In FY 2012, in addition to maintaining a level of expertise among the staff, RTBF will support major environmental test facilities, including electromechanical, abnormal and normal environments, Microelectronics Development Laboratory, Tech Area IV Accelerators, Tech Area V Nuclear Reactor facilities, Electromagnetic Test Facilities, Materials Characterization Laboratories and the Tonopah Test Range (TTR) in Nevada. Facilities will cyclically operate at minimum-operations levels rotating staff on a planned schedule to accommodate mission needs.

In FY 2012, the RTBF Operations funding provides minimum-operations capability level for TTR while also providing limited recapitalization of equipment. The TTR provides unique capabilities to air drop nuclear bomb test units, supporting DSW's ability to perform surveillance testing on nuclear bombs and test their compatibility with U.S. Air Force bombers and fighters. Funding also provides for the initiation of recapitalization of testing equipment to support increased DSW surveillance activities for the W76 and B61, and support for the essential capabilities in microsystems and radiation hardness, engineering and material sciences that are required to support the B61 LEP and potential LEPs on the W78 and the W88.

• **Savannah River Site (SRS)**	**131,129**	**92,722**	**97,767**

The RTBF Operations of Facilities at SRS provides the tritium operations capability in support of the nuclear security enterprise, which is unique to the enterprise and includes: production, reclamation of gas transfer systems for limited life component exchange and LEPs; production, recycling, and recovery of tritium and deuterium gases; surveillance of Gas Transfer Systems; packaging design, maintenance, and certification; and storage of national security legacy components and materials.

In FY 2012, funding supports activities leading to the replacement of Thermal Cycle Absorption Process hybrid beds, starts modernization activities of the existing facilities to support infrastructure initiatives, and supports the DSW Limited Life Components (LLCs) schedule.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Y-12 National Security Complex**	**228,601**	**220,927**	**246,001**

The RTBF Operations of Facilities at Y-12 provides multiple capabilities in support of the nuclear security enterprise, including: enriched and depleted uranium operations; lithium and other special material operations; component production and fabrication; Highly Enriched Uranium (HEU) down-blending activities; and weapon assembly and disassembly, in support of LEPs. Funding generally supports Y-12 operations at a minimum-operable state of readiness.

Additionally, in FY 2012, activities include management of the thirteen production and support facilities and related facility systems, including newly generated waste. These facilities are operated to ensure compliance with ES&H requirements and DOE Orders, while ensuring the availability of the facilities for all Defense Programs programmatic objectives.

• **Institutional Site Support (ISS)**	**120,041**	**40,970**	**199,638**

Institutional Site Support provides HQ contractor support, Departmental assessments and other program costs which benefit the entire nuclear security enterprise. The ISS also serves a number of critical purposes for the nuclear security enterprise. Funding is crucial to address unplanned events during the execution year. Such events typically consist of natural disasters or significant equipment, system or facility failures. Unplanned events are tracked and later trended to assess the health and sustainability of the nuclear security enterprise's infrastructure.

The ISS also includes $168,232,000 in funding for a required contractual pension payment for University of California. Unlike pension payments at NNSA sites, collected through labor rates and paid by the M&O contractor, the University of California payment is a direct federal payment remaining from the transition of the LANL and LLNL sites to private contractors.

Program Readiness	**72,873**	**69,309**	**74,180**

- Program Readiness implements a multi-year strategy to provide capabilities (skilled worker expertise, advanced technologies, and innovative approaches) that support the programmatic needs of the NNSA. These crosscutting investments address needs beyond any single facility, Campaign, or weapon system and are essential to achieving the objectives of Stockpile Stewardship. Under this crosscutting subprogram, the following activities are supported:

- The Nuclear Criticality Safety Program (NCSP) provides sustainable expert leadership, direction, and the technical infrastructure necessary to develop, maintain and disseminate the essential technical tools, training and data required to support safe, efficient fissionable material operations within DOE. The NCSP is a continually improving, adaptable, and transparent program that communicates and collaborates globally, such as with France's Commissariat a l'Energie Atomique (CEA), to incorporate technology, practices and programs responsive to

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

the technical needs of those responsible for developing, implementing, and maintaining nuclear criticality safety throughout the DOE. The collaboration with the French CEA will lead toward joint operations of unique critical experiments capability (e.g. a mixed actinide super prompt critical solution assembly) for validating criticality safety design codes for a variety of applications important to the DOE including new reactor designs and alternative fuel cycles.

- Nevada State Regulatory environmental compliance issues that resulted from years of nuclear testing activities in Nevada to geologic studies performed by the U.S. Geological Survey Department.

- Nuclear Safety R&D activities to influence the technical foundations for authorization basis decision making and reaffirmation of authorization bases of defense nuclear facilities and associated operations.

- The training, development, and technical apprenticeship of new associates for critical skills at NNSA production plants, along with the technical resource pipeline and production assurance required to sustain critical production and engineering capabilities.

- The capabilities needed for integrated and engineered Nuclear Warhead Certification at SNL. Specific activities supported by Program Readiness at Sandia include: Weapons Intern Program (WIP), which is important in developing and maintaining critical skills; Technology Readiness, necessary to support any future LEPs; NNSS Radiography (e.g., Cygnus Operators and Scientists); and Qualification Alternatives to the Sandia Pulsed Reactor (QASPR) applications consistent with developing and maturing technology.

Material Recycle and Recovery (MRR)	**69,224**	**70,429**	**85,939**

The RTBF MRR provides for recycling and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement of weapons and components. Supports the implementation of new or improved processes for fabrication and recovery operations, material stabilization, conversion, and storage. The MRR supports the process of recycling and purifying materials to meet specifications for safe, secure, and environmentally acceptable storage, and to meet the directive schedule for tritium reservoir refills. The funding request provides additional recycling and recovery activities to support the increased workload associated with LEP production rates, additional weapon surveillance activities, increased piece part disassemblies and increases in Campaign and Sustainment work in the nuclear facilities. Recycling and recovery activities will be supported by DSW when the scope exceeds the base capability provided by the MRR program. The MRR is principally accomplished at LANL, the SRS Tritium Extraction Facility and Y-12.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

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

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

- At Y-12, activities include uranium purification and conversion to UO_3, acid removal and waste processing, conversion of enriched uranium oxide to metal buttons, material transport and storage, processing enriched uranium chips and scraps, chemical conversion of lithium, salvage operations, and filter teardowns. All of these activities are required to provide materials needed for Stockpile Stewardship programs and to ensure safe and secure handling of materials on-site. In addition, Y-12 MRR includes deactivation of Building 9206 and operation of the Central Scrap Management Office that manages the receipt, storage, and shipment of enriched uranium scrap and the Precious Metals Business Center that provides a cost effective service to many users within the DOE complex.

Containers	**23,321**	**27,992**	**28,979**

The RTBF containers provides for shipping container research and development, design, certification, re-certification, test and evaluation, production and procurement, fielding and maintenance, decontamination and disposal, and off-site transportation authorization of shipping containers for nuclear materials and components supporting both the nuclear weapons program and nuclear materials consolidation. New container systems such as the DPP-1, DPP-3, ES-4100, and 9977/9978 are being developed to improve safety, security, ability to be maintained, meet updated regulatory requirements, and accept a broader array of contents to minimize the number of specialized containers that have to be maintained. These efforts include efficiencies provided by close coordination of planning and operations with users/customers. Supports the emphasis on nuclear material consolidation, and de-inventory activities to ensure needed transportation containers are certified and available to accommodate proposed material movements. This includes supporting the de-inventory of LLNL Category I and II nuclear materials through the certification and supply of containers. DSW also provides support for container activity when weapon system scope exceeds the level initially identified by the container subprogram.

Storage	**24,558**	**24,233**	**31,272**

The RTBF storage provides for effective storage and management of national security and surplus pits, HEU, and other weapons and nuclear materials. Funding includes the cost of receipt, storage, and inventory of nuclear materials, non-nuclear materials, HEU, enriched lithium, and components from dismantled warheads. Storage also provides programmatic planning for nuclear material requirements, including analysis, forecasting, and reporting functions, as well as emergent analyses of nuclear materials as designated by the NNSA and others. The Nuclear Materials Integration

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

subprogram under Site Stewardship will also be supported by having the requisite facilities available so they can execute their responsibility. Storage activities will be supported by DSW when the scope exceeds the base capability provided by the Storage program.

- At Pantex, activities include long-term storage of special nuclear materials, which involves planning, engineering, design, and start-up activities; processing and repackaging materials for safe storage; storage activities for the strategic reserve; national security inventory thermal monitoring and characterizations; disposition of legacy materials; and nuclear materials management, including planning, assessment, and forecasting nuclear material requirements. Pit Disassembly and Inspection Surveillance includes surveillance activities associated with pits in storage. Activities include weight and leak testing, visual inspections, and radiography. Improvements to surveillance of pits will be provided such as Low Energy Radiography; Acoustic Resonance Spectroscopy; a second Laser Gas Sampling System; High Resolution Computed Tomography; Non-Destructive Laser Gas Sampling; Dimensional Inspection; and the Pit Characterization Lab. Increases in non-nuclear material disposition activities at Pantex and increased capabilities to perform characterization activities on legacy components in storage are also supported, including the ultimate disposal of components currently backlogged in scrap status.
- At Y-12, activities include the overall management and storage of uranium, lithium, and other nuclear and weapons materials, including the nation's strategic reserve of HEU. In addition, the Y-12 Nuclear Materials Management, Storage, and Disposition program provides programmatic guidance and support of these materials and services throughout the nuclear security enterprise. The Storage program supports the loading, operating, and maintaining of HEUMF. This program also provides the long-term planning and analysis of materials required for the Y-12 manufacturing strategy in support of the nuclear weapons stockpile.

Construction	**283,904**	**399,016**	**620,510**

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

The RTBF Construction budget request increases the funding for the CMRR Facility and Uranium Processing Facility (UPF). The high priority of both projects was highlighted in the Nuclear Posture Review.

The CMRR Facility at LANL will relocate and consolidate mission-critical analytical chemistry, material characterization, and actinide research and development activities that directly support Stockpile Stewardship and other programs. Construction of the Radiological

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Laboratory/Utility/Office Building (RLUOB) is complete, and installation of associated equipment is underway and ahead of schedule. Following a series of cost reviews, the updated cost range estimate based on 45 percent design maturity for the CMRR Total Project Cost (TPC) is $3,700,000,000 to $5,800,000,000. This updated cost range estimate reflects bounding cost estimate data from the contractor and government contingency. Consistent with NNSA's increased emphasis on project management rigor, baseline cost and schedule will not be finalized until the project achieves 90 percent design maturity. The project is scheduled to achieve 90 percent design maturity in FY 2012, and the Department will set the performance baseline in FY 2013. The increased funding level in the FY 2012-FY 2016 period is needed to support the required schedule of construction completion in FY 2020 and a ramp-up to full operations by FY 2023. For FY 2012, the amounts shown in the line item request for CMRR represent TPC, which includes both Construction and OPC. Construction and OPC funds will be executed through the line item. Funds will be obligated and recorded in the appropriate object classes (object class 32.0 and 25.4) as defined in Office of Management and Budget Circular A-11.

The UPF at the Y-12 Complex will replace deteriorating 50-year-old facilities that do not meet current standards, are increasingly expensive to maintain, and are technologically obsolete. When complete, the UPF will allow a substantial reduction in the footprint of the secure area of the site and associated maintenance and security costs. The UPF will support the nation's nuclear weapons stockpile, down blending of enriched uranium in support of nonproliferation, and provide uranium as feedstock for fuel for naval reactors. Following a series of cost reviews, the updated cost range estimate based on 45 percent design maturity for the UPF TPC is $4,200,000,000 to $6,500,000,000. This updated cost range estimate reflects bounding cost estimate data from the contractor, government contingency, and an independent cost estimate by the Department's Office of Cost Analysis. Consistent with NNSA's increased emphasis on project management rigor, baseline cost and schedule will not be finalized until the project achieves 90 percent design maturity. The project is scheduled to achieve 90 percent design maturity in FY 2012, and the Department will set the performance baseline in FY 2013. The increased funding level in the FY 2012- FY 2016 period is needed to support the NNSA's priority to phase out operations in Building 9212 and move required chemical processing activities from Building 9212 into UPF in FY 2020, with a ramp-up to full operations in UPF by FY 2024. For FY 2012, the amounts shown in the line item request for UPF represent TPC, which includes both Construction and OPC. Construction and OPC funds will be executed through the line item. Funds will be obligated and recorded in the appropriate object classes (object class 32.0 and 25.4) as defined in Office of Management and Budget Circular A-11.

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

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

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

The Nuclear Facility Risk Reduction (NFRR) Project at Y-12 will reduce risk of failure of systems, structures, and components in buildings 9212 and 9204-2E by upgrading specific infrastructure systems to ensure continuity of capability and continued safe operations until transition to the UPF.

The Test Capabilities Revitalization–Phase II Project at SNL will refurbish non-nuclear capabilities necessary to test weapons components in support of the current stockpile. This facility is needed to support timely certification components for the B61 and future LEPs.

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

Total, Readiness in Technical Base and Facilities	**1,810,279**	**1,848,970**	**2,326,134**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Operations of Facilities	
▪ **Kansas City Plant (KCP)**	
This decrease results from completion of the purchase of long lead major equipment, which was funded in FY 2011, as KCP transitions to its new site.	**-29,885**
▪ **Lawrence Livermore National Laboratory**	
The increase provides adequate funding to support the minimum-operations of nuclear facilities during de-inventory and increase the availability of Site 300 in support of required science technology and engineering activities.	**+3,884**
▪ **Los Alamos National Laboratory**	
This increase reflects increased support in the processing of Stored Newly Generated (SNG) TRU waste at Area G in order to remediate and close Area G by December 2015 which is partially offset by reduced operations at CMR facility due to the continued reduction of material at risk within the facility.	**+62**
▪ **Nevada National Security Site**	
The increase supports a minimum-operations capability at DAF, U1a, JASPER, BEEF and Baker to support the full suite of Stockpile Stewardship mission requirements while concurrently maintaining experimental capabilities. The level of funding requested stabilizes the RTBF funded workforce levels supporting these missions.	**+17,482**
▪ **Pantex Plant**	
The increase adjusts funding to meet required minimum-operational levels due to the increasing investments in corrective maintenance to address degrading and aging infrastructure. Increased investment will provide improvements to the plant site in areas (such as high explosive facilities) which will enable continued sustainment of operable, secure, and compliant conditions in support of the increased surveillance, LEP and dismantlement activities.	**+43,594**

	FY 2012 vs. FY 2011 Request ($000)
▪ **Sandia National Laboratories**	
The increase supports initiatives beginning the priority recapitalization of the Tonopah Test Range, and more fully supports the essential capabilities in microsystems and radiation hardness, engineering and material sciences that are required to support the B61 LEP and potential LEPs on the W78 and W88.	**+3,339**
▪ **Savannah River Site**	
The increase in funding supports activities leading to the replacement of Thermal Cycle Absorption Process hybrid beds and starts modernization activities of the existing facilities to support infrastructure initiatives.	**+5,045**
▪ **Y-12 National Security Complex**	
This increase reflects funding to support operations that meet required minimum-operational levels of facilities. The funding will allow continued investments in maintenance and address aging infrastructure.	**+25,074**
▪ **Institutional Site Support**	
The increase reflects $168 million in funding for University of California pension payments and expected shortfalls from contractor supported defined benefit pensions. This increase is offset by a decrease reflecting an emphasis within ISS to provide funding for Departmental assessments and program costs which benefit the entire nuclear security enterprise.	**+158,668**
Total, Operations of Facilities	**+227,263**

Program Readiness

The increase in funding supports the Nuclear Criticality Safety Program's collaboration with France to begin design of a new, jointly operated unique mixed actinide super prompt critical solution assembly machine and full operations of the Critical Experiments Facility at the NNSS DAF.	**+4,871**

	FY 2012 vs. FY 2011 Request ($000)
Material Recycle and Recovery	
The increase in funding is to provide ongoing activities to support LEPs and the disassembling of components from dismantled weapons including the stabilization and decontamination of nuclear material, primarily at Y-12. This increase also supports an increased workload in material recovery and recycle associated with increased weapons activities and safety risk reduction activities.	**+15,510**
Containers	
The increase results from a slight adjustment to the fabrication of newly certified containers for nuclear materials and components.	**+987**
Storage	
The increase supports increased non-nuclear material disposition activities at Pantex and increased capabilities to perform characterization activities on legacy components in storage, primarily in new pit surveillance techniques.	**+7,039**
Construction	
The increase in FY 2012 funding will support several key Construction projects at the identified sites. At LANL, the funding will support achieving 90 percent design maturity in FY 2012 for the Chemistry and Metallurgy Research Replacement (CMRR) Facility Project, and also funds scope for the TA-55 Reinvestment Project Phase II and the Transuranic (TRU) Waste Facility Project. At Y-12, the funding will support achieving 90 percent design maturity in FY 2012 for the Uranium Processing Facility Project). Funding will also provide for the start of construction of the Nuclear Facility Risk Reduction Project. At Pantex, funding will support the High Explosive Pressing Facility (HEPF) Project.	

	FY 2012 vs. FY 2011 Request ($000)
At the Sandia National Laboratories, the funding will allow construction for the Test Capabilities Revitalization Project Phase II.	**+221,494**
Total Funding Change, Readiness in Technical Base and Facilities	**+477,164**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	44,391	45,368	46,366
Capital Equipment	54,070	55,260	56,476
Total, Capital Operating Expenses	**98,461**	**100,628**	**102,842**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	47,386	48,428	49,493	50,582
Capital Equipment	57,718	58,988	60,286	61,612
Total, Capital Operating Expenses	**105,104**	**107,416**	**109,779**	**112,194**

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

Construction Projects[a]

(dollars in thousands)

	Total Estimated Cost (TEC) [b]	Prior Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Unappropriated Balance
12-D-301, TRU Waste Facilities, LANL	71,000 - 124,000	0	0	0	9,881	61,119 - 114,119
11-D-801, TA-55 Reinvestment Project, Phase 2, LANL	75,400 - 99,900	0	0	20,000	19,402	38,845 - 60,345
10-D-501, Nuclear Facility Risk Reduction (NFRR), Y-12	65,796	0	12,500	0	35,387	17,909
09-D-404, Test Capabilities Revitalization-II, SNL	42,804	3,104	3,200	0	25,168	0
09-D-007, LANSCE-Refurbishment, LANL [c]	TBD	19,300	0	0	0	0
08-D-802, High Explosive Pressing Facility, PX [d]	134,217	613	0	30,000	66,960	36,644
08-D-801, High Pressure Fire Loop, PX	40,716	8,806	31,910	0	0	0

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

[b] Where cost ranges are shown, they are for Total Project Cost (TPC) not Total Estimated Cost (TEC). Otherwise, all point estimates are for TEC.

[c] $27,690 in previously appropriated funding for LANSCE-R has been converted from line-item funding to the Operations of Facilities subprogram in accordance with H.R. 4899, the Supplemental Appropriations Act, 2010.

[d] $41,781 in previously appropriated funding for 08-D-802, High Explosive Pressing Facility, PX were directed to be used as a use of prior year balance offset by the Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85).

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Unappropriated Balance
07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade, LANL [a]	TBD	10,000	0	0	0	TBD
07-D-140, Project Engineering & Design, VL	18,193	9,675	0	5,000	3,518	0
06-D-402, NTS Replace Fire Stations No. 1 and No. 2, NTS	36,744	35,271	1,473	0	0	0
06-D-141, PED/Construction, Uranium Processing Facility, Y-12	TBD	0	94,000	115,016	160,194	TBD
06-D-140, Project Engineering & Design, VL [b]	192,929	176,929	12,000	4,000	0	0
04-D-128, Criticality Experiments Facility (formerly TA-18 Mission Relocation Project), LANL/NTS	81,269	79,769	1,500	0	0	0
04-D-125, Chemistry and Metallurgy Research Facility Replacement (CMRR), LANL	TBD	328,832	97,000	225,000	300,000	TBD
99-D-141-01, Pit Disassembly and Conversion Facility (PDCF), SRS [c]	TBD	280,441	30,321	0	0	0
Total, Construction			**283,904**	**399,016**	**620,510**	

[a] $30,332 in prior year appropriations are proposed to be used as offsets for other DOE programs in FY 2012. Future funding requirements for RLWTF are yet to be determined.

[b] Funding for the Uranium Processing Facility (UPF), Y-12 in FY 2010 and beyond is provided under 06-D-141. Funding in the amount of $139,205 was provided under 06-D-140, Project Engineering and Design, LV in prior years for UPF.

[c] Funding in FY 2011 and beyond is requested under the Defense Nuclear Nonproliferation/Fissile Materials Disposition Program.

Outyear Construction Projects

(dollars in thousands

	FY 2013	FY 2014	FY 2015	FY 2016
15-D-XXX, HE Science and Engineering Facility, PX	0	0	10,000	0
15-D-XXX, HE Staging Facility, PX	0	0	9,776	0
15-D-XXX, TA-55 Reinvestment Phase III, LANL	0	0	29,980	43,495
14-D-XXX, DAF Lead-In Piping, NNSS	0	1,000	0	30,000
14-D-XXX, Fire Suppression Lead-ins, PX	0	13,000	0	4,249
14-D-XXX, UV to IR Flame Detector Upgrade, PX	0	14,860	0	0
12-D-301, TRU Waste Facility, LANL	12,349	71,151	12,426	0
11-D-801, TA-55 Reinvestment Phase II, LANL	8,889	8,624	12,500	0
10-D-501, Nuclear Facility Risk Reduction (NFRR), Y-12	17,909	0	0	0
09-D-401, Test Capabilities Revitalization, Ph II, SNL	11,332	0		
08-D-802, High Explosive Pressing Facility, PX	24,800	11,844	0	0
07-D-220, Radioactive Liquid Waste Treatment Facility Upgrade, LANL	11,855	0	19,150	0
06-D-141, PED/Construction, Uranium Processing Facility, Y-12	190,000	350,000	350,000	350,000
04-D-125, Chemistry and Metallurgy Research Facility Replacement (CMRR), LANL	300,000	350,000	350,000	350,000
Total, Construction	**577,134**	**820,479**	**793,832**	**777,744**

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

(dollars in thousands)

Major Item of Equipment	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2010	FY 2011	FY 2012	Completion Date
DO93 5-Axis Mill	2,350	2,350	0	0	2,350	0	2013
Total Major Items of Equipment				**0**	**2,350**	**0**	

12-D-301, Transuranic (TRU) Waste Facility,
Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range that was approved on August 10, 2010, with the preliminary cost range of $71,000 to $124,000 and a preliminary CD-4 range of FY 2015 to FY 2018.

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

This PDS is new for FY 2012.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2012	02/07/2006	8/10/2010	TBD	TBD	TBD	TBD	N/A	N/A

Phase A: Infrastructure and Site Improvements

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2012	02/07/2006	8/10/2010	7/6/2011	3/09/2011[a]	1/9/2012	2/01/2013[b]	N/A	N/A

Phase B: Staging and Characterization Facilities

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2012	02/07/2006	8/10/2010	TBD	TBD	TBD	TBD	N/A	N/A

3. Baseline and Validation Status

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	18,193	TBD	TBD	TBD	TBD	TBD	71,000 – 124,000

[a] Date of anticipated CD-2 approval.

[b] Date of proposed baseline CD-4 schedule.

Phase A: Infrastructure and Site Improvements

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	3,000	9,881	12,881	600	N/A	600	13,481

Phase B: Staging and Characterization Facilities

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	15,193	TBD	TBD	TBD	TBD	TBD	TBD

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

4. Project Description, Justification, and Scope

The Department of Energy (DOE) signed an Order of Consent ("Consent Order") with the State of New Mexico, effective on March 1, 2005. The Consent Order requires DOE to complete a "Fence-to-Fence" cleanup of the Los Alamos National Laboratory (LANL) by December 29, 2015. "Fence-to-Fence" means removal and/or remediation of contaminants that reside in the environment at LANL. As part of the Consent Order, the State of New Mexico has identified four Material Disposal Areas (MDAs) in TA-54. The current set of Transuranic (TRU) waste storage and process facilities resides in MDA G. The MDA G will undergo a phased closure, consistent with the Consent Order, to be completed by December 29, 2015. It will not be feasible, practical, or realistic to attempt to keep the TRU facilities operational in the midst of Area G closure activities. Therefore, the TRU waste management capability must be reconstituted at a location outside of the closure boundaries. Closure of MDA G is scheduled to start in FY 2013 and must be completed by December 29, 2015. The replacement capability will be used for handling future Defense Programs newly generated waste.

Phase A: Infrastructure and Site Improvements Scope

The scope will be limited to construction of site utilities to prepare the selected site for the construction of the staging and characterization facilities. Construction of the new facilities requires the site to obtain a Resource Conservation and Recovery Act (RCRA) permit from the State of New Mexico Environmental Division. Applying for the RCRA permit requires a detailed design of the site infrastructure, which involves site surveys, grading, and extending utility lines from the existing services for tie-in to the new building.

FY 2012 activities include completion of the final design and start of construction.

Phase B: Staging and Characterization Facilities Scope

The scope involves the design, construction, and installation of facilities to ship newly generated TRU waste to the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. It does not provide for the processing and shipping of legacy waste. The facilities are part of a comprehensive, long-term strategy to consolidate radioactive waste operations into a smaller, more compact area that can operate safely, securely, and effectively for the foreseeable future. The facility is currently designated as a hazard category 2 nuclear facility, seismic design category 2. The facility will be sized to stage/store up to 1,240 plutonium equivalent drums of waste; stacked three high, if and when necessary. The facility's sizing is based on the assumption of up to nine months storage from generation to WIPP shipment, TRU storage area for the current DP and non-DP projected generation rates, current processing throughput rate of 75 percent facility/equipment availability and limited storage of oversize TRU containers.

FY 2012 activities include RCRA permit applications and the start of the final design.

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

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

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED (07-D-140-02)			
FY 2007	0	0	0
FY 2008	2,452	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	408
FY 2011	5,000	5,363	11,332
FY 2012	3,518	3,518	4,776
FY 2013	0	0	1,677
Total, PED (07-D-140-02)	18,193	18,193	18,193
Construction			
FY 2012	9,881	9,881	6,467
FY 2013	12,349	12,349	7,399
FY 2014	71,151	71,151	TBD
FY 2015	12,426	12,426	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2007	0	0	0
FY 2008	2,452	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	408
FY 2011	5,000	5,363	11,332
FY 2012	13,399	13,399	11,243
FY 2013	12,349	12,349	9,076
FY 2014	71,151	71,151	TBD
FY 2015	12,426	12,426	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	1,297	1,297	1,297
FY 2008	1,784	1,784	1,784
FY 2009	959	959	959
FY 2010	2,417	2,417	2,417
FY 2011	1,661	1,661	1,661
FY 2012	942	942	942
FY 2013	1,867	1,867	1,867
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D			
FY 2012	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 2007	1,297	1,297	1,297
FY 2008	1,784	1,784	1,784
FY 2009	959	959	959
FY 2010	2,417	2,417	2,417
FY 2011	1,661	1,661	1,661
FY 2012	942	942	942
FY 2013	1,867	1,867	1,867
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBS
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2007	1,297	1,297	1,297
FY 2008	4,236	1,784	1,784
FY 2009	8,182	959	959
FY 2010	2,417	11,729	2,825

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2011	6,661	7,024	12,993
FY 2012	14,341	14,341	12,185
FY 2013	14,216	14,216	10,943
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED) (07-D-140-2)			
Design	14,675	N/A	TBD
Contingency	3,518	N/A	TBD
Total, PED	18,193	N/A	TBD
Construction			
Site Preparation	9,881	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
		N/A	
Total, TEC	TBD	N/A	TBD
Contingency, TEC	TBD	N/A	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	1,500	N/A	TBD
Conceptual Design	2,700	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, OPC except D&D	TBD	N/A	TBD

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
D&D			
D&D	NA	N/A	NA
Contingency	NA	N/A	NA
Total, D&D	NA	N/A	NA
Total, OPC	TBD	N/A	TBD
Contingency, OPC	TBD	N/A	TBD
Total, TPC	TBD	N/A	TBD
Total, Contingency	TBD	N/A	TBD

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2012	TEC	9,675	5,000	13,399	12,349	71,151	12,426	TBD	TBD	TBD
	OPC	6,457	1,661	942	1,867	TBD	TBD	TBD	TBD	TBD
	TPC	16,132	6,661	14,341	14,216	TBD	TBD	TBD	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q FY 2016
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	FY 2066

(Related Funding requirements)

(dollars in thousands)

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

9. Required D&D Information

Area	Square Feet
Area of new construction	10,000 – 16,000
Area of existing facility(s) being replaced	TBD
Area of additional D&D space to meet the "one-for-one" requirement	None

Name(s) and site location(s) of existing facility(s) to be replaced: TA-54 Disposal Area G. Cost for this disposal is not the responsibility of the National Nuclear Security Administration and will be paid by the Office of Environmental Management (EM) Program. Area G cost will be part of the EM budget and responsibility.

10. Acquisition Approach

The project will be executed in two phases. Phase A will provide Site and Infrastructure Improvements and will be executed through a firm-fixed price design-bid-build contract. Phase B will provide the Staging and Characterization Facilities and will be executed through firm-fixed price design-bid-build contract. The Management and Operating contractor will provide project, design, and construction management oversight and procure the design and construction services.

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

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range for all three phases of TRP II that was approved on July 15, 2008 with a preliminary cost range of $75,400 to $99,900 and a preliminary CD-4 date of FY 2016.

Phase A: Glovebox #1 and Air Dryers
The most recent DOE O 413.3B approved CD is CD-2 for Phase A, Approve Performance Baseline that was approved on November 24, 2009 with a Total Project Cost (TPC) of $19,470 and a CD-4 date of May 2013.

Phase B: Glovebox #2, Confinement Doors, and Demolition of Plutonium Facility (PF)-7 in support of the Uninterruptible Power Supply (UPS)
The most recent DOE O 413.3B approved CD is CD-2 for Phase B, Approve Performance Baseline that was approved on June 3, 2010 with a TPC of $18,203 and a CD-4 date of February 2014.

Phase C: Glovebox #3, Exhaust Stack, UPS, Criticality Alarm System, and Vault Water Tanks
The most recent DOE O 413.3B approved CD is CD-1, Approve Alternative Selection and Cost Range that was approved on July 15, 2008 with a TPC not to exceed $66,227. A performance baseline (CD-2) is anticipated by the 3Q FY 2011.

This phased critical decision approach and schedule is consistent with the tailoring strategy that has been approved by the NNSA Acquisition Executive.

As stated in the FY 2010 President's Budget Request, (06-D-140 data sheet), "construction and final design funding for TRP II will be requested in the future via a new PDS." This data sheet meets that commitment and includes the TRP II final design scope and funding.

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

This PDS is an update to the FY 2011 PDS. Project progress is noted in Section 2 below.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/15/2008	3QFY2012	TBD	TBD	TBD	N/A	N/A
FY 2012	3/23/2005	7/15/2008	3QFY2012	TBD	TBD	TBD[a]	N/A	N/A

Phase A: Glovebox #1 and Air Dryers

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/15/2008	3QFY2012	11/24/2009	1QFY2010	3QFY2013	N/A	N/A
FY 2012	3/23/2005	7/15/2008	2QFY2011	11/24/2009	4QFY2011	3QFY2013	N/A	N/A

Phase B: Glovebox 2, Confinement Doors, and Demolition of PF-7 in support of the UPS

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/15/2008	3QFY2012	3QFY2010	TBD	TBD	N/A	N/A
FY 2012	3/23/2005	7/15/2008	4QFY2011	6/3/2010	4QFY2011	2QFY2014	N/A	N/A

Phase C: Glovebox 3, Exhaust Stack, UPS, Criticality Alarm System, and Vault Water Tanks

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	3/23/2005	7/15/2008	3QFY2012	3QFY2011	TBD	TBD	N/A	N/A
FY 2012	3/23/2005	7/15/2008	3QFY2012	3QFY2011	TBD	TBD	N/A	N/A

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

[a] Preliminary estimate for CD-4 is FY 2016.

3. Baseline and Validation Status

(dollars in thousands)

	TEC, Prelim Design	TEC, Final Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	13,684	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2012	14,684	12,700	56,715	84,099	15,477	N/A	15,477	99,576

Phase A: Glovebox #1 and Air Dryers

(dollars in thousands)

	TEC, Prelim Design	TEC, Final Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	3,700	TBD	15,330	19,030	440	N/A	440	19,470
FY 2012	4,289	1,848	12,448	18,585	443	N/A	443	19,028

Phase B: Glovebox 2, Confinement Doors, and Demo of PF-7 in support of the UPS

(dollars in thousands)

	TEC, Prelim Design	TEC, Final Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	5,069	854	11,041	16,964	621	N/A	621	17,585

Phase C: Glovebox 3, Exhaust Stack, UPS, Criticality Alarm System, and Vault Water Tanks

(dollars in thousands)

	TEC, Prelim Design	Final Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	5,326	9,998	33,226	43,224	14,413	N/A	14,413	62,963

4. Project Description, Justification, and Scope

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

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

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

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

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

TRP II Overall Scope: Consists of seven (7) subprojects to be completed in three phases:

1. Replace existing Uninterruptible Power Supply with nuclear grade equipment and relocate from the PF-4 to a new structure to allow simpler maintenance, proper exhaust, and to minimize mixed waste generation.
2. Refurbish three existing air dryers, demolition of the fourth, and provide a cross connect between the 300 and 400 area dryers so the 400 dryer can back up the 300 dryer within the PF-4. Modern controls will also be provided.
3. Replace six existing PF-4 confinement doors to allow the facility ventilation system to maintain pressure differential between the facility and the environment.
4. Replace existing Criticality Alarm detectors and circuits in the PF-4 with new and expandable detectors and electronics.
5. Upgrade two Pu-238 water storage tanks cooling system within the PF-4.
6. Seismically brace and qualify high priority (ignition source and high material at risk) glovebox stands in the PF-4 to meet safety requirements.
7. Upgrade the sampling system for the existing PF-4 exhaust stacks so that exhaust measuring equipment meets industry standards.

Phase A: Glovebox Stand 1 and Air Dryers:

Air Dryers – Refurbish three existing air dryers, demolition of the fourth, and provide a cross connect between the 300 and 400 area dryers so the 400 dryer can back up the 300 dryer within the PF-4. Modern controls will also be provided.

Glovebox Stands Group 1 – Seismically upgrade the stands for 10 high priority gloveboxes to ensure gloveboxes remain intact and do not topple during a seismic event.

Phase B: Glovebox Stand 2, Confinement Doors, and the demolition of PF-7 in support of the UPS:

Glovebox Stands Group 2 – Seismically upgrade the stands for 14 high priority gloveboxes ensure gloveboxes remain intact and do not topple during a seismic event.

Replace six existing PF-4 confinement doors to allow the facility ventilation system to maintain pressure differential between the facility and the environment.

Demolition of PF-7 – The demolition of PF-7 will provide space for the new structure to house the Uninterruptible Power Supply safety system.

Phase C: Glovebox Stand 3, Exhaust Stack, UPS, Criticality Alarm System, and Vault Water Tanks

Glovebox Stands Group 3 – Seismically upgrade the stands for the identified high priority gloveboxes to ensure gloveboxes remain intact and do not topple during a seismic event.

Upgrade the sampling system for existing PF-4 exhaust stacks so that exhaust measuring equipment meets industry standards.

Replace existing Uninterruptible Power Supply with nuclear grade equipment and relocate from the PF-4 to a new structure to allow simpler maintenance, proper exhaust, and to minimize mixed waste generation.

Upgrade two Pu-238 water storage tanks cooling system within the PF-4.

Replace existing Criticality Alarm detectors and circuits in the PF-4 with new and expandable detectors and electronics.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
Preliminary Design (06-D-140-02)			
FY 2008	1,439[a]	1,439	24
FY 2009	8,245	8,245	3,403
FY 2010	5,000[b]	5,000	7,860
FY 2011	0	0	2,000
FY 2012	0	0	1,397
Total, Preliminary Design	14,684	14,684	14,684
Final Design (11-D-801)			
FY 2011	7,500	7,500	6,000
FY 2012	5,200	5,200	6,700
Total, Final Design	12,700	12,700	12,700
Total Design	27,384	27,384	27,384
Construction			
FY 2011	12,500	12,500	11,000
FY 2012	14,202	14,202	12,940
FY 2013	8,889	8,889	9,560
FY 2014	8,624	8,624	8,540
FY 2015	12,500	12,500	10,680
FY 2016	0	0	3,995
Total, Construction	56,715	56,715	56,715
TEC			
FY 2008	1,439	1,439	24
FY 2009	8,245	8,245	3,403
FY 2010	5,000	5,000	7,860
FY 2011	20,000	20,000	19,000
FY 2012	19,402	19,402	21,037
FY 2013	8,889	8,889	9,560
FY 2014	8,624	8,624	8,540
FY 2015	12,500	12,500	10,680
FY 2016	0	0	3,995
Total, TEC	84,099	84,099	84,099

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

[b] FY 2010 PED includes $1,000 that was transferred from 06-D-140-03, PED Radioactive Liquid Waste Treatment Facility Upgrade. Funding for both PED projects were appropriated under the same project data sheet.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
FY 2005	854	854	854
FY 2006	1,919	1,919	1,919
FY 2007	980	980	980
FY 2008	1,343	1,343	1,343
FY 2009	90	90	90
FY 2010	319	319	319
FY 2011	685	685	685
FY 2012	2,100	2,100	2,100
FY 2013	1,500	1,500	1,500
FY 2014	2,577	2,577	2,577
FY 2015	2,200	2,200	2,200
FY 2016	910	910	910
Total, OPC except D&D	15,477	15,477	15,477
D&D			
FY2010	NA	NA	NA
Total, D&D	NA	NA	NA
OPC			
FY 2005	854	854	854
FY 2006	1,919	1,919	1,919
FY 2007	980	980	980
FY 2008	1,343	1,343	1,343
FY 2009	90	90	90
FY 2010	319	319	319
FY 2011	685	685	685
FY 2012	2,100	2,100	2,100
FY 2013	1,500	1,500	1,500
FY 2014	2,577	2,577	2,577
FY 2015	2,200	2,200	2,200
FY 2016	910	910	910
Total, OPC	15,477	15,477	15,477
Total Project Cost (TPC)			
FY 2005	854	854	854
FY 2006	1,919	1,919	1,919
FY 2007	980	980	980
FY 2008	2,782	2,782	1,367
FY 2009	8,335	8,335	3,493
FY 2010	5,319	5,319	8,179
FY 2011	20,685	20,685	19,685
FY 2012	21,502	21,502	23,137
FY 2013	10,389	10,389	11,060
FY 2014	11,201	11,201	11,117
FY 2015	14,700	14,700	12,880
FY 2016	910	910	4,905
Total, TPC	99,576	99,576	99,576

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Preliminary Design (06-D-140)	12,619	11,619	TBD
Contingency	2,065	2,065	TBD
Final Design (11-D-801)	9,930	0	TBD
Final Design Contingency	2,770	0	TBD
Total, Design	27,384	13,684	TBD
Construction			
Site Preparation	TBD	TBD	TBD
Equipment	TBD	TBD	TBD
Other Construction	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Construction	56,715	TBD	TBD
Total, TEC	84,099	TBD	TBD
Contingency, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	TBD	TBD
Conceptual Design	TBD	TBD	TBD
Start-Up	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, OPC except D&D	15,477	TBD	TBD
D&D			
D&D	N/A	N/A	TBD
Contingency	N/A	N/A	TBD
Total, D&D	N/A	N/A	TBD
Total, OPC	15,477	TBD	TBD
Contingency, OPC	TBD	TBD	TBD
Total, TPC	99,576	TBD	TBD
Total, Contingency	TBD	TBD	TBD

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2011	TEC	13,684	20,000	19,640	20,221	20,468	42,480	TBD	TBD	TBD
	OPC	6,088	3,300	2,800	2,600	TBD	TBD	TBD	TBD	TBD
	TPC	19,772	23,300	22,440	22,821	20,468	42,480	TBD	TBD	TBD
FY 2012	TEC	14,684	20,000	19,402	8,889	8,624	12,500	0	0	84,099
	OPC	5,505	685	2,100	1,500	2,577	2,200	910	0	15,477
	TPC	20,189	20,685	21,502	10,389	11,201	14,700	910	0	99,576

8. Related Operations and Maintenance Funding Requirements

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

(Related Funding requirements)

(dollars in thousands)

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

9. Required D&D Information

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

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

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

10. Acquisition Approach

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

10-D-501, Nuclear Facility Risk Reduction, Y-12 National Security Complex, Oak Ridge, Tennessee
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is Approval of Performance Baseline (CD-2) and approval for procurement of long-lead equipment items and minor construction and demolition (CD-3A) that was approved on October 28, 2010, with a Total Project Cost of $75,796 and a CD-4 date of December 7, 2015.

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

This PDS is an update of FY 2010 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	10/20/2008	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2012	10/20/2008	10/20/2009	12/29/2011	10/28/2010	9/30/2011	12/07/2015	NA	NA

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

	CD-3A
FY 2012	10/28/2010

CD-3A – Approve Long-Lead Equipment Procurement and minor construction and demolition

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	12,500	TBD	TBD	TBD	TBD	TBD	TBD
FY 2012	6,655	59,141	65,796	10,000	NA	10,000	75,796

4. Project Description, Justification, and Scope

Project Description

This project is intended to extend the life of Buildings 9212 and 9204-2E at the Y-12 National Nuclear Security Complex. The mission critical equipment that will be upgraded was selected through a risk-informed analysis that was performed by a team of internal and external experts over a two-year period. The team reviewed the conditions of over 50 systems serving the two buildings and selected 18 from the list that were found to be most important to the two buildings safety and operational efficiency.

Justification

Buildings 9212 and 9204-2E are needed to continue NNSA missions at Y-12. The 9212 facility represents the heart of the enriched uranium operations at Y-12. Its process support systems and many of the processes are showing significant age-related deficiencies that have impacted reliability and, in some cases, prevented operation of many of the processes or obtaining desired production capabilities. Many areas of the facility were constructed in the middle 1940s. Many of the process operations originate from the 1960s through the early 1980s and operated in harsh industrial applications and chemical environment with little preventive maintenance. Some upgrades of the support systems have been completed; however, they are reaching operating lives of 20 to 30 years and even more for some systems. Certain major components of the support systems were installed in the 1960s and earlier.

Continued safe operation of 9212 impacts not only the Y-12 operations and missions, but also Defense Program missions involving other key elements of the NNSA Nuclear Weapons Complex. Although the 9204-2E facility is a newer facility, its process support systems are of an equivalent age and are also experiencing age-related failures. Replacement parts are no longer available for several of the failing components causing extended delays in repairing and returning to service failed systems. Some components are failing in a manner that is adversely impacting the 9204-2E structure. Other systems are experiencing failures that are adversely impacting 9204-2E missions.

Building 9204-2E houses operations essential to weapons production, certification, evaluation, life-extension, storage, and retirement. Continued safe operation of Building 9204-2E is essential for continued viability of the on-going weapon stockpile including disassembly, quality evaluation, and life-extension operations, availability of feedstock for 9212 in support of its missions including dismantlement of retired nuclear weapons, and alleviation of current and future material storage constraints.

Scope

Building 9212
Design and install replacement/upgrade for the degraded electrical panels, switchgears, motor control centers, lighting panels, ventilation/exhaust systems which includes fans, motors, 2400 volt breakers, filters housings (upgrade to HEPA filters), and 2 inch and smaller water and steam lines.

Critical Decision 3A approved the procurement and installation of casting furnace, Stack 33, and the breakers for the switchgears.

Building 9204-2E
Replace a Kathabar (large humidifier) needed to maintain humidity within ±2 percent required for manufacturing parts, upgrade monitoring/control systems in the environmental room, and upgrade inefficient/degraded house and machine vacuum systems.

Critical Decision 3A approved the demolition of Kathabar 3350.

	Brief Description
System	**Building 9212 Scope**
Steam distribution system	Replace degraded steam line and pressure-reducing stations in Building 9212.
Cooling Tower water	Dismantle and remove (D&R) final tie-ins and replace at same location; Install new piping and valves in an alternate location. Not included in the scope is the removal of the abandoned equipment.
Motor Control Centers (MCC) 231-1A, 354-1A	D&R the old MCC (231-1A) and install a new Power Panel in a nearby location. D&R the old MCC (354-1A) and Install a new, smaller MCC in an alternate location.
Switchgear 218	D&R the old switchgear and install new switchgear in the same location.
Switchgears 221 / 308	Provide new switchgear breakers and install in the existing locations.
Stack 33 automatic control system	Install a manually operated damper control system to replace the current (inoperable) automatic system.
Casting furnace vacuum system pumps	D&R two of the existing vacuum pumps and install new ones in the same location.
Stacks 110 and 43 fans, motors, and filter housings	Install new equipment in an alternate location, route exhaust flows to the existing stack 110. D&R Stack 43.
Stacks 38, and 48 fans, motors, and filter housings	Install new equipment in an alternate location, combine exhaust flows to a single, combined new stack.
Stack 27 ductwork	Replace ductwork in basement by providing an alternate routing exterior to the building to a combination of new roof exhaust fans and Stack 28, not located in the head house basement. D&R of the existing stack and associated equipment in the basement is not included in the NFRR scope.
	9204-2E Scope
Kathabar system replacement	Upgrade the Kathabar 3350 system.

FY 2012 activities include start of construction.

Funds appropriated under this data sheet may be used to provide independent assessments of the planning and execution of this project. Construction funds appropriated in FY 2012 will be used only after CD-3 approval.

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

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2010	6,655 [a]	6,655	2,666
FY 2011	0	0	3,989
Total, PED	6,655	6,655	6,655
Construction			
FY 2010	5,845	5,845	0
FY 2011	0		5,845
FY 2012	35,387	35,387	8,206
FY 2013	17,909	17,909	26,578
FY 2014	0	0	12,665
FY 2015	0	0	5,847
Total, Construction	59,141	59,141	59,141
TEC			
FY 2010	12,500	12,500	2,666
FY 2011	0	0	9,834
FY 2012	35,387	35,387	8,206
FY 2013	17,909	17,909	26,578
FY 2014	0	0	12,665
FY 2015	0	0	5,847
Total, TEC	65,796	65,796	65,796
Other Project Cost (OPC)			
OPC except D&D			
FY 2009	2855	2855	2855
FY 2010	264	264	264
FY 2011	1,501	1,501	1,501
FY 2012	803	803	803
FY 2013	661	661	661
FY 2014	1,714	1,714	1,714
FY 2015	1,224	1,224	1,224
FY 2016	978	978	978
Total, OPC except D&D	10,000	10,000	10,000
D&D	NA	NA	NA
FY 2010	NA	NA	NA
Total, D&D	NA	NA	NA

[a] $12,500 was originally requested as PED funding in the FY 2010 project data sheet. $5,845 of uncosted balances from PED will be used to procure long-lead items. The DOE Order 413.3B allows placement of long-lead equipment before the overall start of construction is approved.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
OPC			
FY 2009	2,855	2855	2855
FY 2010	264	264	264
FY 2011	1,501	1,501	1,501
FY 2012	803	803	803
FY 2013	661	661	661
FY 2014	1,714	1,714	1,714
FY 2015	1,224	1,224	1,224
FY 2016	978	978	978
Total, OPC	10,000	10,000	10,000
Total Project Cost (TPC)			
FY 2009	2,855	2,855	2,855
FY 2010	12,764	12,764	2,930
FY 2011	1,501	1,501	11,335
FY 2012	36,190	36,190	9,009
FY 2013	18,570	18,570	27,239
FY 2014	1,714	1,714	14,379
FY 2015	1,224	1,224	7,071
FY 2016	978	978	978
Total, TPC	75,796	75,796	75,796

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	6,035	10,500	6,035
Contingency	620	2,000	620
Total, PED	6,655	12,500	6,655
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	47,571	53,296	47,571
Contingency	11,570	TBD	11,570
Total, Construction	59,141	53,296	59,141
Total, TEC	65,796	65,796	65,796
Contingency, TEC	12,190	TBD	12,190
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	3,228	3,228	3,228
Conceptual Design	2,772	513	2,772
Start-Up	2,000	TBD	2,000
Contingency	2,000	TBD	2,000
Total, OPC except D&D	10,000	TBD	10,000
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	10,000	TBD	10,000
Contingency, OPC	2,000	TBD	2,000
Total, TPC	75,796	TBD	75,796
Total, Contingency	14,190	TBD	14,190

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2010	TEC	12,500	0	35,387	17,909	0	0	0	0	65,796
	OPC	4,475	TBD	TBD	TBD	TBD	0	0		TBD
	TPC	16,975	TBD	TBD	TBD	TBD	0	0	0	TBD
FY 2012	TEC	12,500	0	35,387	17,909	0	0	0	0	65,796
	OPC	3,119	1,501	803	661	1,714	1,224	978	0	10,000
	TPC	15,619	1,501	36,190	18,570	1,714	1,224	978	0	75,796

8. Related Operations and Maintenance Funding Requirements

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

(Related Funding requirements)

(dollars in thousands)

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

9. Required D&D Information

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

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

10. Acquisition Approach

Procurement of goods and or services will be accomplished by the Y-12 Management and Operating (M&O) contractor consistent with the approved procedures. The M&O workforce has demonstrated success in planning and executing projects within this challenging, fluctuating environment. To the extent practical and if needed, subcontracts will be fixed lump sums and/or unit rate and competitively bid, allowing, to the maximum practical extent, participation by qualified small, small/disadvantaged, and Historically Underutilized Business Zone businesses. All contracts will be awarded on the basis of best value to the government, price, and other appropriate factors.

09-D-404, Test Capabilities Revitalization-Phase II Project
Sandia National Laboratories, New Mexico
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-3, Approve Start of Construction, approved September 10, 2008, with a Total Project Cost (TPC) of $52,705 and CD-4 of fourth quarter of Fiscal Year (FY) 2013.

This project has a proposed Baseline Change Proposal (BCP) with a TPC of $57,809. As a result, the funding profile for this project is not fully funded. Additionally, funding may be requested in FY 2013 once the BCP is approved.

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

This PDS is an update of FY 2009 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2009	07/03/2001	05/27/2005	3QFY2008	4QFY2008	4QFY2008	4QFY2013	3QFY2010	4QFY2011
FY 2012	07/03/2001	5/27/2005	6/30/2008	9/10/2008	9/10/2008	9/30/2013	3QFY2010	4QFY2012

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

(fiscal year or quarter)

	CD-3A
FY 2009	11/30/2007

CD-3A: Procure long-lead services for machining the gas gun and the 12-inch actuator for the Mechanical Shock Facility

3. Baseline and Validation Status

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2009	6,883	37,700	44,583	7,500	455	7,955	52,538
FY 2012	6,883	42,804	49,687	7,660	462	8,122	57,809

4. Project Description, Justification, and Scope

Project Description

Phase II of the Test Capabilities Revitalization (TCR) project will revitalize the NNSA aged and deteriorated normal and abnormal mechanical environment test capabilities at Sandia National Laboratories (SNL) and 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.

Project Justification

The existing test capabilities are inadequate to reliably support mission requirements. Without revitalization, individual test capabilities will be lost**.** Absent these laboratories and test instrumentation enhancements, the Modeling and Simulation approach to design, development, and qualification will not be achieved. Finally, Sandia will not attract the high quality test engineers and scientists needed to meet NNSA's stockpile stewardship obligations without improved test facilities.

A study conducted in 2000 found that nearly 90 percent of the SNL test equipment and facilities being upgraded through the TCR project were inadequate or marginal, and only 11 percent 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.

The TCR-II mission needs are driven by three overarching and equally important requirements. The first requirement is to maintain 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.

The second requirement is to maintain a capability to support Phase 6.2 and 6.3 LEP development efforts that result in weapon system life extensions, modifications or alterations. 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 Stockpile-to-Target Sequence (STS). The third requirement driving Sandia test capabilities is the need to develop and validate weapon-related models. Sandia has embarked on a comprehensive 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.

In addition, TCR-II is consistent with the nuclear security enterprise needs and is fundamental to the transformation of the Enterprise to be more responsive and cost effective. The requested investments will maintain Sandia's ability to consistently achieve NNSA Defense Programs objectives as the "engineering lab of the Enterprise." The TCR-II is integral to Sandia's role in increasing confidence in the warhead designs and demonstration of a responsive infrastructure that will enable a reduction in total stockpile size.

Project Scope

The planned scope includes revitalizing the following test capabilities:

1. 10,000 foot Rocket Sled Track, includes: a) replacement of the damaged track-side cabling, instrumentation, and AC power boxes; b) renovation of buildings 6736, 6741, 6742, 6743, 6744, 6745, 6746, 6747 and 6751, to restore them to a maintainable condition and removal of substandard buildings from the stockpile; c) upgrade of the target handling area, including the addition of utilities and target preparation slabs, and target demolition areas; d) site improvements to include drainage, grading, and paving along the south 5,000 ft of the track, track repairs in general, and e) add a 195 ft track extension to preclude damaging the tracks during testing.

2. Centrifuge Complex (Building 6526) includes: a) construct a new facility of approximately 2,380 square feet (±10 percent) as an addition to Building 6526 to consolidate work/storage spaces now located in substandard buildings that will be demolished; b) renovate Building 6526 (indoor centrifuge) to include security and code compliance upgrades; c) improvements to the general site and infrastructure to address water and sewer needs, paving, soil contamination (hydraulic fluid), data acquisition/controls, and demolition of substandard buildings, and d) construct a 383 sf (± 10 percent) new oil reserve Building 6523E.

3. Mechanical (Dynamic) Shock Facility (Building 6570) includes: a) upgrade and extension of the 18-inch actuator track to support higher-speed (400-ft/sec) testing; b) upgrade (e.g., foundation) and extension of the 12-inch actuator track to support higher-speed (320-ft/sec) testing; c) addition of a new gas gun assembly with integrated controls and pulse shaping capabilities to provide tailored 1000-ft per sec component testing capabilities; d) addition of a 4,250 sf (±10 percent) Test Arena to support the track extensions, operation of the actuators and air gun, and deployment of advanced measurement/diagnostic technologies for subsystem and component testing; e) renovation of Building 6570 to restore it to a maintainable condition; f) replacement of the dilapidated compressor equipment building (6571), and g) restoration of the pneumatic power system.

4. Vibro-Acoustics and Mass Properties Facility (Building No. 6560 and 6610): includes: a) renovation of Buildings 6560 and 6610 to restore the facilities to a maintainable state. b) construction of 2,400 sf (±10 percent) of additions to Building 6560 to house building electrical and mechanical systems and provide for test article handling and staging; c) provision of site improvements, including grading, drainage, and paving, and d) replacement of aging test equipment, controls, and data acquisition systems.

5. Aero-sciences Facility (Building 865) includes: a) replace compressed air tanks; b) modify flow conditioning for Tri-sonic Wind Tunnel; c) replace heater power and control for Hypersonic Wind

Tunnel, and d) perform minor targeted facilities modifications to address operational efficiency needs.

6. Demolish: a) Buildings: 6571, 6562, 6563, 6520A&B, 6523 and 6523A&C, 6523D, 6524, 7525, 6523CAN, 6730, 6741A&C, 6742F&G, 6743C&D&J, 6751A, and a portion of Building 6560; b) Transportainers (TP)-74, TP-75, and TP-146; c) Storage Structures OSB-19, OSB-00 and OSB-20, and Storage building 9925G, and d) the Oil Cooler and associated footings.

FY 2012 activities will include start of facilities construction.

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

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

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2005	1,589	1,589	8
FY 2006	3,075[a]	3,075	2,184
FY 2007	2,219[b]	2,219	2,102
FY 2008	0	0	1,829
FY 2009	0	0	760
Total, PED (PED no. 05-D-140)	6,883	6,883	6,883
Construction			
FY 2009	3,104	3,104	312
FY 2010	3,200	3,200	2,758
FY 2011	0	0	3,234
FY 2012	25,168	25,168	21,904
FY 2013	11,332	11,332	9,406
FY 2014	0	0	5,190
Total, Construction	42,804	42,804	42,804

[a] Original FY 2006 appropriation was $4,430. This was reduced by $1,355 as a result of a use of prior year balance offset included in the FY 2008 Consolidated Appropriation Act (P.L. 110-161).

[b] Original FY 2007 appropriation was $3,064. This was reduced by $845 as a result of a use of prior year balance offset included in the FY 2008 Consolidated Appropriation Act (P.L. 110-161).

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2005	1,589	1,589	8
FY 2006	3,075	3,075	2,184
FY 2007	2,219	2,219	2,102
FY 2008	0	0	1,829
FY 2009	3,104	3,104	1,072
FY 2010	3,200	3,200	2,758
FY 2011	0	0	3,234
FY 2012	25,168	25,168	21,904
FY 2013	11,332	11,332	9,406
FY 2014	0	0	5,190
Total, TEC	49,687	49,687	49,687
Other Project Cost (OPC)			
OPC except D&D			
FY 2004	1,552	1,552	1,552
FY 2005	1,976	1,976	1,976
FY 2006	1,477	1,477	1,477
FY 2007	819	819	819
FY 2008	227	227	227
FY 2009	223	223	223
FY 2010	248	248	248
FY 2011	378	378	378
FY 2012	225	225	225
FY 2013	535	535	535
FY 2014	0	0	0
Total, OPC except D&D	7,660	7,660	7,660
D&D			
FY 2011	347	347	347
FY 2012	115	115	115
Total, D&D	462	462	462
OPC			
FY 2004	1,552	1,552	1,552
FY 2005	1,976	1,976	1,976
FY 2006	1,477	1,477	1,477
FY 2007	819	819	819
FY 2008	227	227	227
FY 2009	223	223	223
FY 2010	248	248	248
FY 2011	725	725	725
FY 2012	340	340	340
FY 2013	535	535	535
FY 2014	0	0	0
Total OPC	8,122	8,122	8,122

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 2004	1,552	1,552	1,552
FY 2005	3,565	3,565	1,984
FY 2006	4,552	4,552	3,661
FY 2007	3,038	3,038	2,921
FY 2008	227	227	2,056
FY 2009	3,327	3,327	1,295
FY 2010	3,448	3,448	3,006
FY 2011	725	725	3,959
FY 2012	25,508	25,508	22,244
FY 2013	11,867	11,867	9,941
FY 2014	0	0	5,190
Total, TPC	57,809	57,809	57,809

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	6,407	5,853	5,853
Contingency	476	1,030	1,030
Total, PED (PED no. 04D-140)	6,883	6,883	6,883
Construction			
Site Preparation	9,778	7,688	7,688
Equipment	3,103	3,976	3,976
Other Construction	24,923	22,978	22,978
Contingency	5,000	3,058	3,058
Total, Construction	42,804	37,700	37,700
Total, TEC	49,687	44,583	44,583
Contingency, TEC	5,476	4,088	4,088
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning[a]			
Conceptual Design	262	262	262
Start-Up	6,996	6,859	6,859
Contingency	402	379	379
Total, OPC except D&D	7,660	7,500	7,500

[a] The cost for the conceptual design was included in the Phase 1. The project was split in two phases after CD-0 approval.

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
	(dollars in thousands)		
D&D			
D&D	439	433	433
Contingency	23	22	22
Total, D&D	462	455	455
Total, OPC	8,122	7,955	7,955
Contingency, OPC	425	401	401
Total, TPC	57,809	52,538	52,538
Total, Contingency	5,889	4,489	4,489

7. Schedule of Appropriation Requests

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2009 Performance Baseline	TEC	16,359	28,224	0	0	0	0	0	0	44,583
	OPC	6,869	486	225	375	0	0	0	0	7,955
	TPC	23,228	28,710	225	375	0	0	0	0	52,538
FY 2012	TEC	13,187	0	25,168	11,332	0	0	0	0	49,687
	OPC	6,522	725	340	535	0	0	0	0	8,122
	TPC	19,709	725	25,508	11,867	0	0	0	0	57,809

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY FY2013
Expected Useful Life (number of years)	20
Expected Future Start of D&D (fiscal quarter)	3QFY 2033

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	750	750	15,000	15,000
Maintenance	1,500	1,500	30,000	30,000
Total, Operations & Maintenance	2,250	2,250	45,000	45,000

9. Required D&D Information

D&D Information Being Requested	Square Feet
Area of new construction	10,000
Area of existing facility(s) being replaced	10,000
Area of additional D&D space to meet the "one-for-one" requirement	0

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

a) Buildings: 6571, 6562, 6563, 6520A&B, 6523 and 6523A&C, 6523D Pad, 6524, 6523CAN, 6741A&C, 6742F&G, 6743C&D&J, 6747, 6751, Portion of Building 6560;
b) Transportainers (TP)-74, TP-75, and TP-146;
c) Storage Structure OSB-19, OSB-00 and OSB-20, and Storage building 9925G; and
d) the Oil Cooler and associated footings.

The D&D will be accomplished using funds from the Readiness in Technical Base and Facilities, sponsored by Defense Programs, National Nuclear Security Administration. D&D of existing facilities commenced in FY 2010 and will be completed by 4Q FY 2012.

10. Acquisition Approach

Renovations:
Design**:** Firm Fixed-Price (FFP), best value procurement; Architect/Engineer (A/E).
Construction: Well-defined construction packages: competitively bid, FFP, best value procurement. Undefined construction packages: competitively bid, FFP, best value procurement or use existing Time and Material (T&M) contracts.

Decontamination & Demolition:
Design**:** Firm-Fixed Price (FFP), best value procurement; A/E.
Demolition**:** Use existing unit price contracts.
Decontamination**:** Use existing T&M contract.

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

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-3, Approve Start of Construction that was approved on May 15, 2008 with a Total Project Cost (TPC) of $80,578 and CD-4 in the second quarter of FY 2011.

Latest approved Baseline Change was on January 9, 2009, with a TPC of $116,038 and CD-4 of May 2014. The project was placed on hold during FY 2009 at the completion of design activities. In FY 2011, construction is planned to commence. This project must be rebaselined to support the FY 2012 – FY 2016 budget process as a result of the hold and the reduction of all existing uncosted project balances in FY 2010. A Baseline Change Proposal (BCP) will be prepared; as part of the BCP development, a cost estimate and external independent review will be performed to ensure the project is ready to begin construction, as well as update the project's cost and schedule. Upon approval of the BCP, a revised TPC and CD-4 date will be established. The current un-validated estimate is approximately $146 million with a CD-4 in the first quarter of FY 2017. Construction funding being requested under this data sheet is less than the baseline TEC. A request for proposals has been issued and a construction contract should be awarded in the spring of 2011. Based on the actual contract, the baseline will be recalculated.

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

This PDS is an update of the FY 2011 PDS and reflects progress to date.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2008	8/8/2003	7/19/2005	3QFY2007	11/21/2006	4QFY2008	2QFY2011	N/A	N/A
FY 2009	8/8/2003	7/19/2005	4QFY2008	11/21/2006	4QFY2008	3QFY2014	N/A	N/A
FY 2011	8/8/2003	7/19/2005	3QFY2009	11/21/2006	5/15/2008	1QFY2017	N/A	N/A
FY 2012	8/8/2003	7/19/2005	3QFY2009	11/21/2006	5/15/2008	1QFY2017	N/A	N/A

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2008	8,146	68,140	76,286	4,292	N/A	4,292	80,578
FY 2009	8,146	72,334	80,480	4,507	N/A	4,507	84,987
FY 2011	7,948[a]	125,972	133,920	4,292	N/A	4,292	138,212
FY 2012	7,948	134,217	142,165	4,540	N/A	4,540	146,705

4. Project Description, Justification, and Scope

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

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

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

The FY 2012 activities include the continuation of construction work initiated in FY 2011. This work will include the placement of reinforcement steel and concrete as well as the procurement and manufacture of long lead equipment such as blast-doors, frames, and isostatic presses.

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

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

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

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2004	1,200	1,200	0
FY 2005	1,488	1,488	330
FY 2006	1,980	1,980	2,184
FY 2007	3,280[a]	3,280	3,055
FY 2008	0	0	1,755
FY 2009	0	0	624
Total, PED (PED 04-D-103-02)	7,948	7,948	7,948
Construction			
FY 2008	613[b]	613	577
FY 2009	0[c]	0	36
FY 2010	0	0	0
FY 2011	30,000	30,000	5,400
FY 2012	66,960	66,960	50,000
FY 2013	24,800	24,800	40,000
FY 2014	11,844	11,844	14,000
FY 2015	0	0	11,100
FY 2016	0	0	13,104
Total, Construction	134,217	134,217	134,217
TEC			
FY 2004	1,200	1,200	0
FY 2005	1,488	1,488	330
FY 2006	1,980	1,980	2,184
FY 2007	3,280	3,280	3,055
FY 2008	613	613	2,332
FY 2009	0	0	660
FY 2010	0	0	0
FY 2011	30,000	30,000	5,400
FY 2012	66,960	66,960	50,000
FY 2013	24,800	24,800	40,000
FY 2014	11,844	11,844	14,000
FY 2015	0	0	11,100
FY 2016	0	0	13,104
Total, TEC	142,165	142,165	142,165

[a] Original appropriation was $3,478 and was reduced by $198 as a use of prior year balance offset in the FY 2010 appropriation.

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

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

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
FY 2004	860	860	860
FY 2005	281	281	281
FY 2006	158	158	158
FY 2007	200	200	200
FY 2008	150	150	150
FY 2009	20	20	20
FY 2010	700	700	700
FY 2011	170	170	170
FY 2012	200	200	200
FY 2013	200	200	200
FY 2014	300	300	300
FY 2015	400	400	400
FY 2016	553	553	553
FY 2017	348	348	348
Total, OPC Except D&D	4,540	4,540	4,540
D&D	0	0	0
Total OPC			
FY 2004	860	860	860
FY 2005	281	281	281
FY 2006	158	158	158
FY 2007	200	200	200
FY 2008	150	150	150
FY 2009	20	20	20
FY 2010	700	700	700
FY 2011	170	170	170
FY 2012	200	200	200
FY 2013	200	200	200
FY 2014	300	300	300
FY 2015	400	400	400
FY 2016	553	553	553
FY 2017	348	348	348
Total, OPC	4,540	4,540	4,540
Total Project Cost (TPC)			
FY 2004	2,060	2,060	860
FY 2005	1,769	1,769	611
FY 2006	2,138	2,138	2,342
FY 2007	3,480	3,480	3,255
FY 2008	763	763	2,482
FY 2009	20	20	680
FY 2010	700	700	700
FY 2011	30,170	30,170	5,570
FY 2012	67,160	67,160	50,200
FY 2013	25,000	25,000	40,200

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2014	12,144	12,144	14,300
FY 2015	400	400	11,500
FY 2016	553	553	13,657
FY 2017	348	348	348
Total, TPC	146,705	146,705	146,705

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	7,948	7,948	7,122
Contingency	0	0	1,024
Total, PED	7,948[a]	7,948	8,146
Construction			
Site Preparation	800	800	0
Equipment	0[b]	0	7,816
Other Construction	114,891	112,384	51,579
Contingency	18,526	12,788	8,745
Total, Construction	134,217	125,972	68,140
Total, TEC	142,165	133,920	76,286
Contingency, TEC	18,526	12,788	9,769
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	1,166	1,166	1,166
Conceptual Design	355	355	998
Other	364	123	161
Start-Up	1,631	1,631	1,485
Contingency	1,024	1,017	482
Total, OPC except D&D	4,540	4,292	4,292

[a] PED reduced due to the withdrawal of uncosted funds.

[b] The initial plan was for equipment to be government furnished (GFE). The current plan calls for equipment to be included in the construction contract. Therefore, equipment cost is now included in "Other Construction." The increase also reflects actual bids received before the project was deferred, which have been escalated for the current estimate.

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	4,540	4,292	4,292
Contingency, OPC	1,024	1,017	482
Total, TPC	146,705	138,212	80,578
Total, Contingency	19,550	13,805	10,251

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2009	TEC	68,415	0	0	0	0	0	0	0	68,415
Performance	OPC	2,249	1,800	243	0	0	0	0	0	4,292
Baseline	TPC	70,664	1,800	243	0	0	0	0	0	72,707
FY 2010	TEC	50,540	0	0	0	0	0	0	0	50,540
	OPC	1,669	0	0	0	0	0	0	0	1,669
	TPC	52,209	0	0	0	0	0	0	0	52,209
FY 2011	TEC	8,561	30,000	30,359	0	0	0	0	0	68,920
	OPC	1,669	170	300	300	500	500	0	0	3,439
	TPC	10,230	30,170	30,659	300	500	500	0	0	72,359
FY 2012	TEC	8,561	30,000	66,960	24,800	11,844	0	0	0	142,165
	OPC	2,369	170	200	200	300	400	553	348	4,540
	TPC	10,930	30,170	67,160	25,000	12,144	400	553	348	146,705

8. Related Operations and Maintenance Funding Requirements

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

(Related Funding requirements)

(dollars in thousands)

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

9. Required D&D Information

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

Name(s) and site location(s) of existing facility(s) to be replaced: Buildings 12-17, 12-21A, and 12-63. The site currently has approximately additional 19,000 square feet of footprint in various facilities available for demolition.

10. Acquisition Approach

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

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

1. Significant Changes

DOE O 413.3B allows NNSA to request PED funds for use in preliminary design, final design and baseline development. This data sheet currently only contains funds for Transuranic (TRU) Waste Facility Project. The approved Critical Decision (CD) for the TRU Waste Facility Project is CD-1, Approve Alternative Selection and Cost Range that was approved on August 10, 2010, with a preliminary cost range of $71,000 to $124,000 and CD-4 range of FY 2015 to FY 2018. CD-1 approval provides the authorization to begin the use of PED funds for the project Execution Phase.

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

This PDS is an update of the FY 2011 PED PDS.

Agreements on the planning assumptions and final project requirements were reached in the second Quarter of FY 2010 resulting in an additional FY 2012 PED request.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0[a]	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2007	02/07/2006	2QFY 2007	4Q FY 2008	Various	Various	Various	Various	Various
FY 2008	02/07/2006	2QFY 2007	4Q FY 2008	Various	Various	Various	Various	Various
FY 2009	02/07/2006	1Q FY 2008	4Q FY 2009	TBD	TBD	TBD	TBD	TBD
FY 2010	02/07/2006	1Q FY 2009	TBD	TBD	TBD	TBD	TBD	TBD
FY 2011	02/07/2006	3Q FY 2010	TBD	TBD	TBD	TBD	TBD	TBD
FY 2012	02/07/2006	08/10/2010	TBD	TBD[b]	TBD	TBD	TBD	TBD

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

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

[b] Schedules are to be determined. Preliminary CD-4 schedule range is 4Q FY 2015 to 3Q FY 2018.

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2007	7,477	N/A	7,477	N/A	N/A	N/A	N/A
FY 2008	7,477	N/A	7,477	N/A	N/A	N/A	N/A
FY 2009	9,898	N/A	9,898	N/A	N/A	N/A	N/A
FY 2010	19,898	N/A	19,898	N/A	N/A	N/A	N/A
FY 2011	TBD	N/A	TBD	N/A	N/A	N/A	N/A
FY 2012	18,193	N/A	TBD	N/A	N/A	N/A	71,000 – 124,000

4. Project Description, Justification, and Scope

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

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

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

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

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

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

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

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

This project has been cancelled.

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

Fiscal Quarter				Total Estimated Cost (Design Only) ($000)	Preliminary Full Total Estimated Cost Projection ($000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
3Q FY 2010	TBD	TBD	FY2015 – FY2018	18,193	71,000 – 124,000

Fiscal Year	Appropriations	Obligations	Costs
2007	0	0	0
2008	2,452[a]	0	0
2009	7,223	0	0
2010	0	9,312	408
2011	5,000	5,363	11,332
2012	3,518[b]	3,518	4,776
2013	0	0	1,677

The Department of Energy (DOE) signed an Order of Consent ("Consent Order") with the State of New Mexico, effective March 1, 2005. The Consent Order requires DOE to complete a "Fence-to-Fence" cleanup of Los Alamos National Laboratory (LANL) by December 29, 2015. "Fence-to-Fence" means removal and/or remediation of contaminants that reside in the environment at LANL. As part of the Consent Order, the State of New Mexico has identified four Material Disposal Areas (MDAs) in TA-54. The current set of TRU waste storage and process facilities resides in MDA G. The MDA G

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

[b] FY 2012 funding request is for Phase B of the project. The Project will be executed in two phases; Phase A will be for Infrastructure and Site Improvements. Phase B is for Staging and Characterization Facilities. Further descriptions of the two phases are provided in 12-D-301. Phase A design is expected to be completed in 4th Quarter FY 2011 therefore, no additional funds is needed.

will undergo a phased closure, consistent with the Consent Order, to be completed by December 29, 2015. It will not be feasible, practical, or realistic to attempt to keep the TRU facilities operational in the midst of Area G closure activities. Therefore, the TRU waste management capability must be reconstituted at a location outside of the closure boundaries. Closure of MDA G is scheduled to start in FY 2012 and must be completed by December 29, 2015.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2007[a]	0	0	0
FY 2008	2,452[bc]	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	408
FY 2011	5,000	5,363	11,332
FY 2012	3,518	3,518	4,776
FY 2013	0	0	1,677
Total, PED	18,193	18,193	18,193
Construction			
FY 2008	NA	NA	NA
FY 2009	NA	NA	NA
FY 2010	NA	NA	NA
FY 2011	NA	NA	NA
Total, Construction	NA	NA	NA
TEC			
FY 2007	0	0	0
FY 2008	2,452	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	408
FY 2011	5,000	5,363	11,332
FY 2012	3,518	3,518	4,776
FY 2013	0	0	1,677
Total, TEC	18,193	18,193	18,193

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

[b] These PED funds are entirely for the TRU Waste Facility Project at LANL. Construction funding is detailed and requested under the data sheet 12-D-301, TRU Waste Facility Project, LANL.

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

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	NA	NA	NA
FY 2008	NA	NA	NA
FY 2009	NA	NA	NA
Total, OPC except D&D	NA	NA	NA
D&D			
FY 2009	NA	NA	NA
Total, D&D	NA	NA	NA
OPC			
FY 2006	NA	NA	NA
FY 2007	NA	NA	NA
FY 2008	NA	NA	NA
FY 2009	NA	NA	NA
Total, OPC	NA	NA	NA
Total Project Cost (TPC)			
FY 2006	NA	NA	NA
FY 2007	NA	NA	NA
FY 2008	2,452	0	0
FY 2009	7,223	0	0
FY 2010	0	9,312	408
FY 2011	5,000	5,363	11,332
FY 2012	3,518	3,518	4,776
FY 2013	0	0	1,677
Total, TPC	18,193	18,193	18,193

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	16,390	TBD	NA
Contingency	1,803	TBD	NA
Total, PED	18,193	TBD	NA
Construction			
Site Preparation	NA	NA	NA
Equipment	NA	NA	NA
Other Construction	NA	NA	NA
Contingency	NA	NA	NA
Total, Construction	NA	NA	NA
Total, TEC	TBD	TBD	NA
Contingency, TEC	TBD	TBD	NA
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	NA	NA	NA
Conceptual Design	NA	NA	NA
Start-Up	NA	NA	NA
Contingency	NA	NA	NA
Total, OPC except D&D	NA	NA	NA
D&D			
D&D	NA	NA	NA
Contingency	NA	NA	NA
Total, D&D	NA	NA	NA
Total, OPC	NA	NA	NA
Contingency, OPC	NA	NA	NA
Total, TPC	NA	NA	NA
Total, Contingency	NA	NA	NA

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2010	TEC	9,675	0	0	0	0	0	0	0	9,675
	OPC	0	0	0	0	0	0	0	0	0
	TPC	9,675	0	0	0	0	0	0	0	9,675
FY 2011	TEC	9,675	5,000	0	0	0	0	0	0	14,675
	OPC	0	0	0	0	0	0	0	0	0
	TPC	9,675	5,000	0	0	0	0	0	0	14,675
FY 2012	TEC	9,675	5,000	3,518	0	0	0	0	0	18,193
	OPC	0	0	0	0	0	0	0	0	0
	TPC	9,675	5,000	3,518	0	0	0	0	0	18,193

8. Related Operations and Maintenance Funding Requirements

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

(Related Funding requirements)

(dollars in thousands)

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

9. Required D&D Information

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

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

10. Acquisition Approach

Not applicable for PED.

06-D-141, Uranium Processing Facility, Y-12 National Security Complex,
Oak Ridge, Tennessee
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range that was approved on July 25, 2007 with a preliminary cost range of $1,400,000 to $3,500,000. The Management and Operations Contractor, B&W Y-12 recently reported an updated cost range estimate of $4,200,000 to $6,500,000 based on 45 percent design maturity in then-year dollars. The Office of Cost Analysis in DOE also recently completed an independent cost range estimate based on 45 percent design maturity and reported a range estimate within the M&O's range. An additional cost review by the Army Corps of Engineers is underway, and the Department of Defense (DoD) Cost Assessment and Program Evaluation (CAPE) office will conduct an independent cost review in FY 2011. The NNSA will use all independent cost review data when available to inform future budget requests. Consistent with NNSA's increased emphasis on project management rigor, total-project baseline cost and schedule will not be finalized until the total project achieves 90 percent design maturity. Additionally, subproject activities such as advanced procurement and site preparation will not begin until those individual subprojects each achieve 90 percent design maturity and baseline approval.

The project experienced an increase in design cost from $351,149, as shown in the FY 2011 request, to $528,690. The increase was due to multiple factors that have been identified as the overall design execution plan and design has matured. These factors include changes to program requirements, improved estimates to accomplish the design activities, transition of design deliverables from construction to design, and an extension to the overall schedule.

For FY 2012 and the outyears, Construction and Other Project Costs (OPC) are shown as To Be Determined (TBD). Estimates will be finalized once the project has achieved 90 percent design maturity and baseline approval. The Total Project Cost totals include Design. In the FY 2012 request, Construction and OPC and the TPC request will appear on the construction line item in the budget narrative and on supporting tables. As the design matures and cost estimates are refined, the OPC costs may fluctuate, affecting the Construction costs but not changing the TPC.

As represented in the FY 2012 request, Construction and OPC funds will be executed through the line item. Funds will be obligated and recorded in the appropriate object classes (object class 32.0 and 25.4) as defined in Office of Management and Budget Circular A-11.

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

This PDS is an update of the FY 2011 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	12/17/04	07/25/07	2QFY2014	TBD	TBD	TBD	TBD	TBD
FY 2012	12/17/04	07/25/07	2QFY2014	4QFY13	4QFY13	TBD	TBD	TBD

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	351,149	935,000 – 1,604,000	1,124,000 - 1,928,000	276,000 - 472,000	TBD	TBD	1,400,000 – 3,500,000
FY 2012	528,690	3,174,779 – 5,320,310	3,703,000 - 5,849,000	497,000 - 651,000	N/A	497,000 - 651,000	4,200,000 – 6,500,000

4. Project Description, Justification, and Scope

Project Description

The Uranium Processing Facility (UPF) is a major system acquisition that was selected in the Record of Decision for the Complex Transformation Supplemental Programmatic Environmental Impact Statement to ensure the long-term viability, safety, and security of the Enriched Uranium (EU) capability at the Y-12 National Security Complex. The UPF will provide new facilities and equipment to consolidate all EU operations at Y-12 into a single, modern facility with state-of-the-art technologies and safeguards and security concepts and strategies. The goals and objectives of UPF are:

- Ensure the long-term capability and improve the reliability of EU operations through consolidation of facilities;
- Replace deteriorating, end-of-life facilities with a modern manufacturing facility;
- Significantly improve the health and safety posture for workers and the public by replacing administrative controls with engineered controls to manage the risks related to worker safety, criticality safety, fire protection, and environmental compliance;
- Accomplish essential upgrades to security at Y-12 necessary to carry out mission-critical activities and implement the Graded Security Protection Policy; and
- Allow the Y-12 site to accomplish a 90 percent reduction in its high-security footprint.

Justification

The UPF is needed to ensure the long-term viability, safety, and security of the EU capability at Y-12 in Oak Ridge, Tennessee. The UPF will support the Nation's nuclear weapons stockpile, down blending of EU in support of nonproliferation, and provide uranium as feedstock for fuel for naval reactors. Currently these capabilities reside in aged and "genuinely decrepit" facilities as noted by the Perry Commission. There is substantial risk that the existing facilities will continue to age to the point of significant impact to Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors programs. The impacts could result in loss of the U.S. capability to maintain the nuclear weapons stockpile through life extension programs, shutdown of the U.S. Navy nuclear powered fleet due to lack of EU fuel feedstock materials, and impact to the Defense Nuclear Nonproliferation program's ability to reduce the enrichment level of foreign research reactors through supply of lower enrichment fuels manufactured at Y-12. The risk of inadvertent or accidental shutdown of the existing facilities is high. Due to the increasing risk a planned shutdown may be necessary prior to completion and startup of a replacement facility, i.e., the UPF.

When fully functional, the UPF will reduce annual operating costs for Y-12 through the consolidation of facilities, reduced transfer of materials, reduction in emissions and waste management, reduction in protective forces required for security, and efficiency gains resulting from the reduction of the Protected Area footprint.

Scope

The UPF will ultimately consolidate all Category I and II EU operations into a single, modern facility with state-of-the-art technologies and safeguards and security concepts and strategies. The UPF will include facilities and equipment required to accomplish the following EU processing operations:

- Disassembly and dismantlement of returned weapons subassemblies;
- Assembly of subassemblies from refurbished and new components;
- Quality evaluation to assess future reliability of weapons systems in the stockpile;
- Product certification (dimensional inspection, physical testing, and radiography);
- EU metalworking, and
- Chemical processing including conversion of scrap and salvage EU to metal, stable, or disposable forms.

The EU processing operations will be housed in a multi-story, reinforced concrete building. The primary building will be seismically designed to protect the building and its contents as required by the applicable safety analysis. A combination of reinforced concrete, concrete masonry units and metal stud and gypsum board walls will be used for interior partitions. The building provides space for EU processing systems and will also house supporting and administrative areas.

The existing site Perimeter Intrusion Detection and Alarm System (PIDAS) or similar system will be extended to enclose UPF within the same Protected Area as the Highly Enriched Uranium Materials Facility (HEUMF). Additional portals will be included to permit access to the facility. Access and alarm systems will be provided as required to meet the site security requirements.

A Fire Water tie-in line to the HEUMF will also be provided. Systems will be provided to accommodate the transfer of nuclear and non-nuclear materials between UPF and other Y-12 facilities.

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

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

The FY 2011 and FY 2012 activities include ongoing design activities for the facility and associated services and equipment. As part of the project planning activities, the project will be awarding multiple CD-2 and CD-3 packages, possibly as early as FY 2011, for smaller, more manageable, subprojects to manage commitments for cost and schedule. The initial activities may include long-lead procurement of a number of specialty systems and components which involve equipment manufacturer design. Also, early start of site preparation and site utilities may be sought. No funding will be used for these purposes until a subproject performance baseline has been validated and the appropriate milestone in accordance with DOE O 413.3B has been approved.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED[a]			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622[b]	90,622	79,184
FY 2010	94,000	94,000	80,959
FY 2011	115,016	115,016	127,000
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	0	0	0
Total, PED	TBD	TBD	TBD
Construction			
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD

[a] PED for FY 2006 – FY 2009 was appropriated under 06-D-140, Project Engineering & Design, VL.

[b] $2,654 was realigned within 06-D-140, PED, VL from the UPF subproject to the Radioactive Liquid Waste Treatment Facility Upgrade subproject, in FY 2009.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2006	5,000	5,000	0
FY 2007	5,000	5,000	677
FY 2008	38,583	38,583	33,950
FY 2009	90,622	90,622	79,184
FY 2010	94,000	94,000	80,959
FY 2011	115,016	115,016	127,000
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC, except D&D			
FY 2005	12,113	12,113	12,113
FY 2006	7,809	7,809	7,809
FY 2007	10,082	10,082	10,082
FY 2008	11,730	11,730	11,730
FY 2009	14,000	14,000	14,000
FY 2010	20,500	20,500	20,500
FY 2011	25,000	25,000	25,000
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2005	12,113	12,113	12,113
FY 2006	12,809	12,809	7,809
FY 2007	15,082	15,082	10,759
FY 2008	50,313	50,313	45,680
FY 2009	104,622	104,622	93,184
FY 2010	114,500	114,500	101,459
FY 2011	140,016	140,016	152,000
FY 2012	160,194	160,194	152,846
FY 2013	190,000	190,000	TBD
FY 2014	350,000	350,000	TBD
FY 2015	350,000	350,000	TBD
FY 2016	350,000	350,000	TBD
FY 2017	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	464,585	286,149	N/A
Contingency	64,105	65,000	N/A
Total, PED	528,690	351,149	N/A
Construction			
Site Preparation	TBD	TBD	N/A
Equipment	TBD	TBD	N/A
Other Construction	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Total, Construction	TBD	TBD	N/A
Total, TEC	TBD	TBD	N/A
Contingency, TEC	TBD	TBD	N/A
Other Project Cost (OPC)			
OPC except D&D	TBD	TBD	N/A
Conceptual Planning	TBD	TBD	N/A
Conceptual Design	TBD	TBD	N/A
Start-Up	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Total, OPC except D&D	TBD	TBD	N/A
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	TBD	TBD	N/A
Contingency, OPC	TBD	TBD	N/A
Total, TPC	TBD	TBD	N/A
Total, Contingency	TBD	TBD	N/A

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2011	TEC	233,205	115,016	105,400	189,987	270,012	320,000	TBD	TBD	TBD
	OPC	75,030	24,179	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	308,235	139,195	TBD	TBD	TBD	TBD		TBD	TBD
FY 2012	TEC	233,205	115,016	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	76,234	25,000	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	309,439	140,016	160,194	190,000	350,000	350,000	350,000	TBD	TBD

8. Related Operations and Maintenance Funding requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	TBD
Expected Useful Life (number of years)	50
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding requirements)

	Annual Costs		Life cycle costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	138	138	6,900	6,900
Maintenance	32	32	1,600	1,600
Total, Operations & Maintenance	170	170	8,500	8,500

9. Required D&D Information

Area	Square Feet
Area of new construction	400,000
Area of existing facility(s) being replaced	0
Area of additional D&D space to meet the “one-for-one” requirement	600,000

The construction of UPF will add approximately 400,000 square feet of new facilities to the Y-12 footprint and will replace functions in all or parts of the following facilities within the Y-12 Complex:

- Areas of Building 9212 that house EU casting and EU chemical processing operations;
- Areas of Building 9215 and 9998 that house EU metal working, EU machining operations and inspection, and
- Building 9204-2E which houses Assembly, Disassembly/ Dismantlement, Quality Evaluation and Product Certification operations.

The final decontamination and decommissioning (D&D) and demolition of these areas are not considered a part of the UPF project.

The D&D of Building 9212 is included in the Integrated Facility Disposition Project (IFDP) which is currently being proposed by the Environmental Management (EM) Program, DOE Oak Ridge Operations Office, Y-12 and Oak Ridge National Laboratory (ORNL) to dispose of legacy facilities at both Y-12 and the ORNL. Building 9215 and 9998 will not become immediately or completely excess

and available for demolition since it also contains depleted uranium manufacturing facilities; ongoing modernization plans for Y-12 are considering further consolidation of non-Special Nuclear Material (SNM) manufacturing functions and determine the potential for the demolition of Buildings 9215 and 9998 as well as the possible reuse of Building 9204-2E. Accordingly, NNSA does not intend to provide funding for the UPF D&D within the Integrated Construction Program Plan (ICPP).

The project will meet the requirement to eliminate facilities of an equivalent size of UPF as required by the FY 2002 Energy and Water Development Appropriations Bill conference Report (107-258) by using Y-12's "banked excess." Y-12's confirmed "banked excess" balance, which was reported July 28, 2010, is 815,768 square feet. It is anticipated that at the time UPF goes on line the square footage that can be released for future demolition is twice the square footage of the UPF.

10. Acquisition Approach

The Management and Operating (M&O) contractor for Y-12 under the leadership and direction of the Y-12 Site Office Federal Project Director and the Federal Integrated Project Team will be responsible for the execution of the project. The Office of Defense Programs is the responsible NNSA organization. The UPF will be executed under a design-bid-build project delivery system in which the design will be performed by one or more Architect-Engineers (A-E's) and construction will be performed by multiple fixed-price Construction Contractors (CC's). Both the A-E's and CC's will be subcontracted through the M&O contractor.

To the extent practical, subcontracts for Title I & II design services, and Title III engineering services will be competitively bid, cost-type subcontracts that are awarded on the basis of best value-based to the Government.

To the extent practical, all construction work and procurements will be accomplished under competitively bid, fixed-price subcontracts. The CC's will be responsible for execution of all construction including site preparation, building construction, equipment installation and contractor acceptance testing.

The M&O contractor will provide project management, administer the A-E and CC subcontracts, act as the design authority for UPF systems, provide designated Authorities Having Jurisdiction (AHJ) for code interpretations, provide technical support to NNSA for the preparation and review of NEPA documentation, prepare construction and operating permit applications, provide technical and operational support to, and oversight of the A-E and CC manager, and be responsible for all commissioning and start-up activities. The M&O contractor may also do limited design and procurement of unique or specialty type equipment. The M&O contractor will provide maintenance support to the CC as required to accomplish tie-ins to existing plant systems and will provide health and safety oversight of the CC and his subcontractors.

04-D-125, Chemistry and Metallurgy Research Building Replacement (CMRR) Project, Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The CMRR project will construct two principal structures in three project phases. The first phase provides funding to construct the Radiological Laboratory/Utility/Office Building (RLUOB). The second phase, the RLUOB Equipment Installation (REI) effort, procures and installs the Special Facility Equipment (SFE) for the RLUOB. The third phase constructs the Nuclear Facility (NF). This data sheet presents the budget, costs, baselines and activities for each of the three phases separately.

RLUOB: The most recent DOE O 413.3B approved Critical Decision (CD) is a tailored CD-4, Approve Project Closeout, approved on June 24, 2010. The RLUOB was baselined in 2005 with a TPC of $164,000. Construction of the building structure and related systems has been successfully completed; the facility will begin operations at the conclusion of the next phase of the CMRR project (REI).

REI: The most recent DOE O 413.3B approved CD is CD-2/3, Approve Performance Baseline and Start of Construction, approved on July 17, 2009 with a TPC of $199,400 and a CD-4 date of April 30, 2013. This phase of the project is underway. At REI CD-4, the RLOUB will be functionally complete and turned over to operations. Project performance will be assessed with the completion of both RLUOB and REI for a combined total cost of $363,400.

NF: The most recent DOE O 413.3B approved CD is CD-1, Approve Alternative Selection and Cost Range that was approved on May 18, 2005 with a preliminary cost range of $745,000- $975,000 and CD-4 in FY 2013. In April 2010, the CMRR Los Alamos National Security LLC (LANS) contractor completed an updated cost range estimate that reflected 45 percent engineering design maturity, changes in the assumptions for site seismic data, incorporation of lessons learned from previous nuclear projects in nuclear quality assurance construction, resolution of safety concerns identified by the Defense Nuclear Facilities Safety Board, and incorporation of commercial data on material costs and estimated escalation assumptions. The updated LANS cost range estimate based on 45 percent design is between $3,710,000 and $5,860,000, and is under review by NNSA.

The CMRR project team continues to work with the DOE Office of the Chief Financial Officer (CFO), the US Army Corps of Engineers (USACE) and the Department of Defense (DoD) Cost Assessment and Program Evaluation (CAPE) office to provide independent validation of the updated cost range estimate provided by LANS. In September 2010, the USACE completed a review of the methods and procedures used to develop estimates for CMRR design efforts resulting in improvements for transparency in the provided estimate. These improvements are applicable to the overall project estimation effort. The USACE will continue to work with the project team in future reviews. The DoD CAPE office will conduct an independent cost review in FY 2011.

Following reconciliation of the series of independent cost reviews, NNSA will establish an updated cost range estimate that will reflect approximately 45 percent design maturity. Additional reviews and updates to cost range estimates are anticipated as the design continues to mature. Consistent with

NNSA's increased emphasis on project management rigor, baseline cost and schedule will not be finalized until the project achieves 90 percent design maturity.

For FY 2012 and the outyears, Construction and Other Project Costs (OPC) are shown as To Be Determined (TBD). Estimates will be finalized once the project has achieved 90 percent design maturity and baseline approval. In the FY 2012 request, the Total Project Cost totals include both Construction and OPC and the TPC request will appear on the construction line item in the budget narrative and on supporting tables.

As represented in the FY 2012 request, Construction and OPC funds will be executed through the line item. Funds will be obligated and recorded in the appropriate object classes (object class 32.0 and 25.4) as defined in Office of Management and Budget Circular A-11.

A Federal Project Director at the appropriate level has been assigned to this project.
This PDS is an update of the FY 2011 PDS. Section 6 contains the CMRR estimate provided in the FY 2011 PDS as the Previous Total Estimate. The TBD references included in the Current Total Estimate reflect ongoing efforts to refine this estimate and develop a baseline for the Nuclear Facility.

2. Design, Construction, and D&D Schedule

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete[a]
FY 2004	7/16/2002	1QFY2004	3QFY2006		2QFY2004	1QFY2011	N/A	N/A
FY 2005	7/16/2002	3QFY2004	3QFY2007		3QFY2005	3QFY2012	N/A	N/A
FY 2006	7/16/2002	2QFY2005	1QFY2007	4QFY2005	1QFY2006	4QFY2010	N/A	N/A
FY 2007	7/16/2002	9/30/2005	2QFY2007	1QFY2006	1QFY2006	1QFY2013	N/A	N/A
FY 2008	7/16/2002	9/30/2005	2QFY2009	10/21/2005	1QFY2006	1QFY2013	N/A	N/A
FY 2009	7/16/2002	9/30/2005	3QFY2010	TBD	TBD	TBD	N/A	N/A
FY 2010	7/16/2002	9/30/2005	3QFY2011	TBD	TBD	TBD	N/A	N/A

RLUOB Facility

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	7/16/2002	5/18/2005	N/A	10/21/2005	10/21/2005	2/28/2010	N/A	N/A
FY 2012	7/16/2002	5/18/2005	N/A	10/21/2005	10/21/2005	6/24/2010	N/A	N/A

RLUOB Equipment Installation

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	7/16/2002	5/18/2005	12/19/2007	7/17/2009	7/17/2009	4/30/2013	N/A	N/A
FY 2012	7/16/2002	5/18/2005	12/19/2007	7/17/2009	7/17/2009	4/30/2013	N/A	N/A

[a] CMR D&D is not part of the CMRR project scope and will not be initiated until final start-up of CMRR Nuclear Facility operations, currently projected to occur no earlier than FY 2022. Inclusion of CMR D&D in the FY 2012 budget request is premature.

Nuclear Facility

	(fiscal quarter or date)							
	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011	7/16/2002	5/18/2005	12/19/2007	TBD	TBD	TBD	N/A	N/A
FY 2012	7/16/2002	5/18/2005	12/19/2007	4Q FY2012	4Q FY2012	TBD	N/A	N/A

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2004	N/A	N/A	500,000	100,000	N/A	N/A	600,000
FY 2005	N/A	N/A	500,000	100,000	N/A	N/A	600,000
FY 2006	N/A	N/A	750,000	100,000	N/A	N/A	850,000
FY 2007	N/A	N/A	738,097	100,000	N/A	N/A	838,097
FY 2008	65,939	672,158	738,097	100,000	N/A	N/A	838,097
FY 2009	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2010	65,138	TBD	TBD	TBD	N/A	TBD	TBD

RLOUB Facility

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	N/A	159,130	159,130	4,870	N/A	4,870	164,000
FY 2012	N/A	159,130	159,130	4,870	N/A	4,870	164,000

RLUOB Equipment Installation

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	N/A	152,900	152,900	46,500	N/A	46,500	199,400
FY 2012	N/A	152,900	152,900	46,500	N/A	46,500	199,400

Nuclear Facility

(dollars in thousands)

	TEC, PED	TEC, Final Design/ Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	65,138	TBD	TBD	TBD	N/A	TBD	TBD
FY 2012	65,138	3,239,862-5,169,862	3,305,000 – 5,235,000	405,000-625,000	N/A	405,000-625,000	3,710,000 - 5,860,000

4. Project Description, Justification, and Scope

Project Description

The CMRR Project seeks to relocate and consolidate mission critical analytical chemistry, material characterization (AC/MC), and actinide research and development (R&D) capabilities, as well as providing special nuclear material (SNM) storage and large vessel handling capabilities to ensure continuous national security mission support capabilities at LANL.

Justification

In January 1999, the NNSA approved a strategy for managing risks at the CMR Building. This strategy recognized that the 50-year-old CMR Facility could not continue to support its mission 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 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. The CMR capabilities are currently substantially restricted; additionally, in order to reduce costs and risks in operating the aging CMR facility, wing consolidation has occurred. These operational restrictions preclude the full implementation of the level of operations DOE/NNSA requires as documented through the Record of Decision for the 2008 LANL Site-Wide Environmental Impact Statement, and in the 2008 Complex Transformation Supplemental Programmatic Environmental Impact Statement. The CMRR project will relocate mission-critical CMR capabilities at LANL to Technical Area (TA)-55 near the existing Plutonium Facility (Building PF-4). The CMRR Project will also provide for SNM storage capabilities in order to sustain national security missions at LANL, and reduce risks to the public and workers.

Scope

The CMRR project consists of designing, constructing and achieving operational readiness for two discrete facilities to meet the national security missions assigned to LANL.

- RLUOB: Construction of a facility to house laboratory space of approximately 19,500 net square feet capable of handling radiological quantities of SNM; a utility building sized to provide utility services (including chilled and hot water, potable hot/cold water, compressed air, and process gases) for all CMRR facility elements; office space for CMRR workers located outside of perimeter security protection systems; and space for centralized TA-55 training activities. The RLUOB becomes fully functional and operational after the completion of the equipment installation effort for this facility in the REI phase.

- REI: Equipment installation includes gloveboxes, hoods, AC/MC instrumentation, security and communication hardware, and final facility tie-ins and operational readiness/turnover activities. The

performance baseline for the RLUOB Equipment Installation effort was approved on July 17, 2009. Funding for the design, procurement, and installation/construction of the RLUOB equipment installation portion is supported through this data sheet.

- NF: Consists of the design, construction, and operational readiness of approximately 22,500 net square feet of Hazard Category II, Security Category I nuclear laboratory space for analytical chemistry/material characterization and actinide research and development operations. Additionally, this facility will include SNM Storage and space to accommodate large vessel handling. Initial site utilities and construction support activities and all associated Special Facilities Equipment (SFE) for the NF, which includes gloveboxes, hoods, and materials transfer system, will be addressed in the baseline for the NF. The CMRR NF capabilities support virtually all nuclear programs at LANL, including pit certification and surveillance, pit manufacturing, and waste operations. Additionally, the CMRR NF will operate in an integrated fashion with the existing PF-4 facility to incorporate production efficiencies and minimize operating costs. The opportunity to improve performance in both the engineering and construction activities will continue to be evaluated to optimize cost and schedule performance.

In FY 2012, funding will be used for RLUOB equipment fabrication, installation, testing, and acceptance. This work will be physically completed by the end of FY 2012, with a transition to operations by 3Q FY 2013.

In FY 2012, funds will also be used to advance the design of the NF. Safety concerns for the NF previously identified by the Defense Nuclear Facilities Safety Board (DNFSB) were certified as resolved by the two agencies (DNFSB and NNSA) on September 14, 2009. To enable completion of dedicated NF design, design engineering and analysis will continue for a select number of safety components by manufacturers. Since the NF requires such a large effort, during FY 2011 within this Project Data Sheet, the project team is exploring options of dividing some of the work into smaller, more manageable, subprojects. These activities may include procurement/modification of site utilities, construction support infrastructure, and soil improvement work. No funding will be used for these purposes until a project performance baseline has been validated and the appropriate milestone in accordance with DOE O 413.3B has been approved for these smaller projects.

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

Funds appropriated for this project may be used to provide independent assessments and other direct support determined necessary by the FPD for the planning and execution of this project.

5. Financial Schedule

RLUOB Facility

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC (PED and Construction) [a]			
FY 2004	9,941	0	0
FY 2005	39,684	49,625	0
FY 2006	54,450	54,450	15,933
FY 2007	41,933	41,933	29,364
FY 2008	13,122	13,122	50,085
FY 2009	0	0	58,348
FY 2010	0	0	4,393
FY 2011	0	0	1,007
Total, TEC	159,130	159,130	159,130
OPC[b]			
FY 2007	1,153	1,153	0
FY 2008	0	0	1,153
FY 2009	3,717	3,717	2,455
FY 2010	0	0	649
FY 2011	0	0	613
Total, OPC	4,870	4,870	4,870
Total Project Cost (TPC)			
FY 2004	9,941	0	0
FY 2005	39,684	49,625	0
FY 2006	54,450	54,450	15,933
FY 2007	41,933	41,933	29,364
FY 2008	13,122	13,122	51,238
FY 2009	4,870	4,870	60,803
FY 2010	0	0	5,042
FY 2011	0	0	1,620
Total, TPC	164,000	164,000	164,000

[a] PED funding for RLUOB was provided under 03-D-103-01.

[b] OPCs for CMRR were not segregated by project phase until FY 2009. Aggregate OPCs for earlier years are reported with the NF.

RLUOB Equipment Installation (REI)

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED	0	0	0
Total, PED (PED 03-D-103-01)	0	0	0
Final Design			
FY 2007	11,489	11,489	3,109
FY 2008	2,009	2,009	9,260
FY 2009	0	0	1,129
Total, Final Design (TEC 04-D-125)	13,498	13,498	13,498
Total, Design	13,498	13,498	13,498
Construction			
FY 2008	19,604	19,604	0
FY 2009	4,998	4,998	3,941
FY 2010	40,000	40,000	36,122
FY 2011	59,000	59,000	82,084
FY 2012	15,800	15,800	17,255
Total, Construction (TEC 04-D-125)	139,402	139,402	139,402
TEC			
FY 2007	11,489	11,489	3,109
FY 2008	21,613	21,613	9,260
FY 2009	4,998	4,998	5,070
FY 2010	40,000	40,000	36,122
FY 2011	59,000	59,000	82,084
FY 2012	15,800	15,800	17,255
Total, TEC	152,900	152,900	152,900
Other Project Cost (OPC)			
OPC except D&D[a]			
FY 2009	3,079	3,079	5,602
FY 2010	10,700	10,700	8,177
FY 2011	14,100	14,100	14,100
FY 2012	14,123	14,123	14,123
FY 2013	4,498	4,498	4,498
Total, OPC except D&D	46,500	46,500	46,500
D&D			
	0	0	0
Total, D&D	0	0	0

[a] OPCs for CMRR were not segregated by project phase until FY 2009. Aggregate OPCs for earlier years are reported with the NF.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
OPC			
FY 2009	3,079	3,079	5,602
FY 2010	10,700	10,700	8,177
FY 2011	14,100	14,100	14,100
FY 2012	14,123	14,123	14,123
FY 2013	4,498	4,498	4,498
Total, OPC	46,500	46,500	46,500
Total Project Cost (TPC)			
FY 2007	11,489	11,489	3,109
FY 2008	21,613	21,613	9,260
FY 2009	8,077	8,077	10,672
FY 2010	50,700	50,700	44,299
FY 2011	73,100	73,100	96,184
FY 2012	29,923	29,923	31,378
FY 2013	4,498	4,498	4,498
Total, TPC	199,400	199,400	199,400

Nuclear Facility

Total Estimated Cost (TEC)			
PED			
FY 2004	9,500	0	0
FY 2005	13,567	23,067	1,848
FY 2006	27,910	27,910	19,147
FY 2007	14,161	14,161	27,213
FY 2008	0	0	15,079
FY 2009	0	0	-329
FY 2010	0	0	44
FY 2011	0	0	2,136
Total, PED (PED 03-D-103-01)	65,138	65,138	65,138
Final Design	39,406	39,406	15,454
FY 2008	92,196	92,196	45,972
FY 2009	57,000	57,000	62,252
FY 2010	166,000	166,000	104,500
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
Total, Final Design (TEC 04-D-125)	TBD	TBD	TBD
Total, Design			
Construction			
FY 2011	0	0	0
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Construction, (TEC 04-D-125)	TBD	TBD	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2004	9,500	0	0
FY 2005	13,567	23,067	1,848
FY 2006	27,910	27,910	19,147
FY 2007	14,161	14,161	27,213
FY 2008	39,406	39,406	30,533
FY 2009	92,196	92,196	45,643
FY 2010	57,000	57,000	62,296
FY 2011	166,000	166,000	106,636
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	3,712	3,712	1,408
FY 2008	0	0	1,105
FY 2009	1,205	1,205	1,018
FY 2010	1,200	1,200	913
FY 2011	2,500	2,500	2,594
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D	TBD	TBD	TBD
Total, D&D	TBD	TBD	TBD
OPC			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	3,712	3,712	1,408
FY 2008	0	0	1,105
FY 2009	1,205	1,205	1,018
FY 2010	1,200	1,200	913

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2011	2,500	2,500	2,594
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	16,714	7,214	7,214
FY 2005	20,731	30,231	9,012
FY 2006	29,310	29,310	20,211
FY 2007	17,873	17,873	28,621
FY 2008	39,406	39,406	31,638
FY 2009	93,401	93,401	46,661
FY 2010	58,200	58,200	63,209
FY 2011	168,500	168,500	109,230
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD
Overall Project			
Total Estimated Cost (TEC)			
PED[a]			
FY 2004	9,500	0	0
FY 2005	13,567	23,067	1,848
FY 2006	27,910	27,910	19,147
FY 2007	14,161	14,161	27,213
FY 2008	0	0	15,079
FY 2009	0	0	-329
FY 2010	0	0	44
FY 2011	0	0	2,136
Total, PED (PED 03-D-103-01)	65,138	65,138	65,138
Final Design & Construction			
(TEC 04-D-125)			
FY 2004	9,941	0	0
FY 2005	39,684	49,625	0
FY 2006	54,450	54,450	15,933
FY 2007	53,422	53,422	32,473
FY 2008	74,141	74,141	74,799

[a] CMRR RLUOB, SFE and NF have completed preliminary design using PED funds included 03-D-103. Design beyond preliminary will be completed using TEC funds included in 04-D-125.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2009	97,194	97,194	109,390
FY 2010	97,000	97,000	102,767
FY 2011	225,000	225,000	187,591
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, Final Design & Construction (TEC 04-D-125)	TBD	TBD	TBD
TEC			
FY 2004	19,441	0	0
FY 2005	53,251	72,692	1,848
FY 2006	82,360	82,360	35,080
FY 2007	67,583	67,583	59,686
FY 2008	74,141	74,141	89,878
FY 2009	97,194	97,194	109,061
FY 2010	97,000	97,000	102,811
FY 2011	225,000	225,000	189,727
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, TEC[a]	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC Except D&D			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	4,865	4,865	1,408
FY 2008	0	0	2,258
FY 2009	8,001	8,001	9,075
FY 2010	11,900	11,900	9,739
FY 2011	16,600	16,600	17,307
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC Except D&D	TBD	TBD	TBD

[a] Section 9 provides preliminary pre-conceptual cost and schedule information for CMR D&D.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
D&D			
Total, D&D	N/A	N/A	N/A
OPC			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	7,214	7,214	7,214
FY 2005	7,164	7,164	7,164
FY 2006	1,400	1,400	1,064
FY 2007	4,865	4,865	1,408
FY 2008	0	0	2,258
FY 2009	8,001	8,001	9,075
FY 2010	11,900	11,900	9,739
FY 2011	16,600	16,600	17,307
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
FY 2015	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD
Total, OPC Except D&D	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2002	1,665	1,665	1,665
FY 2003	12,174	12,174	12,174
FY 2004	26,655	7,214	7,214
FY 2005	60,415	79,856	9,012
FY 2006	83,760	83,760	36,144
FY 2007	72,448	72,448	61,094
FY 2008	74,141	74,141	92,136
FY 2009	105,195	105,195	118,136
FY 2010	108,900	108,900	112,550
FY 2011	241,600	241,600	207,034
FY 2012	300,000	300,000	TBD
FY 2013	300,000	300,000	TBD
FY 2014	350,000	350,000	TBD
FY 2015	350,000	350,000	TBD
FY 2016	350,000	350,000	TBD
FY 2017	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED & TEC)			
Design	TBD	465,276	TBD
Contingency	TBD	80,000	TBD
Total, Design (PED 03-D-103, TEC 04-D-125)	TBD	545,276	TBD
Construction			
Site Preparation	TBD	300,000	TBD
Equipment	TBD	235,000	TBD
Other Construction	TBD	1,606,823	TBD
Contingency	TBD	702,000	TBD
Total, Construction	TBD	2,843,823	TBD
Total, PED & TEC (PED 03-D-103, TEC 04-D-125)	TBD	3,389,099	TBD
Contingency, TEC	TBD	782,000	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	5,000	TBD
Conceptual Design	TBD	26,497	TBD
Start-Up	TBD	280,404	TBD
Contingency	TBD	94,000	TBD
Total, OPC except D&D	TBD	405,901	TBD
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	TBD	TBD	TBD
Contingency, OPC	TBD	TBD	TBD
Total, TPC	3,710,000-5,860,000	TBD	TBD
Total, Contingency	TBD	TBD	TBD

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2005	TEC	159,130								159,130
RLOUB	OPC	4,068	802							4,870
Baseline	TPC	163,198	802	0	0	0	0	0	0	164,000
FY 2009	TEC	38,100	40,000	59,000	15,800					152,900
REI	OPC	5,602	11,900	12,100	12,400	4,498				46,500
Baseline	TPC	43,702	51,900	71,100	28,200	4,498	0	0	0	199,400
	TEC	159,130								159,130
FY 2010	OPC	4,068	802							4,870
RLOUB	TPC	163,198	802	0	0	0	0	0	0	164,000
	TEC	38,100	40,000	59,000	15,800					152,900
FY 2010	OPC	5,602	11,900	12,100	12,400	4,498				46,500
REI	TPC	43,702	51,900	71,100	28,200	4,498	0	0	0	199,400
	TEC	131,600	57,500	129,000	289,200	300,000	300,000	300,000	1,504,631	3,011,931
FY 2010	OPC	34,481	2,000	2,500	3,000	3,500	4,000	4,550	300,500	354,531
NF	TPC	166,081	59,500	131,500	292,200	303,500	304,000	304,550	1,805,131	3,366,462
	TEC	38,100	40,000	59,000	15,800					152,900
FY 2011	OPC	5,602	11,900	12,100	12,400	4,498				46,500
REI	TPC	43,702	51,900	71,100	28,200	4,498	0	0	0	199,400
	TEC	131,600	57,500	166,000	289,200	300,000	300,000	300,000	1,532,769	3,077,069
FY 2011	OPC	34,481	2,000	2,500	3,000	3,500	4,000	4,550	300,500	354,531
NF	TPC	166,081	59,500	168,500	292,200	303,500	304,000	304,550	1,833,269	3,431,600
	TEC	38,100	40,000	59,000	15,800					152,900
FY 2012	OPC	3,079	10,700	14,100	14,123	4,498				46,500
REI	TPC	41,179	50,700	73,100	29,923	4,498	0	0	0	199,400
	TEC	196,740	57,000	166,000	TBD	TBD	TBD	TBD	TBD	TBD
FY 2012	OPC	34,534	1,200	2,500	TBD	TBD	TBD	TBD	TBD	TBD
NF	TPC	231,274	58,200	168,500	TBD	TBD	TBD	TBD	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY2009[a]
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD
Total, Operations & Maintenance	125,000	N/A	6,300,000	N/A

9. Required D&D Information

As directed by the DOE Acquisition Executive at CMRR CD-0, NNSA and LANL developed a pre-conceptual cost and schedule range for the D&D requirements of the existing CMR Building located at TA-3 during the CMRR conceptual design. The initial pre-conceptual cost estimate range for D&D of the CMR Building is approximately $200,000 - $350,000 (un-escalated FY 2004 dollars) with an associated schedule estimate range of 4-5 years. This information was presented as part of CMRR CD-1 per Secretarial direction issued at CD-0.

During the 3rd Quarter of FY 2005, the D&D of the existing CMR facility received CD-0 as a separate project in conjunction with CMRR CD-1 approval. Current Future Years Nuclear Security Program/Integrated Construction Program Plan (FYNSP/ICPP) funding profiles do not include the funding for the D&D of the CMR Facility. The NNSA will not initiate CMR D&D activities until completion and operational start-up of the CMRR Nuclear Facility, currently projected to be operational well after the FYNSP budget planning window. As such, budget formulation for the CMR D&D project is premature for the FY 2012 budget submission and will not be included in future CMRR Project Data Sheets. The D&D CMR Facility budget will occur upon the establishment of a project number and update of the FYNSP/ICPP in outyear budget cycles.

The CMR D&D commitment is reflected in this CPDS for completeness. However, as planning for this D&D activity matures, NNSA may elect to enable this effort as a separate project, execute it as an element of a wider project or program for a portfolio of D&D activities at LANL, or bundle it with other, yet undefined activities.

[a] This date corresponds to the beneficial occupancy of the RLUOB construction phase only. NF date and related funding requirements are TBD.

Area	Gross Square Feet (gsf)
TA-55-400 (Radiological Laboratory & Office Building) TA-55-440 (Central Utility Building)	187,127 20,998
TA-55-500 (Security Category I/Hazard Category II Nuclear Facility)	395,230 (beneficial occupancy post FY 2018)
TA-3, Building 29 (CMR)	(571,458)
LANL "banked excess" necessary to offset one-for-one requirement	31,897

Name and site location of existing facility to be replaced: CMR (TA-3, Building 29)

When originally conceptualized, the replacement facilities for CMR, the RLUOB and NF, were thought to result in a significantly smaller space than the CMR facilities being replaced. However, owing to needs to meet modern health, waste, safety, and security functions, the combined space for CMRR is now expected to exceed the space for CMR.

The CMRR has incorporated the NNSA Fiscal Year Banking of Excess Facilities Elimination, New Construction and Net Banked Square Footage reporting process that documents, through the DOE Facilities Information Management System (FIMS), the data associated with new construction added by the RLUOB and the NF. The new construction square footage is accounted for once beneficial occupancy is received and is subsequently offset with LANL "banked excess" additional D&D space to meet the "one-for-one" requirement within the FY 2002 Energy and Water and Water Development Appropriations Bill conference report (107-258). Given planned new construction (including CMRR) at LANL and planned excess facility reductions, the excess program is projecting it will have banked well over a million and a half square feet before CMR is demolished. The gross square feet of the CMRR NF is a preliminary estimate and will be updated as the design develops.

10. Acquisition Approach

Design and Construction Management will be implemented by Los Alamos National Security through the LANL Management and Operating Contract. The CMRR Acquisition Strategy is based on procurement strategies specific for each major component of the CMRR project in order to mitigate overall technical and schedule risk. The RLUOB was implemented via LANL-issued design-build subcontract based on performance specifications developed during CMRR Conceptual Design. The SFE associated with the RLUOB and the NF will be implemented via one or more LANL-issued final design-bid-construction contracts. Design-build contracting may also be employed for discrete, well defined, procurements. Other contracting mechanisms may also be utilized that are best suited, after analysis for individual and discrete procurements. The performance baseline will be established upon completion of final design for each portion of the Project. Options are being considered for construction of the main NF structure, but the current plan is to acquire one or more qualified specialty contractors through the site M&O under commercial terms.

Secure Transportation Asset

Overview

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriaton	FY 2011 Request	FY 2012 Request
Secure Transportation Asset (STA)			
Operations and Equipment	144,542	149,018	149,274
Program Direction	96,141	99,027	101,998
Total, Secure Transportation Asset	**240,683**	**248,045**	**251,272**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Equipment				
Operations and Equipment	141,560	142,270	146,865	150,561
Program Direction	107,896	110,599	114,656	117,212
Total, Operations and Equipment	**249,456**	**252,869**	**261,521**	**267,773**

Mission

The STA program safely and securely transports nuclear weapons, weapons components, and special nuclear materials to meet projected Department of Energy (DOE), Department of Defense (DoD), and other customer requirements.

The STA Government Performance and Results Act (GPRA) unit contains two activities that contribute to GPRA Unit Program Number 43 – Program Direction, and Operations and Equipment. Secure Transportation Asset (STA) is a departmental asset. Program Direction provides primarily for the federal agents and the secure transportation workforce. Operations and Equipment provides for STA's transportation service infrastructure that is critical in meeting the stockpile refurbishment and modernization initiatives of the nuclear security enterprise.

The workload requirements support the Administration's approach to promoting the President's initiative for reducing nuclear dangers and pursuing the goal of a world without nuclear weapons. To meet these goals, the STA capacity is maintained to support the workload associated with the dismantlement and maintenance of the nuclear weapons stockpile and the initiative to consolidate the storage of nuclear material. The uncertain threat environment necessitates the implementation of force multiplier technologies and also operational enhancements for domain awareness analysis and front-end reconnaissance. The STA program continues to implement an operationally-focused and intelligence-driven operation, focusing on the detection, deterrence and disruption of potential threats while sustaining capabilities to defend, recapture and recover.

The STA current capacity will meet the planned NNSA Stockpile refurbishment and modernization initiatives and other DOE workload. The NNSA STA Advisory Board (STAAB) will continue to balance and prioritize customer requests against STA capability. In recent years, the nuclear material consolidation campaigns have stressed the STA vehicle fleet, and now STA needs to replace aging

transportation assets to meet shipping requirements. Over the long-term, the STA will maintain the personnel and vehicle resources at sufficient levels to meet the NNSA and DOE shipping requirements with safe and secure transportation. Since its formal creation in 1974, the program has maintained its long legacy of no loss of cargo and no radiological release on any shipment. To support the future needs of the military, the stockpile, and other customers, the program is recapitalizing its transportation infrastructure, ensuring that a consistent and predictable capability is available throughout the decade.

Benefits

STA's primary objective is to serve its customers through the provision of safe and secure shipments. Defense Programs remains the highest priority customer for STA, as these shipments are required to support and maintain the nuclear weapons in the national stockpile. The Stockpile Refurbishments, Life Extensions, various test programs, and nuclear weapon disassemblies depend on the movement of material and weapons on schedule. STA's ability to support the transportation requirements is critical to ensuring the recovery of schedule to advance surety technologies for weapons systems. In addition to this responsibility, the STA must also provide secure transport to support other NNSA programs including Naval Reactors, Defense Nuclear Nonproliferation and Nuclear Counterterrorism Incident Response. The STA program supports the Departmental initiative to convert weapons-grade material to commercial reactor fuel (MOX) by transporting weapon pits and fuel rods. Other DOE programs including Nuclear Energy and Environmental Management are also supported. STA also supports other government programs, including the National Aeronautic and Space Administration, and is involved with the international shipments with Canada, United Kingdom, and France.

A major priority in FY 2012 is the replacement of aging aviation assets. Two DC-9s and one C-9 have reached the end of their effective life-cycle. STA plans to acquire the final of the three 737-like aircraft in FY 2012.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- Safely and securely completed 100 percent of shipments without compromise/loss of nuclear weapons/components or a release of radioactive material;
- Produced and put into operation 22 Support Vehicles (SVs);
- Produced and put into operation 4 Escort Vehicle Heavy Chassis (EVHCs);
- Refurbished 13 Safeguards Transporter (SGT) Trailers;
- Completed one SGT annual systems test and documented results;
- Maintained the Over-the-Road Documented Safety Analysis;
- Conducted 1 Agent Candidate Training (ACT) class to maintain agent-end-strength;
- Completed final OPUS design;
- Revised the Site Safeguards Security Plan (SSSP), incorporating the Active Security Doctrine (ASD) and identifying the variances with the DOE Graded Security Protection Policy (GSP).
- Fielded SIPRNET at each of the federal agent commands;

- Continued SGT refurbishment transition to New Mexico;
- Conducted surveys and assessments to ensure mission, training and operations are executed safely and securely;
- Sold Gulfstream aircraft and successfully applied the funds to procure the first replacement aircraft;
- Maintained the Vulnerability Assessment to include all current and emerging threats, and
- Conducted facility maintenance in accordance with the Ten Year Site Plan requirements.

Major Outyear Priorities and Assumptions

The outyear projections for STA total $1,031,619,000 for FY 2013 through FY 2016. The primary objective of the STA program is to continue completing 100 percent of shipments safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material. In order to support the workload requirements, while maintaining the safety and security of shipments, the STA program will continue vehicle production to support mission requirements. Armored Tractor production will begin in FY 2012 with production activities continuing throughout the Future-Years Nuclear Security Program. Additionally, STA will initiate the design, engineering and fielding of a new Command, Control, Communication, Computer and Cyber (C5) System to replace the current Transportation Command and Control System (TCCS). The STA program also intends to maintain agent manpower between 370 and 390. A predictive transportation planning process balances workload requirements, training, maintenance, and agent quality of life. The mission schedule will provide the capability to support 100-110 unit mission weeks per fiscal year.

Secure Transportation Asset

Operations and Equipment

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Equipment			
Mission Capacity	79,787	84,010	79,641
Security/Safety Capability	27,160	27,001	32,261
Infrastructure and C5 Systems	24,399	23,681	25,997
Program Management	13,196	14,326	11,375
Total, Operations and Equipment	**144,542**	**149,018**	**149,274**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Equipment				
Mission Capacity	69,715	69,033	73,476	72,771
Security/Safety Capability	32,715	32,817	32,923	33,030
Infrastructure and C5 Systems	26,583	27,621	27,411	31,444
Program Management	12,547	12,799	13,055	13,316
Total, Operations and Equipment	**141,560**	**142,270**	**146,865**	**150,561**

Description

Within the STA Operations and Equipment Activity, four subprograms make unique contributions to the GPRA Unit Program Number 43 regarding the safety and security of the nuclear stockpile. These subprograms accomplish the following: (1) Mission Capacity - provides agent candidate training to maintain federal agent workforce, provides mission-essential agent equipment, maintains and expands the transportation fleet and provides aviation services; (2) Security/Safety Capability - develops and implements new fleet technologies, intensifies agent training, and implements Security, Safety, and Emergency Response programs; (3) Infrastructure and C5 systems - provides facility maintenance, support for minor construction projects, and C5 systems; and (4) Program Management - provides corporate functions and business operations that control, assist, and direct secure transport operations.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Mission Capacity	**79,787**	**84,010**	**79,641**

Mission Capacity sustains STA systems capacity through equipment purchases and maintenance of the agent manpower to fulfill the present transportation schedule. This goal includes the following activities: (1) Annually, conduct an Agent Candidate Training class to maintain the agent end-strength and training expertise. Funding supports the recruiting, equipping, and training of federal agent candidates necessary to maintain the work force impacted by attrition**.** (2) Replaces the aging vehicle fleet with newly designed vehicles. Funding supports the design, engineering, testing, and fielding of specialized vehicles, tractors and trailers necessary for successful convoy operations. (3) Maintains readiness posture of the STA fleet. Funding supports the inspection, testing, and maintenance of escort vehicles, secure trailers, armored tractors, mobile communication and defensive systems, as well as the operation of three vehicle maintenance facilities and two mobile electronic maintenance facilities. Funding also supports aviation assets utilized to move agents to staging points to minimize travel time and increase availability to support missions. As the nuclear security enterprise moves toward consolidation of materials and centralization of operations, STA will adapt to new shipping patterns and delivery timelines. Aircraft are also used to support the Limited Life Components Program and emergency response for the Nuclear Emergency Search Team (NEST), Accident Response Group (ARG), Radiological Assistance Program (RAP), and Joint Tactical Operations Team (JTOT). Funding supports the operation and maintenance of three large fixed wing aircraft and one Learjet 35.

FY 2012 activities will support an ACT class, maintain the STA fleet, and purchase a 737-like aircraft and the associated parts, spares and tools required to manage and maintain the acquired aircraft to replace the aging DC-9 fleet.

Security/Safety Capability	**27,160**	**27,001**	**32,261**

Security/Safety Capability activities include the following sub-elements: (1) Identifies, designs, and tests new fleet and mission technologies. Funding supports on-going upgrades and enhancements to the secure trailers, analyzing intelligence data, disseminating information and the application of emerging physical security technology. (2) Sustains and supports intensified training. Funding supports the technical equipment, logistics, curriculum development, and staffing necessary to conduct Special Response Force (SRF), Operational Readiness Testing (ORT), and agent sustainment training. Sustainment training includes, but is not limited to, surveillance detection, tactics, advance driving and firearms and operations. Funds are utilized to obtain off-site training venues that are capable of supporting units or commands, necessary to maintain specialized federal agent skills and qualifications, including weapon and off-road drive training. (3) Maintains security and safety programs. Funding supports liaison with state and local law enforcement organizations; maintaining a human reliability program for federal agents and staff; analyzing security methods and equipment; conducting vulnerability assessments; developing the Site Safeguards and Security Plan (including Force-on-Force validation exercises), and combat simulation computer modeling; and conducting

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

safety studies and safety engineering for the Safety Basis, Nuclear Explosive Safety, and over-the-road safety issues. (4) Maintains the NNSA Emergency Operations Center (EOC) in Albuquerque, NM, as well as trains and exercises the STA response capability. Funding supports the Emergency Management Program to include Federal Agent Incident Command System refresher and sustainment training.

The focus in FY 2012 will be to operate the Transportation Safeguards System (TSS) within the safety and security licenses, based on the updated/upgraded Site Safeguards and Security Plan, and to maintain agent skills to meet the GSP requirements. The STA program will maintain the federal agent force, equipment and training tempo to meet GSP and workload requirements.

Infrastructure and C5 Systems	**24,399**	**23,681**	**25,997**

Infrastructure and C5 Systems provides support to the program goal of expanding, modernizing, and maintaining the physical platforms that the STA operates. This goal includes the following sub-elements: (1) Modernize and maintain classified command and control, communication, computer, and cyber (C5) systems activities to enhance required oversight of nuclear convoys. Funding supports operation of the Transportation Emergency Control Centers; communications maintenance; electronic systems depot maintenance; and the costs for operating relay stations in five states. (2) Expand, upgrade and maintain the STA facilities and equipment in support of federal agents and projected workload. Funding supports the utilities, maintenance, upgrades and required expansion projects for 80 facilities and their respective equipment.

The focus for FY 2012 is to modernize and maintain classified command and control communication, computer and cyber (C5) systems and upgrade and maintain the STA facilities and equipment. The C5 modernization activities will provide secure end-to-end convoy communications beyond line of sight including the integration of VHF, UHF, dual cellular and satellite communications.

Program Management	**13,196**	**14,326**	**11,375**

Program Management provides support to the program goal of creating a well-managed, responsive, and accountable organization by employing effective business practices. This goal includes the following: (1) Provide for corporate functions including validation of the safety and security operations, technical document support and business operations that control, assist, and direct secure transport operations. This includes supplies, equipment and technical document production and regulation. (2) Assess, evaluate and improve work functions and processes. Funding supports quality studies, self-inspections, professional development, routine STA intranet web support, configuration management, and business integration activities.

The focus for FY 2012 is to provide for corporate functions and business operations that control, assist and direct secure transportation operations. The STA program will integrate the National Work Breakdown Structure foundation into existing project list in an effort to provide a consistent

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

framework for planning, programming, budgeting and evaluation within Defense Programs. In addition, STA will conduct a Joint Testing Exercise to evaluate organizational proficiencies in the following five essential TSS system elements: execute intelligence cycle, operational security, command/control/emergency management, federal agent protective force and physical security.

Total, Secure Transportation Asset, Operations and Equipment	**144,542**	**149,018**	**149,274**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Mission Capacity	
The decrease is attributable to the conclusion of the transition of SGT Refurbishment activities to New Mexico and the implementation of an economical and efficient flight operations program. Cost savings are projected as a result of upgrading the aviation fleet and federalizing pilots.	**-4,369**
Security/Safety Capability	
The increase is associated with the following: 1) upgrades in the Emergency Operations Center required to maintain secure communications and interoperability between STA, HQ and emergency response organizations; 2) integration of training activities to enhance management and utilization of resources; 3) increased training activities and required equipment; and 4) maintenance of an effective Human Reliability Program for Federal Agents and staff.	**+5,260**
Infrastructure and C5 Systems	
The increase supports the design, engineering and fielding of a new Command, Control, Communication, Computer and Cyber (C5) System to replace the current Transportation Command and Control System (TCCS) which is reaching its end of life.	**+2,316**
Program Management	
The decrease reflects a shift of funds in support of the C5 initiatives to replace aging systems and funds necessary for maintaining agent skill sets.	**-2,951**
Total Funding Change, Operations and Equipment	**+256**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	85	87	89
Capital Equipment	22,835	23,337	23,850
Total, Capital Operating Expenses	**22,920**	**23,424**	**23,939**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	91	93	95	97
Capital Equipment	24,375	24,911	25,459	26,019
Total, Capital Operating Expenses	**24,466**	**25,004**	**25,554**	**26,116**

Capital expenditures in FY 2010, FY 2011, and FY 2012 include the procurement of a total of three 737-like aircraft and the modification of aircraft cargo doors to meet future payload configurations to replace three aging DC-9s in the STA fleet.

Armored Tractor production activities will increase in FY 2013 once the aircraft procurements and modifications are complete. The Armored Tractor program has reached its life cycle and replacements are necessary to provide safe and secure transportation.

In addition, the remaining capital operating expenditures are associated with procurement of specialized escort vehicles. The vehicles are required to meet projected workload, replacing aging vehicles and initiate a steady state lifecycle. Escort vehicles are critical in providing safe and secure transportation to convoy operations.

Secure Transportation Asset

Program Direction

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Program Direction			
Salaries and Benefits	78,301	83,311	87,307
Travel	7,337	7,746	8,024
Other Related Expenses	10,503	7,970	6,667
Total, Program Direction	**96,141**	**99,027**	**101,998**
Total, Full Time Equivalents	**584**	**637**	**622**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Program Direction				
Salaries and Benefits	91,067	93,307	96,888	99,038
Travel	8,301	8,550	8,806	8,984
Other Related Expenses	8,528	8,742	8,962	9,190
Total, Program Direction	**107,896**	**110,599**	**114,656**	**117,212**
Total, Full Time Equivalents	**649**	**649**	**649**	**649**

Description

The STA Program Direction makes unique contributions to the GPRA Unit Program Number 43 in providing personnel to enhance the safety and security of the nuclear stockpile by: (1) conducting armed escorts of nuclear weapons, material, and components; (2) tracking nuclear convoys and providing emergency response capability; (3) performing staff oversight of three federal agent commands; (4) providing oversight to the design and implementation of classified security technologies; (5) providing critical skills training to the federal agent force and staff; (6) staffing and operating the Training and Logistics Command and conduct of one 21-week training class per year for new agents; and (7) performing administrative and logistical functions for the organization.

The FTEs in FY 2012 are in support of STA's initiatives to efficiently manage the aviation program and a total of 12 pilots will be federalized. The federalization of pilots will begin in FY2011 and is one initiative that is being implemented to enhance the aviation program operations, streamline management, and increase efficiency. The FTEs also support the Federal Agent Force, emergency management, security and aviation programs and all other key elements of the STA mission. The onboard count may not match the FTEs.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Salaries and Benefits	**78,301**	**83,311**	**87,307**

Provides salaries and benefits for the program staff at Albuquerque, NM; Fort Chaffee, AR; and Washington, DC, as well as the federalized pilots, federal agents and support staff at the three federal agent force locations (Albuquerque, NM; Oak Ridge, TN; and, Amarillo, TX). Includes overtime, workmen's compensation, and health/retirement benefits associated with federal agents, secondary positions, and support staff.

Travel	**7,337**	**7,746**	**8,024**

Provides for travel associated with annual secure convoys, training at other federal facilities and military installations, and program oversight.

Other Related Expenses	**10,503**	**7,970**	**6,667**

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 Service requirements such as the Service Center fee, which includes a portion of the security, utilities and other services rendered. Also includes payment for the Department of Energy Common Operating Environment (DOECOE) services.

Total, Program Direction	**96,141**	**99,027**	**101,998**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Salaries and Benefits	
The increase is attributable to the costs associated with the federalizing of the pilots.	**+3,996**
Travel	
The increase supports agent travel costs to attend training at designated sites that support specialized training for units and commands.	**+278**
Other Related Expenses	
The decrease reflects the reduction of Permanent Change of Station (PCS) moves and a shift of funds to travel in support of a Joint Testing Exercise.	**-1,303**
Total Funding Change, Secure Transportation Asset, Program Direction	**+2,971**

Nuclear Counterterrorism Incident Response

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nuclear Counterterrorism Incident Response (Homeland Security)[a]			
Emergency Response (Homeland Security)[a]	140,481	134,092	137,159
National Technical Nuclear Forensics (Homeland Security)[a]	10,227	11,698	11,589
Emergency Management (Homeland Security)[a]	7,726	7,494	7,153
Operations Support (Homeland Security)[a]	8,536	8,675	8,691
International Emergency Management and Cooperation	7,181	7,139	7,129
Nuclear Counterterrorism (Homeland Security)[a]	49,228	64,036	50,426
Total, Nuclear Counterterrorism Incident Response	**223,379**	**233,134**	**222,147**

Outyear Target Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Nuclear Counterterrorism Incident Response				
Emergency Response (Homeland Security)[a]	136,918	138,440	140,098	142,816
National Technical Nuclear Forensics (Homeland Security)[a]	11,694	11,577	11,828	12,274
Emergency Management (Homeland Security)[a]	6,629	6,506	6,694	6,776
Operations Support (Homeland Security)[a]	8,799	8,749	9,000	9,110
International Emergency Management and Cooperation	7,139	7,032	7,276	7,664
Nuclear Counterterrorism (Homeland Security)[a]	48,558	60,376	61,149	63,565
Total, Nuclear Counterterrorism Incident Response	**219,737**	**232,680**	**236,045**	**242,205**

Mission

The Nuclear Counterterrorism Incident Response (NCTIR) program, formerly the Nuclear Weapons Incident Response program, responds to, and mitigates nuclear and radiological incidents worldwide and has a lead role in defending the Nation from the threat of nuclear terrorism.

Benefits

The National Nuclear Security Administration (NNSA) Office of Emergency Operations remains the United States (U.S.) government's primary capability for radiological and nuclear emergency response and for providing security to our Nation from the threat of nuclear terrorism. Through the development, implementation and coordination of programs and systems designed to serve as a last line of defense in the event of a nuclear terrorist incident or other types of radiological accident, the Office of Emergency Operations maintains a high level of readiness for protecting and serving the U.S. and its allies a readiness level that provides the U.S. Government with quickly deployable, dedicated resources capable of responding rapidly and comprehensively to nuclear or radiological incidents worldwide. The NCTIR program is focused on redefining relationships with old partners such as the Federal Bureau of

[a] Office of Management and Budget (OMB) Homeland Security designation.

Investigation (FBI), and strengthening relationships with other newer partners, such as the Department of Homeland Security (DHS). As the need for effective emergency operations activities continues to grow, NCTIR increasingly serves as the Federal Government's comprehensive defense of the Nation against the nuclear terrorism threat.

The NCTIR program functions primarily as a homeland security related activity which also uses its resources and expertise as a unique foreign policy asset for the additional application of international emergency response. Within the NCTIR program, the Emergency Response Homeland Security (HS), Emergency Management HS, National Technical Nuclear Forensics HS, Operations Support HS, International Emergency Management and Cooperation, and Nuclear Counterterrorism HS subprograms each make unique contributions to GPRA Unit Program Number 54.

Emergency Response HS maintains and provides specialized technical expertise in response to nuclear/radiological incidents, including those involving nuclear weapons. These capabilities include immediate situation resolution, longer-term consequence management, and issues relating to human health. These response teams include the Nuclear Emergency Support Team (NEST) and other assets.

Emergency Management HS provides for the comprehensive, integrated emergency planning, preparedness, and response programs throughout the Department's field operations. The program develops and implements specific programs, plans and systems to minimize the impact of emergencies on national security, worker and public safety, and the environment. The program oversees the implementation of emergency management policy, preparedness, and response activities within the NNSA. National Technical Nuclear Forensics HS supports implementation of operations and research and development as well as builds upon nuclear disposition activities already underway, including pre- and post-detonation nuclear forensics.

Operations Support HS activities support Headquarters' emergency response operations through the Headquarters' Watch Office and Operations Centers. Program staffs participate in drills and exercises to improve communication and notification capabilities and procedures. Operations Support HS manages and operates the Headquarters Emergency Communications Network to facilitate unclassified and classified videoconferences in support of Department-wide task forces, meetings/briefings, exercises/drills and all DOE site emergencies. The International Emergency Management and Cooperation (IEMC) program designs, organizes, and conducts training, provides technical assistance, and develops programs, plans and infrastructure to strengthen emergency management systems worldwide.

The Nuclear Counterterrorism (NCT) HS program serves as the premier U.S. Government program regarding Improvised Nuclear Device (IND) and proliferant weapon design and assessment activities. The NCT program provides the necessary analysis of NNSA-specific data needed by other agencies to counter the threat of a terrorist nuclear device or non-stockpile nuclear weapons designs. The NCT program draws on the full range of tools, techniques, and expertise developed within the nuclear weapons design laboratories.

The Nuclear Counterterrorism Incident Response program continues to contribute to the departmental strategic goal of "Securing our Nation: Enhance nuclear security in defense, non-proliferation, nuclear power, and environmental safeguards" through the ongoing and planned international activities to provide consistent emergency plans and procedures, effective early warning and notification of

nuclear/radiological incidents or accidents, and delivery of assistance to an affected nation should an incident/accident occur. Through the IEMC program element, NCTIR is also providing communication and radiation monitoring equipment, technical assistance and training for International Atomic Energy Agency (IAEA) and foreign government emergency programs to address nuclear/radiological incidents and accidents including lost radiological sources. The IEMC supports emergency response cooperative activities bilaterally, multi-laterally and under various international agreements and arrangements and Presidential and Global Initiatives to ensure programs are in place to protect emergency personnel, the public and the environment from the consequences of nuclear/radiological incidents and accidents.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- Deployed multiple field teams to conduct operations for special events and elevated threats including 46 high profile special events and 19 emergency responses around the world in support of Homeland Security, FBI and Department of State; including National Special Security Events, and National Security Events. These events included: State of the Union; Super Bowl; several NASCAR events; Nuclear Security Summit; 2010 Winter Olympics; 2010 World Cup; Central American Games; Marine Corps Marathon; MLB All-Star Game; and New Year's Eve support in various cities.

- Participated in 119 interagency domestic and international counterterrorism exercises and drills, including: Tier 1 National Level Exercise 2010, Marble Challenge (2), and Nuclear Weapons Accident Incident Exercise 2010.

- Participated in Eagle Horizon 2010, a White House-directed interagency continuity exercise.

- Continued support to the FBI of its render safe capability and provided Kit Alpha (diagnostics/RDD/isolation) and training to the cities of Los Angeles and Chicago Bomb Squads. The Kit Alpha is accompanied by a five week training curriculum taught by Emergency Response Personnel in conjunction with FBI and provides advanced detection, mitigation, and delay technology for use against Radiological Dispersal Devices (RDDs) and Improvised Nuclear Devices.

- Continued corrective actions from Pre-Detonation Device (Disposition) exercises which called for extensive modifications to traditional forensic support to the FBI and Device Assessment.

- Continued to support the FBI and the Interagency in the National Technical Nuclear Forensics (NTNF) Post Detonation debris collections capability. Completed and validated interagency CONOPS for Post Detonation debris collections through conduct of exercise Shining Tortoise.

- Finished the installation of the Main Ventilation Fan for G-Tunnel at the Nevada National Security Site. This was an identified Life Safety Issue. The G-Tunnel is used to support Disposition activities in support of the FBI in the NTNF mission.

- Outreach activities continued with the conduct of 6 International Radiological Assistance Program Training for Emergency Response and 5 International Radiation Emergency Medical Training courses; assistance in providing radiation detection equipment, assistance and training to 4 partner nations; exercise assistance with 4 partner countries and 2 international organizations; and training, equipment and in-country technical assistance to South Africa during the World Cup.

- Continued Global Initiative to Combat Nuclear Terrorism (GICNT) support through outreach, interagency, and international efforts designed to improve the capabilities of participant nations for response, mitigation, and investigation of terrorist use of nuclear and radioactive materials. Individual events with the GICNT included exercises in the Netherlands and Kazakhstan; conferences in the United Arab Emirates; and, workshops in Australia, the United Kingdom and Morocco.

- Improved the capability of Triage, a radiological reach-back capability, to provide first responders with expert analysis of detector readings and enhanced hands-on training and workshops.

- Established a formal Nuclear Threat Reduction Channel with the United Kingdom to improve nuclear counterterrorism and nuclear counterproliferation technical collaboration.

- Executed 8 major scientific experiments regarding nuclear materials and threat high explosive configurations and one major render safe experiment against a specified threat device.

- DoD deployed several thousand IED disruptor tools, developed by the NCT program for US and Coalition Forces in Afghanistan.

Major Outyear Priorities and Assumptions

The outyear projections for Nuclear Counterterrorism Incident Response total $930,667,000 for FY 2013 through FY 2016. The focus during this period will be to maintain effectiveness for ensuring required capabilities for a world-wide response to a nuclear or radiological incident and\or accident; Equipment and Training, Render Safe Stabilization Operations, International Emergency Management and Cooperation, and Nuclear Counterterrorism. These initiatives support scientific breakthroughs from Render Safe Research and Development in support of stabilization equipment and training for FBI teams and the continued implementation of international emergency management training and outreach activities to maintain the mission objective of reducing the risk of international nuclear or radiological events through strengthening emergency preparedness and response capabilities worldwide.

The NCTIR outyear budgets will concentrate on the programs that contribute the most to vital national security missions. The program will focus to correct deficiencies surfaced by quarterly evaluation of the readiness performance measure.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Emergency Response (Homeland Security)	**140,481**	**134,092**	**137,159**

The Office of Emergency Response serves as the last line of national defense in the face of a nuclear terrorist incident or other type of radiological accident. The mission is to protect the public, environment, and the emergency responders from terrorist and non-terrorist events by providing a responsive, flexible, efficient, and effective nuclear/radiological emergency response framework and capability for the Nation by applying NNSA's unique technical expertise resident within the Enterprise. The strategic approach for emergency response activities is to ensure a central point of contact and an integrated response to emergencies. Specific attention is focused on providing the appropriate technical response to any nuclear emergency within the Department, the U.S. and abroad. This is accomplished by ensuring that the appropriate infrastructure is in place to provide command, control, communications, and properly organized, trained and equipped response personnel to successfully resolve an emergency event.

▪ **Nuclear Emergency Support Team**	**93,682**	**89,106**	**90,890**

Under the provisions of the Atomic Energy Act of 1954 and Presidential Decision Directives 39 and 62, National Security Presidential Directives (NSPD) 28, NSPD 17/Homeland Security Presidential Directive (HSPD) 4, and NSPD 46/HSPD 15, government agencies are directed to plan for, train, and resource a robust capability to combat terrorism, especially in the area of Weapons of Mass Destruction (WMD). The Nuclear Emergency Support Team (NEST) program provides DOE/NNSA technical assistance to a Lead Federal Agency (LFA), whether it be DHS, FBI, or Department of Defense (DoD), to deal with incidents, including terrorist threats, that involve the use of nuclear materials. The NEST program is comprised of three functional elements which include searching for, rendering safe, and command and control of the assets. Furthermore, there are five primary teams dedicated to the execution of these functions: Accident Response Group (ARG), Radiological Assistance Program (RAP), Nuclear/Radiological Advisory Team (NRAT), Search Response Team (SRT), and Joint Technical Operations Team (JTOT). These teams utilize Radiological Triage for assessment activities. The NEST program has been structured to address threats posed by domestic and foreign terrorists likely to have both the will and means to employ WMD. The NEST response assumes that such an act might occur with little, if any, advanced warning.

Under such circumstances, NEST would respond to assist in the search for, identification, characterization, rendering safe and final disposition of any nuclear weapon or radioactive device. Additionally, NEST has the capability to search for possible additional devices that may have been emplaced. Finally, the NEST Technology Integration program develops innovative equipment and analysis methods for emergency responders.

The Render Safe Research and Development (RS R&D) Program, also part of the NEST program, continues to research technologies that can be used to diagnose, stabilize, and render safe a nuclear

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

device. Currently, the RS R&D portfolio is focused on diagnostic and stabilization technologies. Several technologies developed by the RS R&D Program have been procured by the RSSO program and delivered to the first stabilization team. The RS R&D and RSSO Programs work closely with other government agencies to leverage available technologies and resources.

▪ **Other Assets**	**27,449**	**25,660**	**25,843**

Additional assets provide assistance to local, state and other federal agencies and conduct exercises in response to emergencies involving nuclear/radiological materials in support of States and local jurisdictions. The DOE/NNSA teams work closely with the Federal coordinating agency which is usually the Department of Homeland Security / Federal Emergency Management Agency. DOE also coordinates with the Environmental Protection Agency (EPA)/Nuclear Regulatory Commission (NRC) and other elements within DOE, and provides support to the NEST programs to ensure the safe resolution of an incident and protect public safety and the environment.

- The Aerial Measuring System (AMS) detects and maps radioactive material at an emergency scene to determine contamination levels using fixed wing and rotary aircraft.
- The Atmospheric Release Advisory Capability (ARAC) develops and disseminates predictive dose and deposition plots generated by sophisticated computer models.
- The Federal Radiological Monitoring and Assessment Center (FRMAC)/Consequence Management Teams provide the technical capabilities focused on radiological consequence management to assist and coordinate federal radiological monitoring and assessment activities and effects with DHS, Federal Emergency Management Agency (FEMA), NRC, EPA, DoD, state and local agencies, and others.
- The Radiation Emergency Assistance Center/Training Site (REAC/TS) provides advice and medical consultation for injuries resulting from radiation exposure and contamination and serves as a training facility. REAC/TS operates the Cytogenetic Biodosimetry Laboratory (CBL) that has the capability to perform clinical dose assessments for potentially exposed individuals. The CBL is the only federally funded civilian facility of its kind in the country. Additionally, REAC/TS provides training to the medical community and maintains a database of medical responders trained to treat radiation injuries within the U.S. and abroad.

▪ **Render Safe Stabilization Operations**	**19,350**	**19,326**	**20,426**

The Render Safe Stabilization Operations (RSSO) is working with the FBI to train and equip teams to isolate and stabilize a nuclear device, IND or RDD until the national response assets arrive to render it safe. The RSSO program has deployed an operational capability to one city. Preparations are in place to begin providing, maintaining, and training on stabilization equipment for the second city. RSSO has developed and tested the concept of operations to support the Stabilization Special Agent Bomb Technicians through the use of the NNSA's render safe home teams.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

In FY 2012, the funding requested for Stabilization Operations will facilitate the interchange of information between NCTIR and other agencies, obtain and maintain equipment, develop and train the stabilization field and home teams with the FBI, and deploy the first generation of stabilization equipment to selected FBI teams, thus improving the national emergency response capability and fully integrating this technology with response elements and associated deployed technologies.

National Technical Nuclear Forensics (Homeland Security)	**10,227**	**11,698**	**11,589**

The Office of National Technical Nuclear Forensics (NTNF) provides operational support to Pre-Detonation Device and Post-Detonation technical nuclear forensics program. The NTNF program is a Homeland Security Council (HSC)/National Security Council (NSC) sponsored policy initiative, which aims to establish missions, institutionalize roles and responsibilities and enable operational support for pre-detonation and post-detonation nuclear forensics and attribution programs including training and exercises, equipment purchases and maintenance, logistics, and deployment readiness to support ground sample collection and Deployable Field Laboratory operations. Major program elements include:

- Development and maintenance of the concept of operations, operational plans, and procedures;
- modeling, signatures development, knowledge base and data management;
- support to FBI in collection of pre-detonation device forensics evidence;
- maintenance and improvements to G-Tunnel in support of NTNF;
- support to FBI and DoD in collection, analysis, and evaluation in support of post-detonation TNF;
- support the FBI and interagency in Bulk Analysis of Special Nuclear Materials; and
- training, drills, and exercises.

Emergency Management (Homeland Security)	**7,726**	**7,494**	**7,153**

The Office of Emergency Management develops and implements specific programs, plans, and systems to minimize the impacts of emergencies on worker and public health and safety, the environment, and national security. This is accomplished by promulgating appropriate Departmental requirements and implementing guidance; developing and conducting training and other emergency preparedness activities; supporting readiness assurance activities and participating in interagency activities. The objective is to continue to have a fully implemented and fully integrated Departmental comprehensive emergency management system throughout the Enterprise. In FY 2012, the Office of Emergency Management will conduct six to eight no-notice exercises at DOE/NNSA sites to gauge emergency preparedness.

The Office of NNSA Emergency Management Implementation serves as the single point of contact for implementing and coordinating emergency management policy, preparedness, and response activities

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

with NNSA, including managing and coordinating NNSA field and contractor implementation of emergency management policy.

The Emergency Operations Training Academy (EOTA) is an academically accepted training and development center that remains on the cutting edge of technology and innovation. It is the Office of Emergency Operations point of service for training development and oversight.

The Continuity Program (CP) continues to include responsibility for all of DOE and NNSA and is a HSC/NSC required policy initiative. These programs develop the Headquarters and the field Continuity of Operations and Continuity of Government plans that are updated constantly. Periodic training and exercises are required. The NNSA and DOE continue to participate in major interagency exercises sponsored by DHS on an annual basis. In the FY 2012/FY 2013 timeframe, the CP plans to complete the National Communications System directive (NCS) 3-10 (Federal) communications equipment and training requirements for the national capital region as well as Albuquerque, New Mexico.

Operations Support (Homeland Security)	**8,536**	**8,675**	**8,691**

Emergency Operations Support operates the DOE Emergency Operations Centers and the Emergency Communications Network (ECN). The DOE Headquarters Emergency Operations Center provides the core functions of supporting Departmental command, control, communications, Geographic Information System (GIS) data and situational intelligence requirements for all categories of DOE emergency response situations. The goal of the Emergency Communications Network Program is to provide the DOE/NNSA national emergency response community a world-class, state-of-the-art, high speed, global emergency communications network to support the exchange of classified and unclassified voice, data and video information.

International Emergency Management and Cooperation	**7,181**	**7,139**	**7,129**

The International Emergency Management and Cooperation (IEMC) subprogram develops program plans and infrastructure; provides technical assistance, and designs, organizes, and conducts training to strengthen and harmonize emergency management systems worldwide. Current ongoing cooperation involves more than 80 countries and 10 international organizations with key cooperative activities involving Argentina, Brazil, Canada, Chile, China, Denmark, Finland, France, Iceland, India, Iraq, Israel, Japan, Malaysia, Mexico, Morocco, Norway, Pakistan, Philippines, Russia, Singapore, South Africa, South Korea, Sweden, and Taiwan. The NNSA will continue liaison with, and participate in projects sponsored by, international organizations (IAEA, European Union (EU), North Atlantic Treaty Organization (NATO), Group of 8, (G8), World Health Organization,(WHO), World Meteorological Organization, (WMO), and Arctic Council), exhibiting leadership under assistance and cooperation agreements to provide consistent emergency plans and procedures, effective early warning

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

and notification of nuclear/radiological incidents or accidents, and delivery of assistance to an affected nation should an incident/accident occur.

The IEMC subprogram supports the IAEA in developing and implementing new technical standards and guidance for emergency management affecting all member states (approximately 150 countries). The IEMC is also providing communication and radiation monitoring equipment and technical assistance for the IAEA and foreign government emergency programs to address nuclear and radiological incidents and accidents including lost sources. The subprogram supports emergency response cooperative activities bilaterally, multi-laterally and under various international agreements and arrangements and Presidential and Global Initiatives to ensure programs are in place to protect emergency personnel, the public and the environment from the consequences of nuclear/radiological incidents and accidents. The IEMC conducts emergency drills and exercises involving nuclear facility workers and local and national government counterparts; and develops and conducts training courses for nuclear facility emergency staff and other emergency responders.

The subprogram continues to design, organize and conduct specialized emergency management training courses such as the International Radiological Assistance Program Training for Emergency Response, International Radiation Emergency Medical, Major Public Event, and International Exercise Design/Design Builder; and specialized programs to support worldwide capabilities for atmospheric plume modeling, radiological triage, radiation medical assistance, specialized Maritime operations, and technical assistance and methods and procedures for combating nuclear terrorism.

Specific emergency management activities are ongoing in China, Malaysia, Philippines, South Korea, Thailand, Russia, Kazakhstan, Argentina, Brazil, Chile, Iceland, Morocco and S. Africa. Additionally, the subprogram is working to maximize synergies and ensure integration of emergency management systems and training and emergency response activities with other ongoing NNSA projects involving foreign partners.

Nuclear Counterterrorism (Homeland Security)	**49,228**	**64,036**	**50,426**

The Nuclear Counterterrorism (NCT) program serves as the premier U.S. Government program for technical expertise regarding Improvised Nuclear Devices, as well as, proliferant foreign and non-U.S. stockpile weapon design and assessment activities as they relate to nuclear terrorism, counterproliferation and national render safe activities. The NCT program has developed specialized capabilities within the stockpile-related nuclear weapons design laboratories and production facilities, to provide the necessary analysis, policy support, and contingency planning needed by other agencies to counter the threat of a stolen, modified, or improvised nuclear device. The majority of this budget request is for nuclear materials and high explosives assessment, as well as development and testing of diagnostics and render safe tools. Also, in FY 2012, NCT will be completing analysis of a second series of major render safe experiments in support of the Disablement Capabilities Review.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

This subprogram element enables specialized R&D for technical analysis, equipment, and procedures necessary to maintain the Nation's capabilities for research on non-stockpile nuclear weapons designs; e.g., Improvised Nuclear Devices or Radiological Dispersal Devices and the laboratory analysis of their aftermath. Additionally, this program element will ensure that we will be able to meet the most urgent of DoD requirements in our role for worldwide render safe support. This effort will enhance our capabilities to respond to intelligence requests and maintain operational readiness through acquisition of needed specialized equipment and training of interagency staff on non-stockpile weapons designs, thus decreasing the Nation's risk in the event of a nuclear terrorist strike.

Total, Nuclear Counterterrorism Incident Response	**223,379**	**233,134**	**222,147**

Explanation of Changes

	FY 2012 vs. FY 2011 Request ($000)
Emergency Response (Homeland Security)	
▪ **Nuclear Emergency Support Team**	
This increase reflects reinvestment in some capabilities for First Responder mission requirements which were reduced in the FY 2011 budget request to accommodate necessary program activities within other NCTIR elements.	**+1,784**
▪ **Other Assets**	
This increase reflects reinvestment in mission requirements in the Consequence Management teams, which were reduced slightly in the FY 2011 budget request to accommodate necessary activities within other NCTIR program elements.	**+183**
▪ **Render Safe Stabilization Operations**	
Reflects an increase in program investment for development and continued deployment of first generation equipment for stabilization teams.	**+1,100**
Subtotal, Emergency Response	**+3,067**
National Technical Nuclear Forensics (Homeland Security)	
This decrease reflects reprioritization within NCTIR elements to accommodate increases in higher priority mission requirements.	**-109**
Emergency Management (Homeland Security)	
This decrease reflects reprioritization within NCTIR elements to accommodate increases in higher priority mission requirements.	**-341**
Operations Support (Homeland Security)	
Increases Emergency Operations Centers funding to support required maintenance and operation of the Emergency Communications Network.	**+16**
International Emergency Management and Cooperation	
This decrease is commensurate with the planned profile of funding requirements for international outreach efforts.	**-10**

	FY 2012 vs. FY 2011 Request ($000)
Nuclear Counterterrorism (Homeland Security)	
This decrease results from reallocation within the NCTIR program to accommodate overall program balance and the NCTIR mission within the available resources and the overall needed investment mix. The NCT base program will continue to ensure its mission of reducing the risks of potential INDs. The decrease in this subprogram element scales back the specialized R&D for technical analysis, equipment, and procedures necessary to maintain the Nation's capabilities for research on non-stockpile nuclear weapons designs; e.g., foreign proliferant designs, Improvised Nuclear Devices or Radiological Dispersal Devices and the associated large scale experiments as well as ensuring that we will be able to meet the expectations of DoD in our role for worldwide render safe support.	**-13,610**
Total Funding Change, Nuclear Counterterrorism Incident Response	**-10,987**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	2,924	2,988	3,054
Total, Capital Operating Expenses	**2,924**	**2,988**	**3,054**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	3,121	3,190	3,260	3,332
Total, Capital Operating Expenses	**3,121**	**3,190**	**3,260**	**3,332**

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

Facilities and Infrastructure Recapitalization Program

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Facilities and Infrastructure Recapitalization Program			
Operations and Maintenance (O&M)			
Recapitalization	70,483	79,600	81,980
Infrastructure Planning	6,153	9,400	9,400
Facility Disposition	8,976	5,000	5,000
Subtotal, Operations and Maintenance (O&M)	**85,612**	**94,000**	**96,380**
Construction	9,963	0	0
Total, Facilities and Infrastructure Recapitalization Program	**95,575**	**94,000**	**96,380**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Facilities and Infrastructure Recapitalization Program				
Operations and Maintenance (O&M)				
Recapitalization	86,600	0	0	0
Infrastructure Planning	2,400	0	0	0
Facility Disposition	5,000	0	0	0
Subtotal, Operations and Maintenance (O&M)	**94,000**	**0**	**0**	**0**
Construction	0	0	0	0
Total, Facilities and Infrastructure Recapitalization Program	**94,000**	**0**	**0**	**0**

Mission

The Facilities and Infrastructure Recapitalization Program (FIRP) continues its mission to restore, rebuild and revitalize the physical infrastructure of the nuclear security enterprise. The program funding is utilized to address an integrated, prioritized series of repair and infrastructure projects that significantly increase the operational efficiency and effectiveness of the NNSA nuclear security enterprise sites by focusing on elimination of legacy deferred maintenance. FIRP improves safety and is able to readily respond to changing missions, priorities and decisions affecting both sites and their facilities within the nuclear security enterprise through the implementation of its prioritized project list that targets the highest priority facilities and infrastructure deficiencies first.

Benefits

Within FIRP, four subprograms each make unique contributions to the Government Performance and Results Act (GPRA) Unit Program Number 44. Of the four subprograms, three require funding in FY 2012: Recapitalization, Infrastructure Planning, and Facility Disposition. The Facility Disposition subprogram achieved its initial commitment to fund a cumulative 3,000,000 gross square feet (gsf) for disposition in FY 2008. However, additional facilities continue to be dispositioned as part of FIRP's effort to reduce the deferred maintenance backlog.

FIRP is complementary to the ongoing programmatic base maintenance and infrastructure efforts at NNSA sites. Maintenance and infrastructure are primarily funded by the Readiness in Technical Base and Facilities (RTBF) program and through site overhead allocations to ensure that facilities necessary for immediate programmatic workload activities are sufficiently maintained. FIRP addresses the additional sustained investments above the RTBF base for focused reduction of deferred maintenance to extend facility lifetimes, reduce the risk of unplanned system and equipment failures, increase operational efficiency and effectiveness, allow for the recapitalization of aging facility systems, and remove hazards to workers by improving safety. FIRP works in partnership with RTBF to ensure the facilities and infrastructure of the nuclear security enterprise are restored to an appropriate condition to support the Stockpile Stewardship Program mission, transformation of the Enterprise, and to institutionalize responsible and accountable facility management practices.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- All FIRP line item construction projects were rated as "Green" for cost and schedule by the DOE Office of Engineering and Construction Management (OECM).
- FIRP exceeded its annual target and reached 89 percent of its goal by funding $65.4 million of legacy deferred maintenance for high priority projects in mission critical facilities.
- 08-D-601, Mercury Highway Project at the Nevada National Security Site was successfully completed under budget. Due to favorable construction bids, an additional nine miles was paved, resulting in the reconstruction of the entire Mercury Highway up to Gate 700, where most of the Air Force vehicular traffic enters the base. The remaining $1.652M was reprogrammed and utilized by the Recapitalization subprogram.
- 06-D-601, Electrical Distribution System Upgrade and the 06-D-602, Gas Main and Distribution System Upgrades at Pantex Plant have successfully been completed and put into service. Both projects were completed within the approved baseline schedule and under budget.
- 08-D-602, Potable Water Systems Upgrade and 08-D-603, Steam Plant Life Extension Projects, both at the Y-12 National Security Complex were completed within the approved baseline cost and schedule.
- The Facility Disposition subprogram was reconstituted through the reallocations from the Recapitalization subprogram in order to execute several disposition projects. These include the demolition of excess facilities to enable the reduction of the PIDAS at the Y-12 National Security Complex, the demolition of facilities at Lawrence Livermore National Lab and the Pantex Plant which have exceeded their useful life and are no longer habitable, and to initiate demolition of several TA-18 facilities at Los Alamos National Lab.

Major Outyear Priorities and Assumptions

The outyear projections for FIRP total $94,000,000 (FY 2013). FIRP is a finite program with a Congressionally-mandated end date of FY 2013.

FIRP continues to use a prioritized project listing that enables the program to prioritize and fund legacy deferred maintenance reduction projects that significantly reduce NNSA's deferred maintenance backlog to acceptable levels and support the Stockpile Stewardship Program mission and transformation of the enterprise. FIRP projects improve safety by improving conditions for the maintenance workers and the general laboratory and plant populations.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Recapitalization	**70,483**	**79,600**	**81,980**

Recapitalization funds capital renewal and sustainability projects required to restore the facilities and infrastructure comprising the nuclear security enterprise to an acceptable condition. The subprogram funds projects in accordance with established criteria and priorities that target deferred maintenance reduction and repair (non-programmatic) of facilities and infrastructure. These projects are vital to improving safety and restoring the facilities that accommodate the people, equipment, and material necessary to support scientific research, production, or testing to conduct the Stockpile Stewardship Program, the primary NNSA mission. Recapitalization also includes construction/renovation projects (non-programmatic) that renovate landlord or multi-program facilities, address adaptive reuse (conversion) or alterations to existing facilities, bring existing production and laboratory facilities into compliance with mandated codes and/or standards, or reduce the site landlord's total ownership costs of facilities and infrastructure. FIRP has invested approximately $103,000,000 (FY 2004-FY 2010) in its enterprise-wide Roof Asset Management Program and plans to provide $15,000,000 in FY 2012 through FY 2013 to maintain a corporate approach for the management of NNSA's roofing assets.

Infrastructure Planning	**6,153**	**9,400**	**9,400**

Infrastructure Planning funds planning activities for the upcoming year's Recapitalization projects. Its primary objective is to ensure that projects are adequately planned and designed in advance of project start. This permits the timely use of Recapitalization funds and effective project execution, using a graded approach to meet the requirements of DOE Order 413.3B, "Program and Project Management for the Acquisition of Capital Assets." The subprogram supports: the establishment of Recapitalization project baselines; planning and design for priority general infrastructure projects; contract preparation and other activities necessary to ensure the readiness to obligate and execute funds. Other key activities funded by this subprogram include assessments of the physical condition of the enterprise to aid in the prioritization of deferred maintenance reduction and facility consolidation efforts; and procurement support of small business contracts. The FY 2012 Planning funds will be used to design repairs and refurbishments of mission critical facilities throughout the enterprise. The preponderance of work is in building mechanical and electrical systems, HVACs, chillers and cooling towers, steam pipe repairs, and high voltage electrical distribution upgrades.

Facility Disposition	**8,976**	**5,000**	**5,000**

The Facility Disposition subprogram funds the decontamination, dismantlement, removal and disposal of excess facilities that have been deactivated. This includes facilities that are excess to current and future NNSA mission requirements, and are not contaminated by weapons processes. The subprogram achieved its initial commitment to fund a cumulative 3,000,000 gross square feet (gsf) for disposition in FY 2008. This subprogram was reconstituted in FY 2010 in order to contribute to FIRP achieving a $900,000,000 legacy DM reduction by FY 2013. From a corporate facilities view, an aggressively pursued disposition program is a major component of all successfully

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

executed government, private sector, and academic asset management pursuits. This action restores that capability to NNSA's corporate facilities management activities. The disposition of excess facilities reduces energy consumption, security risks, environment, safety and health hazards, surveillance and maintenance costs, deferred maintenance, and contributes to the realization of a smaller, safer, more secure and less expensive nuclear security enterprise. The FY 2012 Disposition funds will be used to demolish excess utility buildings and structures throughout the Y-12 site, and to disposition various trailers and transportable buildings to clear footprint for a sustainable building project at LANL.

FIRP Construction	**9,963**	**0**	**0**

FIRP Construction funded select utility line item construction projects across the enterprise, which reduced deferred maintenance and resulted in increased efficiencies. FY 2010 funding completed the last project executed under this subprogram.

Total, Facilities and Infrastructure Recapitalization Program	**95,575**	**94,000**	**96,380**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Recapitalization	
The increase reflects funding provided to maintain work at Y-12.	**+2,380**
Infrastructure Planning	
There is no change in the requested amount, which is in alignment with the level of effort required to support up-front planning and design of FY 2013 Recapitalization projects.	**0**
Facility Disposition	
There is no change in funding associated with the disposition of excess facilities.	**0**
Construction	
There is no change in funding associated with line item construction projects.	**0**
Total Funding Change, Facilities and Infrastructure Recapitalization Program	**+2,380**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	29,306	29,951	30,610
Capital Equipment	0	0	0
Total, Capital Operating Expenses	**29,306**	**29,951**	**30,610**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	31,283	31,971	32,674	33,393
Capital Equipment	0	0	0	0
Total, Capital Operating Expenses	**31,283**	**31,971**	**32,674**	**33,393**

Construction Projects[b]

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Unappro-priated Balance
08-D-601, Mercury Highway, NTS [c, d]	17,500	17,500	0	0	0	0
08-D-602, Potable Water System, Y-12	48,906	48,906	0	0	0	0
07-D-253, TA-I Heating Systems Modernization, SNL	52,496	42,533	9,963	0	0	0
06-D-601, Electrical Distribution System Upgrade, PX	16,721	16,721	0	0	0	0
06-D-603, Steam Plant Life Extension Project, Y-12	43,818	43,818	0	0	0	0
Total, Construction			**9,963**	**0**	**0**	

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

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

[c] $1,500,000 of prior-year uncosted balances for 08-D-601, Mercury Highway, Nevada National Security Site was reprogrammed in FY 2009 in order to address funding needs for contractor employee defined-benefit pension plans. The project completed the previously-approved scope under budget and funding was available without impact due to favorable bids and subsequent contract award for the project.

[d] The Mercury Highway project completely successfully and $1,652,725 of the remaining funds were reprogrammed in FY 2010 in order to address legacy deferred maintenance at the Nevada National Security Site.

Site Stewardship

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Site Stewardship			
Operations and Maintenance	63,308	90,478	104,002
Construction	0	15,000	0
Total, Site Stewardship	**63,308**	**105,478**	**104,002**

Outyear and Over Target Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Site Stewardship				
Operations and Maintenance	102,458	175,370	192,488	197,706
Construction	2,241	0	15,000	15,000
Total, Site Stewardship	**104,699**	**175,370**	**207,488**	**212,706**

Mission

The goal of Site Stewardship is to ensure the overall health and viability of specific site-wide infrastructure at NNSA sites to support NNSA, Department of Energy and other national missions, bringing focus on environmental compliance and energy and operational efficiency. The Site Stewardship Operations and Maintenance program is comprised of the Operations and Maintenance and Construction subprograms. Within Operations and Maintenance, Environment Projects and Operations, Nuclear Materials Integration, and the Energy Modernization and Investment Program support environmental compliance and energy and operational efficiency.

Benefits

These activities support the NNSA's mission by ensuring efficient cost effective and common stewardship contributions to the Government Performance and Results Act (GPRA) Unit Program Number 45. The Site Stewardship subprogram elements are essential to ensure the ongoing effective and efficient availability of the nuclear security enterprise to support NNSA, DOE and other national missions. These subprogram elements address regulatory driven requirements, nuclear materials consolidation, and energy and utility modernization and improvements at NNSA sites.

Environmental Projects and Operations is a regulatory driven activity that provides Long-term Stewardship (LTS) once the cleanup mission at an NNSA site has been completed by the Office of Environmental Management.

Nuclear Materials Integration provides focused attention on the consolidation and disposition of specific NNSA nuclear materials and on materials owned by multiple programs and where a single coordinated disposition program is warranted. It also maintains and operates the Nuclear Materials Management and Safeguards System (NMMSS) that is used to track information about accountable nuclear materials at DOE and Nuclear Regulatory Commission (NRC) licensed sites.

Energy Modernization and Investment Program promotes the sustainability of NNSA's enduring facilities and infrastructure and enhances National Security by funding discrete projects across the enterprise that: reduce greenhouse gas (GHG) emissions, increase energy and water efficiency, improve metering, and support High-Performance Sustainable Building (HPSB) compliance in accordance with regulatory requirements, e.g., Energy Policy Act, Energy Independence and Security Act, Executive Orders 13423 and 13514, and DOE Order 430.2B. The program's projects help NNSA save on energy usage and cost.

Assuming approval of CD-0, Approval of Mission Need in FY 2011, the FY 2012 funding request for EMIP would also support $3,000,000 in conceptual design activities for recapitalization or replacement of the NNSA Service Center Facility residing at Kirtland Air Force Base, Albuquerque, New Mexico. The current energy and maintenance intense facility will be replaced with a state of the art environmentally sustainable facility.

Construction supports energy efficiency and site utility upgrade projects. In FY 2011, the Sanitary Effluent Reclamation Facility (SERF) Expansion at the Los Alamos National Laboratory (LANL) will recycle up to 115 million gallons of water annually to avoid discharging to the15 permitted outfall points to meet new EPA limits and reduce total site water usage by that amount per year. The Electrical Infrastructure Sustainment and Modernization Project at Y-12 is scheduled to begin in FY 2013, and additional future projects will be indentified and prioritized at each of the sites across the nuclear security enterprise. These projects will address environmental compliance and energy and operational efficiency.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

Nuclear Materials Integration

- The Nuclear Materials Integration effort to remove, by the end of 2012, security category I/II material from Lawrence Livermore National Laboratory (LLNL) remains on schedule with 80 percent of material packaged and prepared for removal from the LLNL site.

- Surplus Highly Enriched Uranium (HEU) from decommissioned Sandia National Laboratories and Army Proving Ground reactors was consolidated and sent to the Savannah River Site to be down-blended and subsequently made into fuel for commercial nuclear power reactors.

- Acquired 28 Tons of high quality heavy water from the Department of Defense (DoD). In addition to relieving DoD of the cost of disposing of material it no longer needed, this acquisition enables NNSA to establish a reserve and defer the need to establish a capability to produce new material.

Environmental Projects and Operations

- The Kansas City Plant (KCP), Lawrence Livermore National Laboratory, Pantex Plant and Sandia National Laboratories submitted all regulatory documents (monitoring reports, compliance plan reports, progress reports, etc) on time and performed all required monitoring activities.

- Approval was received from the California Department of Toxic Substances Control for LLNL Building 419 RCRA Closure Plan and the planning subcontract was awarded.

- Kansas City completed the interim repair of its 002 storm sewer liner and the cleaning and coating of Polychlorinated Biphenyls contaminated area in the basement of the Main Manufacturing Building.

- The Pantex Plant completed well rehabilitation on the Southeast In-Situ Bioremediation well field and injection is approximately 57 percent complete.

- Sandia National Laboratories replaced and installed three scheduled groundwater monitoring wells at the Chemical Waste Landfill.

Major Outyear Priorities and Assumptions

The current outyear projections for Site Stewardship are $700,263,000 for FY 2013 through FY 2016. Outyear funding will provide for the critical and persistent stewardship needs that support and align the nuclear security enterprise with national mission requirements. The NNSA will continue to promote sustainable operations and support the DOE Strategic Sustainability Performance Plan, *Discovering Sustainable Solutions to Power and Secure America's Future*. The EMIP will remain a key component of NNSA's sustainability strategy to comply with E.O. 13514, E.O. 13423 and regulatory requirements. In FY 2013, the Electrical Infrastructure Sustainment and Modernization Project at Y-12 is scheduled to begin and in 2015, Site Stewardship will continue the program of utility modernization line item projects in the Construction subprogram. Additional future projects will be identified and prioritized at each of the sites across the nuclear security enterprise. Pending further definition of mission need (critical decision-0) and selection of acquisition alternative (critical decision-1), no outyear funding is identified or requested to support the replacement of the NNSA Service Center, Albuquerque, New Mexico.

In addition, NNSA is evaluating the transfer, in FY 2014, of funding responsibilities for waste management facilities at NNSA sites from multiple other funding accounts, primarily Readiness in Technical Base and Facilities (RTBF), to the Site Stewardship program. This transfer will provide enhanced management oversight, clearer financial transparency, permit more stable long term planning and allow for increased responsibility on waste generators to minimize waste production and processing.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Operations and Maintenance	**63,308**	**90,478**	**104,002**
Environmental Projects and Operations	**43,308**	**42,273**	**45,290**

The Environmental Projects and Operations (EPO) subprogram provides for the continuance of Long Term Stewardship (LTS) activities that are regulatory driven to reduce risks to human health and the environment at NNSA sites and adjacent areas through two mechanisms: (1) by operating and maintaining environmental cleanup systems installed by the Office of Environmental Management as part of the Legacy Environmental Cleanup projects at NNSA sites; and (2) performing long term environmental monitoring activities and analyses in a cost-effective manner that assures compliance with federal, state, and local requirements. EPO provides effective oversight of these activities and ensures integration of a responsible environmental stewardship program with the NNSA's stockpile stewardship and nuclear security efforts.

In FY 2012, NNSA is responsible for LTS at five sites: Kansas City Plant, Lawrence Livermore National Laboratory (LLNL) Main Site, LLNL Site 300, Pantex Plant, and Sandia National Laboratories. The EPO subprogram supports LTS regulatory requirements by continuing to treat contaminated groundwater; performing environmental monitoring of surface water, ground water, and soils; operating and maintenance of landfill remedies; and working with EPA regions and various states to meet post-completion regulatory cleanup and reporting requirements. The NNSA, working in concert with other Federal agencies, states, and affected stakeholders, executes its LTS activities in a cost-effective, compliant, and safe manner consistent with end states that support the nuclear enterprise mission.

Nuclear Materials Integration	**20,000**	**41,554**	**33,390**

The Nuclear Materials Integration (NMI) subprogram provides focused attention on the consolidation and disposition of specific NNSA nuclear materials and on material sets owned by multiple programs and where a single coordinated disposition program is warranted. In addition, the subprogram includes the Inactive Actinides program activities that ensures programmatic materials, not in active use, are properly characterized and safely packaged, and that unneeded materials have an appropriate disposition path.

By the end of 2012, security category I/II special nuclear material (SNM) will have been removed from Lawrence Livermore National Laboratory. The packaging and removal of transuranic (TRU) waste generated by the preparation of the LLNL materials, consistent with guidance from the Office of Environmental Management, for dispositioning at the Waste Isolation Pilot Program will be completed in FY 2016.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

In FY 2012, the ongoing inactive actinides program will continue to support the treatment, consolidation and disposition of NNSA special nuclear material (SNM) that is no longer required to support the nuclear security enterprise mission. The FY 2012 activities will include the ongoing treatment and disposition of NNSA materials currently stored at non-NNSA sites including the Idaho National Laboratory and Oak Ridge National Laboratory.

Support will be provided to Department-level planning activities including the identification of material sets with multiple program owners where a centralized and coordinated effort would be the most efficient and effective means of consolidating and dispositioning the material. Consistent with this effort, the Department has transferred programmatic and operational responsibility for the Nuclear Materials Management and Safeguards System (NMMSS) from the Office of Health, Safety and Security to the NNSA's Office of Nuclear Materials Integration. NMMSS, co-managed and funded with the Nuclear Regulatory Commission, is the national system for tracking and accounting for source and special nuclear material that is domestically held and for tracking imports and exports of these materials to and from the U.S. The Department of Energy share of NMMSS funding requirements of $2,221,000 is included in the NMI subprogram starting in FY 2012.

Energy Modernization and Investment Program	**0**	**6,651**	**25,322**

The Energy Modernization and Investment Program (EMIP) implements specific sustainability and energy-savings projects across the nuclear security enterprise to reduce greenhouse gas emissions, improve energy and water efficiency of enduring assets, improve metering, and support High-Performance Sustainable Building (HPSB) compliance. The EMIP directly supports Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management, Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance, DOE orders, and regulatory requirements. The EMIP is a key component of NNSA’s energy management strategy to promote sustainability and reduce energy usage and therefore costs, and complements other funding mechanisms.

The FY 2012 EMIP funding supports priority energy conservation projects that will reduce energy consumption enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA’s energy goals and result in cost savings will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution. Example projects include: energy efficient upgrades to existing facility and utility systems; water conservation measures; installation of advanced meters; and high-efficiency new systems.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Assuming approval of CD-0 (Mission Need) in FY 2011, FY 2012 EMIP funding also supports Other Project Costs (OPC) for next-year energy stewardship projects. This funding would support the completion of a conceptual design report (CDR) on the alternative strategies that will satisfy the Mission Requirements for next-year energy Stewardship projects such as the NNSA Service Center Facility residing at Kirtland Air Force Base, Albuquerque, New Mexico, in accordance with DOE Order 413.3B.

Construction	**0**	**15,000**	**0**

Site Stewardship construction supports energy efficiency and site utility upgrade projects.

Total, Site Stewardship	**63,308**	**105,478**	**104,002**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Operations and Maintenance	
▪ **Environmental Projects and Operations**	
The increase is primarily to provide funds to complete the Resource Conservation and Recovery Act (RCRA) mandated closure of Building 419 at LLNL Livermore Site in FY 2012. In addition, there are minor increases in compliance requirements at LLNL Site 300 and Pantex associated with respective Federal Facility Agreements.	**+3,017**
▪ **Nuclear Materials Integration**	
The net decrease is consistent with program plans, and reflects a ramp down of activities at LLNL associated with the removal of security category I/II special nuclear material which is planned for completion by the end of FY 2012; a planned decrease for the treatment and packaging of NNSA materials at the Idaho National Laboratory, a decrease in other inactive actinide programs, and an increase reflecting the transfer of funding for the Nuclear Materials Management and Safeguards System.	**-8,164**
▪ **Energy Modernization and Investment Program**	
The increase provides funds to execute priority EMIP projects that will save on energy usage and cost, and contribute towards the achievement of NNSA's mandated sustainability and energy conservation goals and includes funding for a conceptual design report on alternative strategies that will satisfy the Mission Requirements for the proposed path forward on the NNSA Service Center Facility.	**+18,671**
Construction	
The SERF project is fully funded in FY 2011 and no additional funding is requested in FY 2012 for line item construction projects.	**-15,000**
Total Funding Change, Site Stewardship	**-1,476**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	1,140	1,165	1,191
Total, Capital Operating Expenses	**1,140**	**1,165**	**1,191**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	1,217	1,244	1,271	1,299
Total, Capital Operating Expenses	**1,217**	**1,244**	**1,271**	**1,299**

Construction Projects

	(dollars in thousands)					
	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Unappro-priated Balance
11-D-601, Sanitary Effluent Reclamation Facility, LANL	15,000	0	0	15,000	0	0
Total, Construction			**0**	**15,000**	**0**	

Outyear Construction Projects

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
16-D-XXX, Substation and Power Grid Upgrade, LANL	0	0	0	15,000
13-D-XXX, Electrical Infrastructure Sustainment & Modernization, Y-12	2,241	0	15,000	0
Total, Construction	**2,241**	**0**	**15,000**	**0**

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

Safeguards and Security

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriations	FY 2011 Request	FY 2012 Request
Safeguards and Security (S&S)			
Defense Nuclear Security (Homeland Security)			
Operations and Maintenance	720,823	667,954	711,105
Construction	49,000	52,000	11,752
Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**
Cyber Security (Homeland Security)	**123,338**	**124,345**	**126,614**
Total, Safeguards and Security	**893,161**	**844,299**	**849,471**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Safeguards and Security (S&S)				
Defense Nuclear Security (Homeland Security)				
Operations and Maintenance	729,795	729,173	756,110	814,967
Construction	0	0	0	0
Total, Defense Nuclear Security	**729,795**	**729,173**	**756,110**	**814,967**
Cyber Security (Homeland Security)	**125,416**	**125,321**	**126,898**	**130,003**
Total, Safeguards and Security	**855,211**	**854,494**	**883,008**	**944,970**

Mission

Safeguards and Security (S&S) is comprised of two Government Performance and Results Act (GPRA) Unit Programs. The Defense Nuclear Security (DNS) program, managed by the National Nuclear Security Administration (NNSA) Associate Administrator for Defense Nuclear Security, provides protection for NNSA personnel, facilities, nuclear weapons, and information from a full spectrum of threats, most notably from terrorism, which has become of paramount concern since the September 11, 2001 attacks. The Cyber Security program, managed by the NNSA Chief Information Officer, provides the requisite guidance needed to ensure that sufficient information management security safeguards are implemented throughout the NNSA enterprise. These program efforts are integrated under NNSA's Chief of Defense Nuclear Security.

The FY 2012 submission provides direct funding for the mission base program for Defense Nuclear Security. Work for Others will continue to fund an allocable share of the base program through full cost recovery. Extraordinary security requirements for Work for Others projects will be a direct charge to those customers. In the FY 2012-2016 Budget Request, Cyber Security activities are all requested as direct funded.

The NNSA Management and Operating contractors have provided estimates for full cost recovery of Defense Nuclear Security activities that support and/or benefit Work for Others customers for FY 2012. The following table provides an estimate of the costs that will be recovered from Work for Other customers.

Estimates of Security Costs Recovered by Defense Nuclear Security

(dollars in thousands)

Site	FY 2010	FY 2011	FY 2012
Kansas City Plant	300	300	201
Lawrence Livermore National Laboratory	3,400	3,400	4,260
Los Alamos National Laboratory	3,939	3,939	3,100
Nevada National Security Site	1,929	1,929	1,987
Pantex Plant	165	165	0
Sandia National Laboratories	16,000	16,000	16,000
Y-12 National Security Complex	0	0	0
Total	25,733	25,733	25,548

The Homeland Security Presidential Directive-12 (HSPD-12) directed the establishment of a common identification standard for Federal employees and contractors. This directive will continue to drive investments in upgrades to the physical security infrastructure and information technology to accept HSPD-12 credentials throughout the NNSA. An HSPD-12 Implementation Plan is being developed and the Defense Nuclear Security, Cyber Security and Office of the Administrator Information Technology programs will continue to support these activities in FY 2012.

Defense Nuclear Security

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropration	FY 2011 Request	FY 2012 Request
Defense Nuclear Security			
Operations and Maintenance (Homeland Security)			
Protective Forces	453,779	414,166	418,758
Physical Security Systems	74,000	73,794	107,636
Information Security	25,300	25,943	30,117
Personnel Security	30,600	30,913	37,285
Materials Control and Accountability	35,200	35,602	34,592
Program Management	83,944	80,311	77,920
Technology Deployment, Physical Security	8,000	7,225	4,797
Graded Security Protection Policy (formerly DBT)	10,000	0	0
Total, Operations and Maintenance (Homeland Security)	**720,823**	**667,954**	**711,105**
Construction (Homeland Security)	49,000	52,000	11,752
Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Defense Nuclear Security				
Operations and Maintenance (Homeland Security)				
Protective Forces	405,145	402,755	417,474	451,148
Physical Security Systems	129,491	130,266	132,872	140,537
Information Security	29,540	30,148	31,406	33,806
Personnel Security	39,063	39,375	39,862	41,205
Materials Control and Accountability	33,206	33,502	34,831	37,412
Program Management	86,706	86,363	92,631	103,527
Technology Deployment, Physical Security	6,644	6,764	7,034	7,332
Total, Operations and Maintenance (Homeland Security)	**729,795**	**729,173**	**756,110**	**814,967**
Construction (Homeland Security)	0	0	0	0
Total, Defense Nuclear Security	**729,795**	**729,173**	**756,110**	**814,967**

Mission

The Defense Nuclear Security program provides protection from a full spectrum of threats, especially terrorism, for NNSA personnel, facilities, nuclear weapons, and information. The Defense Nuclear Security program is a Homeland Security-related activity.

Benefits

The Defense Nuclear Security program makes unique contributions to Government Performance and Results Act Unit Program Number 46 by protecting Department of Energy (DOE) interests from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which may cause unacceptable adverse impacts on national security, program continuity, and the health and safety of employees, the public or the environment.

Annual Performance Results and Targets
The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- The first two NNSA-specific policy letters for Information Security and Physical Protection were signed by the Administrator on July 2, 2010, as part of the Zero-Based Security Review (ZBSR), to eliminate unnecessary costs, improve our ability to develop clear and consistent security requirements, identified enterprise-wide acceptable levels of risk, and maintain the effectiveness of the site-level security program.

- Advanced implementation of a Common Procurement and Equipment Standardization program through establishment of a "Security Commodity Team," consisting of contractor, federal, and union representatives from each NNSA and DOE field site, which will be the mechanism for discussion, research, evaluation, and selection of security equipment to be standardized across the enterprise.

- Completed a year-long effort, as part of the ZBSR, to improve the quality and consistency of the site-level vulnerability assessments by focusing on improving the rigor and formality of the analysis process at each site, working with the sites to identify better and more cost effective security upgrades, and employing risk management in the development of the site security strategy.

- Initiated an effort to implement a Defense Nuclear Security Enterprise Wide Physical Security Technology Management Plan which will address the current infrastructure, modernization, standardization and implementation of all physical security systems, (i.e. access systems, alarm systems, detection/deterrent systems, etc).

- Graded Security Protection Policy Implementation Assistance Visits (GSP-IAV) were conducted at each of the Category I sites, as part of the ZBSR. Peer reviews were also performed by the Department of Defense, the United Kingdom and the Office of Health, Safety and Security. These efforts drove changes in the site protection strategies that have resulted in cost reductions.

Significant Program Shifts
The Office of Health, Safety and Security (HSS) and the National Nuclear Security Administration (NNSA) agreed to transfer the management and operations of the Local Area Network Material Accountability System (LANMAS) to NNSA. The LANMAS is a software application provided by the Office of Health, Safety and Security to DOE and NNSA sites and facilities to use as the core of their nuclear accountability systems. The purpose of the transfer is to locate management of the software in the program office that is the largest user. Since NNSA facilities are direct users of the system, they have a greater knowledge of the enhancements, corrections and upgrades needed for the software, as well as the costs and benefits of funding the enhancements. The NNSA has direct lines of communications with these facilities and a better knowledge of the operational impacts of changes to software design features or platforms. The FY 2012 request reflects this functional transfer.

Major Outyear Priorities and Assumptions

The outyear projections for Defense Nuclear Security total $3,030,045,000 for FY 2013 through FY 2016. The trend through the period allows for maintaining a security protection posture compliant with the 2008 GSP, and will fund physical security system life-cycle replacement initiatives as well as installation of state-of-the-art access control, alarm detection and assessment, and other technologies needed to support the NNSA national security mission.

To improve the efficiency of the NNSA security operation, Defense Nuclear Security will continue its efforts to achieve efficiencies in protective forces across NNSA. Defense Nuclear Security is actively engaged with the inter-agency community to identify, field test and deploy state-of-the-art detection and weapons systems that will lead to more efficient utilization of security police officers. Additionally, greater emphasis will also be placed on using risk acceptance methodologies to understand the relative value of additional security increases and defer investments in areas where the risk of adverse security outcomes are at acceptable levels.

Project 08-D-701, Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II at Los Alamos is fully funded in FY 2012 and is projected to meet the CD-4 completion date in March 2013. There are no new security construction projects projected through 2016.

The Mixed Oxide Fuel Fabrication Facility (MFFF) facility is currently planned to be “operational” in late FY 2015. At this time the “testing and checkout” phase and the Operational Readiness Review will occur and security forces will be involved. These periods will involve testing of systems, and safety and security exercises such as Incident Response Scenarios, where the facility must be secured for evacuation. This will ensure there are the right numbers of posts and patrols to meet the site and facility security plan once the site is fully operational. While these activities occur, Defense Nuclear Security will begin funding site and facility security operations consistent with established costing principles. Defense Nuclear Security will fully fund MFFF security operations in FY 2016 and the outyears as MFFF is currently planned to be fully operational in 1Q FY 2017..

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Operations and Maintenance (Homeland Security)	**720,823**	**667,954**	**711,105**

DNS Operations and Maintenance integrates personnel, equipment and procedures to protect a facility's physical assets and resources against theft, sabotage, diversion, or other criminal acts. Each NNSA site or facility has an approved Site Safeguards and Security Plan (SSSP) or a facility Master Security Plan detailing protection measures and resources needed to safeguard site security interests. The DNS program will: continue to improve security to counter known and projected adversary threat capabilities; manage a focused program to identify and deploy improved physical security systems and equipment; work to improve the integration between personnel (protective forces) and technology capabilities; and address protective force overtime rates. Other initiatives include reducing security overhead costs and addressing life cycle equipment issues. The technology deployment endeavor will work with DOE laboratories and parallel government efforts to deploy technologies that demonstrate promise to improve effectiveness and minimize cost growth.

▪ **Protective Forces**	**453,779**	**414,166**	**418,758**

Funding requested for Protective Forces provides for specialized training and sustains protective forces hired in support of the 2003 DBT and to begin planning activities for implementation of the 2008 GSP policy and Tactical Response Force policy. These forces are a site's primary front-line protection, consisting of armed uniformed officers. Protective Forces are an integral part of a site's security posture, and are trained and practiced in various tactics and procedures to protect site interests.

In FY 2012, the request will allow sites to maintain sufficient protective forces required to meet Departmental protection standards. 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 supported by Vulnerability Assessments, and protection strategies designed to ensure adequate protective force staffing levels, equipment, facilities, training, management and administrative support. Additionally, there will activities to upgrade and modernize training facilities at sites that are protecting Category I special nuclear material. They will be executed as a series of capital equipment or General Plant Projects.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
▪ **Physical Security Systems**	**74,000**	**73,794**	**107,636**

Physical Security Systems provide intrusion detection and assessment capabilities, access controls, and performance testing and maintenance of security systems according to the approved site performance testing plan.

In FY 2012, the request supports a multi-year modernization reinvestment strategy, guided by the Congressionally mandated Physical Security Technology Management Plan (PSTMP). This strategy will fund life-cycle replacement initiatives as well as installation of state-of-the-art access control, alarm detection and assessment, and other technologies needed to support the NNSA national security mission.

▪ **Information Security**	**25,300**	**25,943**	**30,117**

The Information Protection element of the budget includes program management and administration, and maintenance costs associated with: protection and control, planning, training, administrative requirements for maintaining security containers and combination, marking, control systems, operations security, special access programs, technical surveillance countermeasures (TSCM), and classification and declassification.

In FY 2012, the request supports continued reviews and controls at Headquarters and field sites of classified and sensitive information, to ensure proper document marking, storage and protection of information.

▪ **Personnel Security**	**30,600**	**30,913**	**37,285**

Personnel Security encompasses the administrative support to the site clearance process, including processes for security clearance determinations at each site to ensure that individuals are eligible for access to classified information or matter and/or access to or control over special nuclear material or nuclear weapons.

In FY 2012, the request continues this effort, and supports the Human Reliability Program, Control of Classified Visits, Security Awareness Programs, and processing of unclassified visits and assignments by foreign nationals. These funds are not used to support the cost of security clearance investigations by the FBI or OPM. Costs for these activities are borne by the Office of Health, Safety and Security for HQ employees or by the requesting entity for M&O clearances.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
▪ **Materials Control and Accountability**	**35,200**	**35,602**	**34,592**

Materials Control and Accountability (MC&A) provides for the control and accountability of special nuclear material and other accountable nuclear materials through measurements, quality assurance, accounting, containment, surveillance, and physical inventory. This subprogram also includes the Local Area Network Material Accountability System (LANMAS) software application as well as training and operational support provided to DOE and NNSA sites and facilities to use as the core of their nuclear accountability systems. The LANMAS software is used by 16 DOE sites, 8 of which are NNSA sites.

In FY 2012, the request provides for tracking movements of accountable nuclear materials between sites and reporting those movements to a national level tracking system. The request provides for assessment, testing, transfers, verifications and measurements, reconciliation and statistical analyses related to MC&A requirements. The FY 2012 request also reflects the functional transfer of the management and operations of the Local Area Network Material Accountability System (LANMAS) from HSS to NNSA.

▪ **Program Management**	**83,944**	**80,311**	**77,920**

Program Management provides direction, oversight and administration, planning, training, and development for security programs in these areas: Security Program Planning, Annual Operating Plans (AOPs), Site Security Plans and Site Safeguards and Security Plans, Vulnerability Analysis, Performance Testing and Assurance activities, Security Incident and Reporting Management, Surveys and Self-Assessments, activities related to deviation requests, Control of Security Technology Transfer Activities, and Facility Clearance and Foreign Ownership, Control or Influence (FOCI) activities.

In FY 2012, the request provides for the assessment of security implementation efforts through the review of updated security plans and performance testing, review of vulnerability assessments, and revised threat and vulnerability analysis. To formalize the process, a detailed Program Management Plan, including annual performance goals and baselines for each site's security program, is in place.

▪ **Technology Deployment, Physical Security**	**8,000**	**7,225**	**4,797**

This effort will identify and facilitate the deployment of security technology to address both short- and long-term solutions to specific physical security and MC&A needs at NNSA sites.

In FY 2012, the request ensures focus on promising, emerging technologies that will provide operational efficiencies for the NNSA security program.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
▪ **Graded Security Protection Policy (formerly Design Basis Threat)**	**10,000**	**0**	**0**

GSP policy funding provided for implementation of the 2008 GSP policy in accordance with approved implementation plans. The FY 2010 Appropriation included $10,000,000 for security upgrades promulgated in the 2004 DBT Special Annex letter and incorporated into the 2008 Graded Security Protection Policy. Funding to continue GSP upgrades has been integrated into functional categories.

Construction	**49,000**	**52,000**	**11,752**

The Construction program includes the cost of new and ongoing line-item construction projects that support the safeguards and security mission within the nuclear security enterprise.

FY 2012 funding of $11,752,000 supports the construction phase of the Nuclear Materials Safeguards and Security Upgrades (NMSSUP) II project, 08-D-701, at the Los Alamos National Laboratory.

Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Operations and Maintenance (Homeland Security)	
▪ **Protective Forces**	
The increase is to upgrade and modernize training facilities at sites that are protecting Category I special nuclear material. They will be executed as a series of capital equipment or General Plant Projects. The increase will be partially offset by the continued efficiencies identified through the DNS Zero-Based Security review and in response to the Deputy Secretary's Security Reform Initiative, both which seek to streamline security required using cost-benefit analyses and the acceptance of risk.	**+4,592**
▪ **Physical Security Systems**	
The increase will be used to fund initiatives identified in the Physical Security Technology Management Plan for life-cycle replacement as well as installation of state-of-the art access control, alarm detection and assessment, and other technologies needed to support the NNSA national security mission. These upgrades are needed primarily at sites protecting Category I special nuclear material. They will be executed as a series of capital equipment or General Plant Projects, and not as a single line item, as originally projected.	**+33,842**
▪ **Information Security**	
The increase implements a more formalized information protection program, including enhanced procedures for documentation, and centralized storage of classified and sensitive information.	**+4,174**
▪ **Personnel Security**	
The level of effort remains unchanged for processing of clearances, granting access authorizations for visitors at NNSA sites, managing the Human Reliability Program, providing security awareness training, and processing visit requests for foreign national unclassified visits and assignments. However, the increase reflects a repricing of the activities based on a bottom-up budget revalidation of this work.	**+6,372**

	FY 2012 vs. FY 2011 Request ($000)
▪ **Materials Control and Accountability**	
▪ The net decrease allows for the essential levels to maintain support of materials consolidation, and revised processes and procedures for process and item monitoring for more timely and accurate tracking of accountable nuclear material (-$1,905,000) and reflects transfer of the Local Area Network Material Accountability System (LANMAS) system from the HSS to NNSA (+$895,000).	**-1,010**
▪ **Program Management**	
The decrease is attributable to continued efforts to identify efficiencies in Program Management areas such as development of Site Safeguards and Security Plans, Annual Operating Plans, local policy implementation, and performance assurance (surveys and self-assessments) and to accurately capture charges for these activities consistent with the Budget and Reporting structure and revised DNS Costing Principles.	**-2,391**
Technology Deployment, Physical Security	
▪ The decrease allows for limited deployment of selected technologies to only one or two sites for a specific technology deployment, instead of four or five sites being piloted with the same technology, to address specific physical security and MC&A needs at NNSA sites. NNSA partners with HSS, and both programs have been downsized.	**-2,428**
▪ **Graded Security Protection Policy (formerly Design Basis Threat)**	
Funding in FY 2011 and FY 2012 to continue Graded Security Protection policy upgrades has been integrated into functional categories and is no longer funded as a separate subcategory.	**0**
Construction	
Completion of construction funding for 08-D-701, Nuclear Materials Safeguards and Security Upgrades Project, NMSSUP II, at LANL ($11,752,000). Funding was provided to Physical Security Systems and Protective Forces to fund initiatives identified in the Physical Security Technology Management Plan. These will be executed as a series of capital equipment or general plant projects.	**-40,248**
Total, Defense Nuclear Security	**+2,903**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	61,076	62,420	63,793
Capital Equipment	14,865	15,192	15,526
Total, Capital Operating Expenses	**75,941**	**77,612**	**79,319**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	65,196	66,630	68,096	69,594
Capital Equipment	15,868	16,217	16,574	16,939
Total, Capital Operating Expenses	**81,064**	**82,847**	**84,670**	**86,533**

Construction Projects

	(dollars in thousands)					
	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Unappro-priated Balance
05-D-170, Project Engineering and Design (PED), VL						
05-D-170-1, PED NMSSUP II, LANL	43,094	43,094	0	0	0	0
05-D-170-2, PED Security Improvements Program, Y-12	10,421	10,421	0	0	0	0
08-D-701, NMSSUP II, LANL	176,822	93,170	0	52,000	11,752	19,900
10-D-701, Security Improvements Program, Y-12	49,000	0	49,000	0	0	0
Total, Construction			**49,000**	**52,000**	**11,752**	**19,900**

Outyear Construction Projects

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
08-D-701, NMSSUP II, LANL	0	0	0	0
Total, Construction	**0**	**0**	**0**	**0**

The GPP will be used to upgrade sites that are protecting Category I special nuclear material.

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program no longer budgets separately for capital equipment and general plant projects. Funding shown reflects estimates based on actual FY 2010 obligations, as adjusted for FY 2012 plans to upgrade and modernize training facilities at sites that are protecting Category I special nuclear material.

08-D-701, Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II, Los Alamos National Laboratory (LANL), Los Alamos, New Mexico
Project Data Sheet is for Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-3B, Approve Start of Construction that was approved on December 16, 2009, with a Total Project Cost (TPC) of $245,166 and CD-4 is expected January 2013. Recent actions in Contingency, Prior Year Obligations, and Operating Costs for FY 2011 have reduced the TPC to $213,086.

The contingency for the project had increased due to favorable construction bids received for the Utility Trunk, Utility Building, and Storm Water Detention Pond subproject; and the North Perimeter Intrusion, Detection, Assessment, and Delay System (PIDADS) subproject. Also the scope and related cost for the South PIDADS subproject has been withdrawn from the project temporarily until a revised PIDAS design can be estimated and implemented. There has been a small cost growth elsewhere in the project, and a minor scope increase to security systems, but the net impact has been an increase in contingency for the project. The increase in contingency and the scope increase have been approved through the NMSSUP baseline change process.

The Acquisition Executive approved Baseline Change Proposal 5 on April 2, 2010, that added scope to the project's security systems, including additional cameras and an additional security sensor to the project. Baseline Change Proposal 4, approved by the Los Alamos Site Office on January 8, 2010, incorporated the contract value for the Utility subcontract into the baseline, with excess funds being added into the project contingency. Baseline Change Proposal 21, approved July 23, 2010, removed the South PIDADS scope, pending the redesign of the South PIDAS, with those funds added to the contingency as well. The net impact of these actions has been an increase in contingency of $27,484 for the project. The contingency amount includes the funds to execute the redesigned South PIDAS scope.

The Office of Defense Nuclear Security has reduced the FY 2012 funding request for the project by $19,900. This reduction in funding request will be reflected in a reduced contingency amount for the project. Additionally, $8,500 in FY 2008 balances will be used by DOE for other higher priority needs, which will also be reflected in reduced contingency.

The current Federal Project Director assumed responsibilities from a Federal Project Director that was at the appropriate level for this project. The current Federal Project Director is expecting to receive the appropriate level certification by June 2011.

This PDS is an update of the FY 2011 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2008	4QFY2002	2QFY2007	1QFY2008	1QFY2008	2QFY2008	3QFY2012	N/A	N/A
FY 2009	4QFY2003	1QFY2007	1QFY2008	2QFY2008	4QFY2008	4QFY2011	N/A	N/A
FY 2011	08/25/2003	05/30/2008	09/30/2009	06/23/2009	06/23/2009	2QFY2013	N/A	N/A
FY 2012	08/25/2003	05/30/2008	09/30/2009	06/23/2009	12/16/2009	2QFY2013	N/A	N/A

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

	CD-3A	CD-3B
FY 2009	06/23/2009	
FY 2010		12/16/2009

CD-3A – Approve Start of Construction of four of the five subprojects: Utility Trunk, Utility Building, and Storm Water Detention Pond subproject; North PIDADS subproject; South PIDADS subproject; and the West Vehicle Access subproject. Additionally approve the procurement of long lead Government Furnished Equipment.
CD-3B – Approve Start of Construction for the last subproject: Entry Control Facility.

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2008			214,755	25,245	N/A		240,000
FY 2009	43,094	170,715	213,809	25,245	N/A	25,245	239,054[a]
FY 2011	43,094	176,822	219,916	25,250	N/A	25,250	245,166
FY 2012	43,094	148,422	191,516	21,570	N/A	21,570	213,086

[a] The FY 2008 appropriated funding was reduced based on the rescission of 0.91 percent ($71,000) and use of prior year balances from construction projects ($82,000) in accordance with the FY 2008 Consolidate d Appropriations Act, (P.L. 110-161).

4. Project Description, Justification, and Scope

Project Description

The project is being conducted in accordance with the project management requirements in DOE O 413.3B and DOE M 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

The Nuclear Materials Safeguards and Security Upgrades Project (NMSSUP) Phase II will support the viability of stockpile management and other current missions carried out in Technical Area (TA)-55 at the Los Alamos National Laboratory (LANL) by providing an effective, robust physical security system to address the core essential physical security systems, protection strategies, and security requirements.

The LANL nuclear missions, as they currently exist and as they are planned in the future, require a reliable safeguards and security system to assure the protection and control of special nuclear materials (SNM), classified matter, and NNSA property. The nuclear materials operation at TA-55 involves the ability to securely store, move, process, and track nuclear materials that are attractive to the adversaries, both in terms of the quantity of materials and the forms. The NMSSUP Phase II project plays a key role in the support of this mission by replacing, or improving, the aging exterior physical security systems and installing enhanced systems to support a new protection strategy for the TA-55 site.

The primary components of the project include, at a minimum:

Perimeter Intrusion Detection, Assessment, and Delay System (PIDADS)
East Vehicle and Pedestrian Entry Control Facility (ECF)
Utility Infrastructure (to support the items above)
West Vehicle Access (WVA)

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED[a]			
FY 2005	10,000	10,000	0
FY 2006	33,094	33,094	770
FY 2007	0	0	15,252
FY 2008	0	0	14,031
FY 2009	0	0	10,569
FY 2010	0	0	2,472
Total, PED	43,094	43,094	43,094

[a] PED funds were appropriated in FY 2005 and FY 2006 under PED Line Item 05-D-170.

[b] $8,500 reduction in FY 2008 Obligations used by DOE for other higher priority needs.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Construction			
FY 2008[b]	40,050	40,050	0
FY 2009	44,620	0	231
FY 2010	0	43,021	33,034
FY 2011	52,000	44,599	74,490
FY 2012	11,752	20,752	40,667
Total, Construction	148,422	148,422	148,422
TEC			
FY 2005	10,000	10,000	0
FY 2006	33,094	33,094	770
FY 2007	0	0	15,252
FY 2008	40,050	40,050	14,031
FY 2009	44,620	0	10,800
FY 2010	0	43,021	35,506
FY 2011	52,000	44,599	74,490
FY 2012	11,752	20,752	40,667
Total, TEC	191,516	191,516	191,516
Other Project Cost (OPC)			
OPC except D&D			
Prior years cost	9,357	9,357	9,357
FY 2006	5,855	5,855	5,855
FY 2007	517	517	517
FY 2008	199	199	199
FY 2009	200	200	71
FY 2010	1,100	1,100	1,229
FY 2011	2,600	2,600	2,600
FY 2012	1,742	1,742	1,392
FY 2013	0	0	350
Total, OPC except D&D	21,570	21,570	21,570
D&D	NA	NA	NA
Total, D&D	NA	NA	NA
Total, OPC	21,570	21,570	21,570
Total Project Cost (TPC)			
Prior years cost	19,357	19,357	9,357
FY 2006	38,949	38,949	6,625
FY 2007	517	517	15,769
FY 2008	40,249	40,249	14,230
FY 2009	44,820	200	10,871
FY 2010	1,100	44,121	36,735
FY 2011	54,600	47,199	77,090
FY 2012	13,494	22,494	42,059
FY 2013	0	0	350
Total, TPC	213,086	213,086	213,086

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	41,133	41,133	43,094
Contingency	1,961	1,961	0
Total, PED (05-D-701)	43,094	43,094	43,094
Construction			
Site Preparation	38,542	41,711	42,447
Equipment	18,215	19,836	20,866
Other Construction	54,876	69,878	74,252
Contingency	36,789	45,397	39,257
Total, Construction	148,422	176,822	176,822
Total, TEC	191,516	219,916	219,916
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	11,925	11,925	11,925
Conceptual Design	4,473	4,473	3,700
Start-Up	4,288	7,361	8,332
Contingency	884	1,491	1,293
Total, OPC except D&D	21,570	25,250	25,250
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	21,570	25,250	25,250
Total, TPC	213,086	245,166	245,166
Total Contingency	37,673	48,849	40,550

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2008	TEC	187,590	27,165	0	0	0	0	0	0	214,755
	OPC	22,853	658	1,734	0	0	0	0	0	25,245
	TPC	210,443	27,823	1,734	0	0	0	0	0	240,000
FY 2009	TEC	186,644	27,165	0	0	0	0	0	0	213,809
	OPC	22,853	658	1,734	0	0	0	0	0	25,245
	TPC	209,497	27,823	1,734	0	0	0	0	0	239,054
FY 2010	TEC	0	0	0	0	0	0	0	0	0
	OPC	0	0	0	0	0	0	0	0	0
	TPC	0	0	0	0	0	0	0	0	0
FY 2011	TEC	136,264	52,000	31,652	0	0	0	0	0	219,916
	OPC	17,228	6,280	1,742	0	0	0	0	0	25,250
	TPC	153,492	58,280	33,394	0	0	0	0	0	245,166
FY 2012	TEC	127,764	52,000	11,752	0	0	0	0	0	191,516
	OPC	17,228	2,600	1,742	0	0	0	0	0	21,570
	TPC	144,992	54,600	13,494	0	0	0	0	0	213,086

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2QFY2013
Expected Useful Life (number of years)	50
Expected Future Start of D&D of this capital asset (fiscal quarter)	2QFY2063

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	18,480	18,480	2,148,100	2,148,100
Maintenance	1,600	1,600	75,500	75,500
Total, Operations & Maintenance	20,080	20,080	2,223,600	2,223,600

9. Required D&D Information

The limited D&D is considered incidental to construction and has been included in the construction costs.

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

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

10. Acquisition Approach

NNSA has assigned management and execution of this project to LANS, LLC. Major contracts are through firm fixed-priced contracting. Interfaces between the contractor(s) and other entities at LANS, LLC, will be managed by a dedicated project team and minimized to facilitate clear lines of responsibilities and contractual obligations. The contracts will be incrementally funded by annual appropriations.

Cyber Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Cyber Security (Homeland Security)			
Infrastructure Program	99,838	97,849	107,618
Enterprise Secure Computing	21,500	21,500	14,000
Technology Application Development	2,000	4,996	4,996
Total, Cyber Security (Homeland Security)	**123,338**	**124,345**	**126,614**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Cyber Security (Homeland Security)				
Infrastructure Program	106,826	106,711	108,193	111,233
Enterprise Secure Computing	14,000	14,000	14,000	14,000
Technology Application Development	4,590	4,610	4,705	4,770
Total, Cyber Security (Homeland Security)	**125,416**	**125,321**	**126,898**	**130,003**

Mission

The goal of the National Nuclear Security Administration (NNSA) Cyber Security program is to ensure that sufficient information management security safeguards are implemented throughout the nuclear security enterprise to adequately protect the NNSA information assets and to provide the requisite guidance in compliance with the Department of Energy's (DOE) Defense-in-Depth Cyber Security strategy and the NNSA Information Management Strategic Plan. The Cyber Security program is a Homeland Security related activity.

Benefits

The Cyber Security program makes contributions to Government Performance and Results Act (GPRA) Unit Program Number 47 by achieving and maintaining a secure NNSA information environment for the enterprise. This requires an approach that combines defense-in-depth and defense-in-breadth principles with essential guiding tenets that align the Cyber Security Program with NNSA cultural and business drivers. The four guiding tenets of ***Risk Management***, ***Agility, Trust***, and ***Partnership*** align with the ***People, Processes***, and ***Technology*** elements to support the defense-in-depth and defense-in-breadth principles. This represents core DOE values for achieving mission effectiveness and is integral to the success of the DOE Cyber Security Program.

Successful realization of the vision and mission requires an ongoing commitment to the basic Cyber Security integration approach which is guided by the four core tenets.

- **People** – Everyone takes action that secures information and maintains its security.
  - Cyber security personnel will consistently demonstrate the highest skill levels in managing and deploying the latest technologies and methods.
  - Program managers, users and support personnel will have confidence in the information needed to achieve their missions.

- The entire NNSA workforce will recognize the importance of cyber security, understand their role in it, and will be constantly vigilant.

- **Processes** – Methods for creating and sustaining trusted information environments that do not impose undue burdens on missions and resources.
  - NNSA processes and governance principles in a networked environment, will be improved continually, and will be sufficiently dynamic and agile to accommodate rapidly changing needs and mission accomplishment.
  - NNSA's secure enterprise architecture will allow appropriate sharing of information and knowledge throughout the NNSA and enable multiple levels of information sharing across security environments.
  - NNSA's cooperative relationships with academia, industry, and research and development organizations will allow rapid integration of available technologies and embed enhanced hardware and software assurance solutions in future capabilities.
- **Technology –** The information environment is enabled by technologies that facilitate secure information sharing, collaboration opportunities, and cost-effective cyber security initiatives directly supporting mission effectiveness.
  - Cyber security capabilities will be dynamic, sufficiently robust, available, agile, reconfigurable on demand, consistently controlled at all points of access, and have a reduced possibility for human and machine error.
  - Develop a comprehensive cyber security infrastructure to support the transformation of the nuclear security enterprise.
  - Cutting-edge protection, detection, and response technologies will be rapidly deployed across all NNSA systems and networks, outpacing the efforts of our adversaries to exploit vulnerabilities.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- The Cyber Security program maintained a flexible, comprehensive, and risk-based cyber security program that protects NNSA information and information assets. To ensure that the program met OCIO requirements, the OCIO conducted site assessments of program activities.

- Completed the DOE Office of Health, Safety and Security (HSS) independent oversight inspection at NNSA sites with 100 percent effective ratings.

- Developed the draft Risk Management Framework and Risk Management Approach for Cyber Security. This new policy will change the way that Federal and contractor personnel work together to implement cyber security requirements enterprise-wide. The process enables the contractor to manage risk of lower level systems with limited Federal oversight.

- Developed the draft NNSA Cyber Security Baseline Program Requirements. This baseline will provide for the implementation of a risk based approach to cyber security and provide a clear understanding of what can and cannot be done within the Program.

- All Site Assessment Visits (SAV) conducted by the Cyber Security Program Manager (CSPM) at NNSA sites resulted in an effective rating.

- Maintained and improved the NNSA cyber security architecture for NNSA Headquarters and sites. This documentation provides the Enterprise with the standard components for cyber infrastructure.

- Designed and built Enterprise Secure Network (ESN)-SIPRNet Gateway. This component provides for an interface between the DOE SIPRNet and NNSA Enterprise Secure Network, allowing for the electronic transfer of files between DOE and NNSA. Testing of the Gateway and the integration into ESN began in FY 2010.

Major Outyear Priorities and Assumptions

The outyear projections for Cyber Security total $507,638,000 for FY 2013 through FY 2016. This level of funding provides for the day to day operation of cyber security within the nuclear security enterprise.

The cyber security program investments must begin to focus on research in the foundations, design, management, security, and usability of future computing and communications networks to help sustain the nuclear security enterprise military, scientific, and technological preeminence. Specifically, the Program will continue to actively coordinate and prioritize it activities with NNSA laboratories and plants to ensure the development of a sustainability research and development (R&D) program.

The Cyber Security R&D Program will provide the necessary technologies to protect NNSA computer based systems from actions that compromise or threaten to compromise the authentication, availability, integrity, or confidentiality to NNSA systems and/or the information they contain. This program will address any mission-relevant gaps identified and will emphasize coordination, leveraging the efforts of all agencies and, where appropriate, use of coordinated multi-agency investments.

The Strategic R&D objectives are to support research, development, testing, and evaluation of cyber security and information assurance technologies. It is aimed at preventing, protecting against, detecting, responding to, and recovering from cyber attacks that may have large-scale consequences. It is also to address cyber security and information assurance R&D needs that are unique to critical cyber infrastructures, next generation secure information technology concept and architectures. It is to develop and accelerate the deployment of new communication protocols that better assure the security of information transmitted over networks. It is for the establishment experimental environments such as test beds that allow government, academic, and industry researchers to conduct a broad range of cyber security development and assessment activities. Additionally, it will provide a foundation for long-range risk-based cyber security and information assurance decision making.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
▪ **Infrastructure Program**	**99,838**	**97,849**	**107,618**

The infrastructure program supports the cyber security operations and activities at NNSA M&O sites. The cyber security operations and infrastructure program is built around a defense-in-depth approach for achieving cyber security in a highly networked environment. The defense-in-depth approach is a combination of known best practices and cost strategy that relies on the intelligent application of techniques and technologies which exist today. The defense-in-depth approach consists of three major components: people, processes and technology. This approach recommends a balance between the protection capability and cost, performance, and operational considerations. The implementation of this approach will enable maintenance of a cyber security posture that complies with all DOE and NNSA policies and processes, while addressing the increasing number and complexity of cyber security threats, vulnerabilities and risks.

For FY 2012, the request will provide for the implementation of enhanced cyber security capability, daily operations, cyber security infrastructure, and risk management as outlined under the newly implemented risk management approach for cyber security. During FY 2012, the Cyber Security program will ensure the development and deployment of cyber security technologies for enhancement in incident management, infrastructure protection and the reduction of insider threat capabilities. During this period, Cyber Security funding will support research, development and deployment of the following capabilities enterprise-wide:

- Cyber Tracer – This will provide the department with the capability to handle cyber security incidents enterprise-wide. The developed technology will provide each site with the capability to share incident information in real time within that site and allow for enterprise-wide corrective actions to take place.
- Insider Threat Capability – This develops an insider threat solution that integrates monitoring, investigation, and forensics capabilities that protect against insider threats. This tool is an agent-based insider threat protection that provides visibility and control of desktops and laptops, whether connected to the network, at home, or completely offline.
- Data Leakage Capability – This is a two-tiered architecture that consists of multiple policy sensors placed around the network to detect and/or prevent data leakage, and a central management console to distribute policies and collect/organize alerts.
- Data Loss Prevention Capability – This provides the capability to quickly discover exposed confidential data wherever it is stored, with the broadest coverage of enterprise data repositories, and web content and applications.
- Continuous Monitoring – Cyber Security will seek to implement a continuous monitoring program at the enterprise level for all critical cyber security assets by September 30, 2012.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
▪ **Enterprise Secure Computing**	**21,500**	**21,500**	**14,000**

Enterprise Secure Computing provides state-of-the-art enterprise level classified computing infrastructure that enables effective collaboration and information sharing necessary for the NNSA Enterprise.

In FY 2012, activities will focus on daily operations, infrastructure enhancements and application deployment. Enterprise Secure Computing funding will support research, development and deployment of the following capabilities across the nuclear security enterprise

- Continued development of the small site solution to provide a cost effective connectivity for M&O and Federal sites. This will provide a strategic opportunity to extend ESN beyond the NNSA and provide for more efficient communications with our external partners.
- Improve Identity and Access Management capabilities with the inclusion of newly acquired Oracle Products. These products will enhance our capabilities by adding work flow and other automation enhancements to our user management process.
- Replacement of the Security Event and Incident Management (SEIM) Tool will give NNSA the ability to improve its defensive posture and gain greater efficiencies with respect to correlating and identifying the increasing number of threats against the NNSA.

▪ **Technology Application Development**	**2,000**	**4,996**	**4,996**

Technology Application Development is responsible for developing and advancing policies and initiatives that will support short and long-term solutions to specific cyber security needs at the NNSA sites and headquarters locations. Technological innovation, research and development are critical components for NNSA to protect its assets in national and global technology driven environments. The research and technology development efforts will focus on emerging technologies and leverage existing technology resources to create a more secure environment. In addition, new strategies can be developed to support cyber security activity across NNSA and foster collaboration between organizations.

In FY 2012, activities will focus on the enhancement of cyber security capabilities in the areas of incident management and disk encryptions. Funds will be used to implement risk mitigation processes to provide for improvement in the cyber security architecture. Actions will be taken to ensure these improvements are made which will include strengthening NNSA cyber security architecture for NNSA Headquarters and sites. NNSA will baseline the cyber security controls for confidentiality, integrity, and availability and will incorporate the certification and accreditation process into the cyber security architecture life-cycle model. Additionally, NNSA will employ a layered defense-in-depth cyber security model across the NNSA enterprise that will ensure integrated and layered protections are implemented consistently across NNSA computing environments.

Total, Cyber Security	**123,338**	**124,345**	**126,614**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
▪ **Cyber Security (Homeland Security)**	
Infrastructure Program	
The increase in the infrastructure program reflects a transfer of funding for unclassified incident response from Enterprise Secure Computing and increased funding for the Cyber Tracer Program.	**+9,769**
Enterprise Secure Computing	
The decrease reflects a restructuring of projects to focus on classified incident management and response and classified operations. Funding for the unclassified mission has been moved to the Infrastructure Program.	**-7,500**
Technology Application Development	
No change.	**0**
Total, Cyber Security	**+2,269**

Capital Operating Expenses and Construction Summary[a]

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	3,529	3,607	3,686
Total, Capital Operating Expenses	**3,529**	**3,607**	**3,686**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	3,767	3,850	3,935	4,022
Total, Capital Operating Expenses	**3,767**	**3,850**	**3,935**	**4,022**

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

National Security Applications

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Maintenance	**0**	**20,000**	**20,000**
Total, National Security Applications	**0**	**20,000**	**20,000**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Total, National Security Applications	**20,000**	**20,000**	**20,000**	**20,000**

Mission

The National Security Applications (NSA) program (formerly the Science, Technology and Engineering Capability) makes strategic investments in the national security science, technology and engineering capabilities and infrastructure base that are necessary to address current and future global security issues. The NSA budget is separated into its own budget line to highlight technical investments. This program integrates the management, development, and maintenance of NSA capabilities that are relied upon by agencies across the Federal government and provides transparency, alignment, and accountability into the investments made in workforce and infrastructure to preserve national security capabilities into the future.

The facilities and the expert multidisciplinary workforce within the nuclear security enterprise provide decision makers with the ability to understand the state of international scientific and technological advances as well as project how these advances could affect national security. Furthermore, their unique multidisciplinary infrastructure is key to anticipating technological surprise and for providing rapid innovative solutions to complex technical problems faced by multiple agencies. To address these national security challenges beyond the nuclear stockpile, the administration is committed to both retain and nurture national security research and development (R&D) capabilities to serve broader national security interests.

Benefits

NNSA's nuclear security enterprise infrastructure, with its unparalleled R&D capabilities, has underpinned national nuclear security from the Manhattan Project to the present. However, the national security landscape in the twenty-first century has changed dramatically. Nations and non-state actors pose unconventional warfare threats to the United States (U.S.) and our allies that could lead to significant loss of life, major damage to the nation's infrastructure, severe economic consequences, and/or technological surprise.

Other Federal agencies have made good use of the breadth of science and technology expertise of the NNSA laboratories. However, past focus has been on short-term and tactical projects of some urgency with specific deliverables that answer an immediate need. The use of the partnership model with the unique, multidisciplinary workforce and infrastructure resident within the enterprise results in an agile and responsive enterprise that is cost efficient, includes accelerated capability development, and has quick response built-in.

This enterprise would help assure political and military decision makers that flexible intellectual and infrastructure capabilities are available to respond to technological surprise and provide innovative solutions to complex technical problems faced by agencies across the Federal government. To address these national security challenges beyond the nuclear stockpile, the administration is committed to both retaining and nurturing national security R&D capabilities that serve broader national security interests.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

The $30,000,000 provided by Congress in the Supplemental Appropriations Act, 2009, and $20,000,000 authorized in FY 2011 initiated more robust strategic partnerships between the three NNSA national security laboratories and entities within the greater national security arena, specifically the intelligence community and the Defense Threat Reduction Agency (DTRA). The enhanced capabilities developed through the FY 2009 funds for the U.S. stockpile, informed by intelligence requirements, are the initial building block in significantly improving the response to national security questions, and will, at the same time, help sustain the critical skills vital to the NNSA mission into the future. The work with DTRA embodies the goal of transforming the NNSA science and technology enterprise into the resource of choice for solving large, time-urgent national security challenges. The associated plan outlines the technical and programmatic framework to share investments with DTRA in common efforts to address national security needs related to counterterrorism, survivability, and weapon effects. Progress to date includes:

- Drafted plan for transitioning technical analyses of foreign nuclear weapons to modern simulation tools, including modern baselines;
- Completed design and development of an advanced low inductance power flow for an explosive pulsed power generator (Mini-G);
- Model and algorithm enhancements to stockpile simulation tools for wider national security applications, and
- Experiments on the National Ignition Facility, Saturn, and Z facilities to advance the abilities to test and characterize strategic systems, materials and components to nuclear weapon environments.

Major Outyear Priorities and Assumptions

The outyear projections for NSA total $80,000,000 for FY 2013 through FY 2016. The funding will support interagency initiatives that apply and develop the science, technology and engineering capabilities of the national security laboratories. These activities enable more robust strategic partnerships between the three NNSA national security laboratories and entities within the greater national security arena. The enhanced capabilities developed through these partnerships will ensure the long-term availability and relevance of NNSA support to national security questions, and will, at the same time help sustain the critical staffing skills vital to the NNSA mission into the future. The NNSA will also continue to evaluate support for activities and projects with the Office of the Director of National Intelligence.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
National Security Applications			
Operations and Maintenance	**0**	**20,000**	**20,000**
▪ **Weapons of Mass Destruction Analysis and Assessments**	**0**	**1,000**	**1,000**

This subprogram addresses two significant challenges in the area of weapons of mass destruction (WMD) analysis and assessments that are of particular relevance to NNSA capabilities. First is the challenge to deliver high specificity detection of nuclear materials that are often at a distance in complex scenarios (e.g., cargo, moving target). A second challenge is that of rapid, robust analysis and data evaluation of nuclear materials and debris to enable attribution. These two challenges provide opportunities to develop and maintain nuclear security capabilities including new radiation sources, measurement and instrumentation expertise, extension of high performance code capabilities, and material science expertise.

▪ **Actinide Chemistry, Diagnostics, and Remote Detection**	**0**	**7,750**	**7,750**

Actinide Chemistry, Diagnostics and Remote Detection subprogram critical efforts are aimed at preventing the terrorist use of nuclear weapons. Actinide chemistry and diagnostics enable rapid and robust identification of the materials interdicted or collected. Key initiatives include the development of comprehensive nuclear materials databases, newly predicted signatures and rapid, high fidelity analytical techniques. Emphasis on debris forensics broadens radiochemistry research, nuclear cross section evaluation, and particle transport modeling.

▪ **Impacts of Energy and Environment on Global Security**	**0**	**1,000**	**1,000**

This subprogram supports development and application of the nuclear security enterprise's resident expertise and methodologies needed to maintain the U.S. nuclear security mission that are adjacent to and strongly complement broader energy security problems. This includes modeling, simulation, theory and experimental capabilities that underpin problems in energy security from laser-based applications, fission/fusion systems, carbon treaty verification capabilities, and special nuclear materials metallurgy skills associated with nuclear security, safety and disposal.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
▪ **Advanced Analysis, Tools, and Technologies**	**0**	**10,250**	**10,250**

This subprogram invests in a portfolio of tools and technologies that will address threats across multiple national security domains including threat design, international safeguards, radiochemistry analysis, and material disablement. Integrated software tools that incorporate uncertainty quantification methodologies and validation of simulation results will benefit the nuclear security enterprise and a number of the national security partners that prioritize these important and emerging analysis concepts. Interagency interest in weapons effects and NNSA expertise will seek tools in areas such as consequence management and electromagnetic pulse threatened environments. Although nuclear materials characterization is directly relevant to nuclear emergency response operations and for surveillance of the current U.S. stockpile, simulation, development, and engineering of new materials and algorithms will enable robust characterization of aging or less well-characterized nuclear materials. High performance computing is integral to enabling a robust predictive capability in the service of national defense. Special purpose hardware and software, advancement in algorithm design and performance, advanced distributed processing, and appropriately secured computing facilities are aspects of this foundational technology.

Total, National Security Applications	**0**	**20,000**	**20,000**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
National Security Applications	
▪ **Operations and Maintenance**	
Weapons of Mass Destruction Analysis and Assessments	
No change.	**0**
Actinide Chemistry, Diagnostics, and Remote Detection	
No change.	**0**
Impacts of Energy and Environment on Global Security	
No change.	**0**
Advanced Analysis, Tools, and Technologies	
No change.	**0**
Total Funding Change, National Security Applications	**0**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	596	609	622
Total, Capital Operating Expenses	**596**	**609**	**622**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	636	650	664	679
Total, Capital Operating Expenses	**636**	**650**	**664**	**679**

[a] Funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects. The program does not budget separately for capital equipment and general plant projects.

Congressionally Directed Projects

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	**3,000**	**0**	**0**

Description

Starting in FY 2008, funding for Congressionally Directed projects was appropriated as a separate funding line although specific projects may relate to ongoing work in a particular programmatic area. The FY 2009 Omnibus Appropriations Act (P.L. 111-8) included 13 Congressionally Directed projects within the Weapons Activities appropriation. The FY 2010 Energy and Water Development and Related Agencies Appropriations Act (P.L. 111-85) included $3,000,000 for one Congressionally Directed Project in support of the Center for Innovation through Computational Simulation and Visualization, Purdue University, Calumet (IN). For FY 2011 and FY 2012, no follow-on funding is requested.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects			
• Center for Innovation through Computational Simulation and Visualization, Purdue University, Calumet (IN)	3,000	0	0
Total, Congressionally Directed Projects	**3,000**	**0**	**0**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Congressionally Directed Projects	
No funding is requested for these activities in FY 2011 or FY 2012 under Congressionally Directed Projects.	0
Total, Congressionally Directed Projects	**0**

Defense Nuclear Nonproliferation

Defense Nuclear Nonproliferation

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Defense Nuclear Nonproliferation

Proposed Appropriation Language

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other incidental expenses necessary for defense nuclear nonproliferation activities, in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, and the purchase of not to exceed one passenger motor vehicle for replacement only, $2,549,492,000, to remain available until expended: Provided, That of the unobligated balances available under this heading, $30,000,000 are hereby permanently cancelled; Provided further, That no amounts may be cancelled from amounts that were designated by the Congress as an emergency requirement pursuant to the Concurrent Resolution on the Budget or the Balanced Budget and Emergency Deficit Control Act of 1985, as amended.

Explanation of Change

Change from the language proposed in FY 2011 consists of a change to the requested funding amount and a cancellation of unobligated balances. The Defense Nuclear Nonproliferation cancellation of unobligated balances of $30 million is associated with the completion of the Elimination of Weapons Grade Plutonium Production Program and was proposed for cancellation to offset requirements elsewhere within DOE.

Defense Nuclear Nonproliferation

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 CR	FY 2012 Request
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	311,274	351,568		417,598
Nonproliferation and International Security	187,202	155,930		161,833
International Nuclear Materials Protection and Cooperation [a]	572,749	590,118		571,639
Elimination of Weapons-Grade Plutonium Production	24,507	0		0
Fissile Materials Disposition	701,900	1,030,713		890,153
Global Threat Reduction Initiative	333,500	558,838		508,269
Congressional Directed Projects	250	0		0
Total, Defense Nuclear Nonproliferation	**2,131,382**	**2,687,167**	**2,136,709**	**2,549,492**

Public Law Authorization:

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

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	479,191	506,243	503,328	519,455
Nonproliferation and International Security	163,000	168,000	171,999	174,999
International Nuclear Materials Protection and Cooperation	519,000	633,000	656,000	531,723
Fissile Materials Disposition	1,112,877	963,691	991,657	1,071,940
Global Threat Reduction Initiative	497,000	637,000	661,000	740,278
Total, Defense Nuclear Nonproliferation	**2,771,068**	**2,907,934**	**2,983,984**	**3,038,395**

[a] FY 2010 amount includes international contribution of $250,000 from South Korea, $140,000 from the United Kingdom of Great Britain, and $308,775 from Finland to support the Second Line of Defense (SLD) Program.

FY 2010 Budget Execution

(dollars in thousands)

	FY 2010 Appropriation	PY Balance/ General Reduction	International Contributions	Reprogramming and Other Transfers	Total Adjustments	Final FY 2010
Defense Nuclear Nonproliferation						
Nonproliferation and Verification Research and Development	317,300	0	0	-6,026	0	311,274
Nonproliferation and International Security	187,202	0	0	0	0	187,202
International Nuclear Materials Protection and Cooperation	572,050	0	699	0	0	572,749
Elimination of Weapons-Grade Plutonium Production	24,507	0	0	0	0	24,507
Fissile Materials Disposition	701,900	0	0	0	0	701,900
Global Threat Reduction Initiative	333,500	0	0	0	0	333,500
Congressionally Directed Projects	250	0	0	0	0	250
Defense Nuclear Nonproliferation	**2,136,709**	**0**	**699**	**-6,026**	**0**	**2,131,382**

Mission

The convergence of heightened terrorist activities and the ease of moving materials, technology, and information across borders have made the potential for terrorism involving weapons of mass destruction (WMD) a serious threat facing the Nation. As part of its national security strategy, the Administration has prioritized keeping WMD material and information out of the hands of terrorists. The FY 2012 budget request for DNN reflects the need to protect the United States (U.S.) and its allies from this threat.

The DNN mission is to provide policy and technical leadership to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; advance technologies to detect the proliferation of weapons of mass destruction worldwide; and eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons -- in short, to detect, deter, secure, or dispose of dangerous nuclear material.

Benefits

The National Nuclear Security Administration's (NNSA) nonproliferation programs seek to secure nuclear materials worldwide that could be used for weapons and to convert such materials for peaceful applications which support the international effort to secure all vulnerable nuclear materials worldwide within four years. In keeping with the Administration's Nuclear Posture Review, the Nonproliferation and Verification Research and Development program conducts a comprehensive R&D program to support continued progress toward a world free of nuclear weapons, including significant emphasis on verification technologies and the development of transparency measures. These technologies will help

the U.S. manage risk by ensuring that there are available capabilities to detect potential clandestine nuclear weapons programs, as well as foreign nuclear material and weapons production facilities and processes.

The DNN program supports the NNSA and Department of Energy (DOE) mission to protect our national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and states of concern. These efforts are implemented in part through the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, formed at the G8 Kananaskis Summit in June 2002, and the Global Initiative to Combat Nuclear Terrorism, launched in Rabat Morocco in October 2006.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

Major Outyear Priorities and Assumptions

Defense Nuclear Nonproliferation has a key role in meeting the Administration's nonproliferation objectives, to accelerate control of "loose nuclear materials" to secure and remove all vulnerable nuclear material from the most vulnerable sites by the end of 2013. In line with this goal, the GTRI program has worked in 118 countries around the world to implement nuclear and radiological threat reduction. By the end of 2016, GTRI will have converted 129 (65 percent) of the 200 HEU reactors, removed 4,801 kilograms (100 percent) of the approximately 4,801 kilograms of vulnerable weapons usable nuclear material at civilian sites, and protected 2,607 (31 percent) of the estimated 8,500 buildings with high-priority nuclear and radiological materials.

The Second Line of Defense program will continue to make significant progress in the prevention and detection of illicit transfer of nuclear material through shipping ports and significant reduction of risk of terrorists acquiring radiological materials and include approximately 650 border sites and 100 Megaports by the end of 2017. Nonproliferation and International Security funding in the outyears reflects the growth of the Next Generation Safeguards Initiative to strengthen global safeguards institutions, in particular the International Atomic Energy Agency (IAEA), and revitalize the U.S. safeguards technology and human capital base. The Fissile Materials Disposition (FMD) program will continue to work with Russia to dispose of its surplus weapon-grade plutonium in a transparent and irreversible manner and to dispose of surplus U.S. weapon-grade plutonium and highly enriched uranium in a similar manner. Nonproliferation and Verification Research and Development created a new R&D and test/evaluation capability at the NNSA National Laboratories and the Nevada National Security Site to provide new technical capabilities to meet the Administration's nonproliferation and arms control initiatives.

DOE Nuclear Nonproliferation Activities

($ in Millions)

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NNSA							
Defense Nuclear Nonproliferation	1,557.2	2,074.4	1,970.7	2,133.3	2,477.2	2,581.1	2,683.6
Waste Solidification Building	70.0	57.0	17.6	0	0	0	0
Pit Disassembly and Conversion [a]	0	80.0	176.0	315.0	321.0	277.0	317.0
Mixed Oxide Fuel Fabrication Facility	504.2	475.8	385.2	322.8	109.7	125.8	37.8
Total, DNN	**2,131.4**	**2,687.2**	**2,549.5**	**2,771.1**	**2,907.9**	**2,983.9**	**3,038.4**

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

The DOE WCF Board has extended the policy for using program funding to finance WCF activities. NNSA programs will continue in FY 2012 to fund a pro rata share by Appropriation of certain DOE Working Capital Fund activities. FY 2012 projected NNSA program allocations are as follows: DOEnet ($237,000) for DOE telecommunications services; Financial Statement Audits ($4,188,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($2,529,000) for procurement management; iManage ($3,679,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,396,000). The NNSA's total contribution to the WCF from both Program and Program Direction funds for FY 2012 is projected at $38,268,000.

The Department has added $500,000 to Defense Nuclear Nonproliferation to support Department-wide efforts through the Working Capital Fund. These resources will fund an update to the Funds Distribution System and budget planning and execution efforts.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established the program to target research opportunities for HBCU institutions to increase their participation in nuclear security-related research and to train and recruit qualified HBCU graduates for employment within the nuclear security enterprise. The majority of the efforts directly support program activities, and programs funded in the Defense Nuclear Nonproliferation appropriation plan to fund research with the HBCU totaling up to approximately $3,000,000 in FY 2012, in areas including engineering, radiochemistry, material sciences, and sensor development.

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[a] In FY 2010 funding for the Pit Disassembly and Conversion Facility was appropriated in the Weapons Activities account. In FY 2011 - FY 2016 funding is requested in the DNN Appropriation.

Nonproliferation and Verification Research and Development

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nonproliferation and Verification R&D			
Proliferation Detection (PD)	175,813	225,004	233,975
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection (NDD)	135,461	126,564	127,800
University of California Pension Payments	0	0	55,823
Total, Nonproliferation and Verification R&D	**311,274**	**351,568**	**417,598**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Nonproliferation and Verification R&D				
Proliferation Detection (PD)	222,623	227,838	228,517	242,357
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection (NDD)	139,568	145,405	145,811	154,098
University of California Pension Payments and Contractor Pension Cost	117,000	133,000	129,000	123,000
Total, Nonproliferation and Verification R&D	**479,191**	**506,243**	**503,328**	**519,455**

Mission

This program improves U.S. national security through the development of novel technologies to detect foreign nuclear weapons proliferation/detonation and verification of foreign commitments to treaties and agreements.

Benefits

Using the unique facilities and scientific skills of the NNSA Nuclear Security Complex as well as other DOE national laboratories, in partnership with industry and academia, the program sponsors research and development to support US nuclear nonproliferation policies and programs by closing technology gaps identified through close interaction with NNSA and other U.S. government agencies and programs.

This program has two subprograms that contribute to the Government Performance and Results Act (GPRA) Unit Program Number 52.

The Proliferation Detection (PD) subprogram provides technical expertise and leadership toward the development of next-generation nuclear detection technologies and methods to detect foreign nuclear materials and weapons production. The PD subprogram develops the tools, technologies, and techniques used to detect, locate, and analyze the global proliferation of nuclear weapons technology with special emphasis on verification technology and transparency measures. The PD subprogram developed technologies also support the broader spectrum of nuclear security for the Nation.

The Nuclear Detonation Detection (NDD) subprogram designs, builds, and supports the satellite sensors that the Department of Defense deploys and operates as part of the nation's nuclear test treaty

monitoring system. The NDD subprogram also provides technical expertise and leadership for development of next-generation seismic and radionuclide nuclear explosion monitoring technologies. Additionally, the NDD subprogram conducts advanced nuclear forensics research to improve the speed, accuracy, reliability, confidence, and specificity of nuclear forensics analysis.

Together the PD and NDD subprograms support the U.S. commitments to international treaties such as the Non Proliferation Treaty (NPT), Comprehensive Test Ban Treaty (CTBT), New Strategic Arms Reduction Treaty (START), a potential Fissile Material Cutoff Treaty (FMCT), and also supports the Nuclear Posture Review.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- Demonstrated neutron imaging of multiple sources under realistic distances – a first step towards application in a warhead counting exercise.
- Conducted field tests at NNSS which demonstrated for the first time the ability of remote sensing systems (hyperspectral), originally designed for gaseous emissions, to detect solid effluents at nuclear fuel cycle sites – these signatures persist even when facilities are not operating.
- Improved fundamental material properties of plastic-based radiation detectors – this may allow production of cheap, large-scale plastic portal monitors able to do isotope identification.
- Transitioned single-photon night camera (NCAM) and mini-SAR (synthetic aperture radar) technology to Stakeholders for national security missions – provides new airborne, remote surveillance capabilities.
- Achieved roadmap benchmarks in U-235 and Pu Production Detection.
- Conducted early on-orbit testing of newly fielded NUDET detection payload (GPS-IIF block) – provides more sensitive & better geolocation capabilities.
- Delivered first of next-generation high altitude NUDET detection payloads – a dramatic increase in sensitivity.
- Completed final design of NUDET detection payload planned for GPS-III – maintains capability of constellation.
- Proved 3-D model of seismic event propagation – increases accuracy of underground detonation detection.
- Completed radioactive decay measurements for operational post-detonation forensics – critical to weapon attribution.

Major Outyear Priorities and Assumptions

The FY 2013 – FY 2016 out-year projections for the R&D program total $2,008,217,000 and support R&D leading to detection systems for strengthening U.S. capabilities to respond to current and projected threats to national security posed by the proliferation of nuclear weapons, and diversion of special nuclear material. Almost a third of this funding is for production of sensors to support the nation's

operational nuclear detonation detection and reporting infrastructure through joint programs with the DoD. R&D provides both U.S.-only and international support to related treaties and agreements.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Nonproliferation and Verification R&D O&M			
▪ **Proliferation Detection**	**175,813**	**225,004**	**233,975**

The Proliferation Detection (PD) subprogram develops technologies in support of NNSA and Defense Nuclear Nonproliferation missions. Specifically, the PD subprogram develops technologies to detect foreign nuclear weapons programs; supports nuclear arms control treaties verification and monitoring; and supports national nuclear security. The PD efforts are aligned along four functional areas. Fissile Material Production and Weapons Development Detection are targeted towards the detection of foreign weapons programs. Radiation Sensing and Warhead Monitoring supports the development of nuclear security tools and applications. Nonproliferation Enabling Technologies supports a broad effort to bring new technologies to applications in the interagency community. The last area is the National Center for Nuclear Security (NCNS), an integrating function located at the Nevada National Security Site. The NCNS studies and tests the application of technology in support of the Nation's treaty verification and monitoring needs.

Fissile Material Production and Weapons Development Detection

The PD subprogram provides technical expertise and leadership in the development of next generation nuclear detection technologies. Research and development efforts are focused on advanced technologies and approaches for detecting foreign proliferant activities, including fissile material and weapon production facilities, equipment, and processes. This also includes developing capabilities for identifying and exploiting indicators of the use of these processes, facilities, or associated equipment and infrastructure, both locally and remotely.

Radiation Sensing and Warhead Monitoring

The PD subprogram also provides technical expertise and leadership in addressing the most challenging problems related to detection, localization, and characterization of special nuclear material (SNM) by conducting the research necessary to demonstrate next-generation detection capabilities for warhead monitoring, SNM detection, and the illicit diversion of SNM, both internal and external to facilities. This area of research also includes advanced detection materials development and, through technical partnerships, supports counterproliferation and counterterrorism activities where there are synergies with the nonproliferation mission.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Nonproliferation Enabling Technologies

Additionally, the PD subprogram provides developed and validated technical knowledge to U.S. Government acquisition programs and the U.S. industrial base to support national and homeland security missions. Technical advances, new proven methodologies, and improvements to capabilities are transferred to operational programs through technical partnerships, including the development of special prototypes to assist major acquisition efforts. A four-way Memorandum of Understanding between NNSA, Department of Homeland Security, Department of Defense, and the Office of the Director of National Intelligence enables a high degree of interagency coordination, leverages capability development across application boundaries, and eliminates unnecessary duplication of funding and effort, particularly in the cross-cutting research area of radiation detection.

National Center for Nuclear Security

PD supports the National Center for Nuclear Security (NCNS) at the Nevada National Security Site to address emerging technical challenges associated with the Administration's nonproliferation objectives. The NCNS will ultimately support U.S. capabilities to monitor international treaties and cooperative agreements, such as the Nuclear Non-Proliferation Treaty (NPT), the New START, the Comprehensive Test Ban Treaty (CTBT) and the proposed Fissile Material Cutoff Treaty (FMCT).

▪ **Homeland Security-Related Proliferation Detection [Non-Add]**	**[50,000]**	**[50,000]**	**[50,000]**
▪ **Nuclear Detonation Detection**	**135,461**	**126,564**	**127,800**

The Nuclear Detonation Detection (NDD) program develops and builds space sensors for the Nation's operational treaty monitoring and Integrated Threat Warning/Attack Assessment capabilities, conducts R&D to advance analytic forensic capabilities related to nuclear detonations, and produces and updates the regional geophysical datasets and analytical understanding to enable operation of the Nation's ground-based treaty monitoring networks. These efforts are aligned along three functional areas, as described below:

Surface, Atmospheric, and Space Detonation Detection (using Satellite Based systems)

The satellite-based segment of the program builds the Global Burst Detector (GBD) and Space and Atmospheric Burst Reporting System (SABRS) payloads for detecting and reporting nuclear detonations. These payloads are launched on Global Positioning System (GPS) satellites and missile warning replenishment, or similar satellites. In addition to building the payloads, the program supports the integration, initialization, and operation of these payloads. The NDD subprogram supports the research, development, and engineering efforts to prepare next generation sensors. For

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

FY 2012, production and delivery of GBD and SABRS payloads will continue at a pace to support timely launch on designated host satellites.

Underground, Underwater, and Atmospheric Detonation Detection (using Ground Based systems)

The ground-based segment of the NDD research program provides research products, with appropriate testing, demonstration, and technical support for use in the U.S. National Data Center and U.S. Atomic Energy Detection System. Through a Memorandum of Understanding with U.S. nuclear detonation detection agencies, NNSA provides the integrated geophysical models and nuclear event source models that enable global, regional, and specific site threat detection, reporting, and interpretation of nuclear events. The NDD subprogram also conducts a limited amount of applied research and system support in non-seismic ground-based detection technologies including infrasound, hydro-acoustic, and radionuclide collection.

Nuclear Forensics Research

The NDD forensics research program conducts research, technology development, and related science to improve post-detonation technical nuclear forensic capabilities. This segment addresses both debris and prompt signatures from a nuclear detonation, including the modeling to predict signatures for collection planning, collection technology, measurement or counting, and evaluation.

University of California Pension	**0**	**0**	**55,823**

Includes funding for contractor pension payments for the University of California. Unlike contractor pension payments at NNSA sites, collected through labor rates and paid by the M&O contractor, the University of California payment is a direct federal payment remaining from the transition of the LANL and LLNL sites to private contractors.

Total, Nonproliferation and Verification Research and Development Operation & Maintenance	**311,274**	**351,568**	**417,598**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Nonproliferation and Verification R&D	
▪ **Proliferation Detection (PD)**	
The increase supports Nonproliferation and Treaty Verification Research, Development, Testing, and Evaluation.	**+8,971**
▪ **Nuclear Detonation – Detection (NDD)**	
The increase sustains a satellite sensor production rate of two Global Burst Detector payloads per year.	**+1,236**
▪ **University of California Pension**	
Increase supports contractor pension plan contributions for the University of California.	**+55,823**
Total Funding Change, Nonproliferation Verification R&D	**+66,030**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	25,667	26,232	26,809
Total, Capital Operating Expenses	**25,667**	**26,232**	**26,809**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	27,339	28,002	28,618	29,248
Total, Capital Operating Expenses	**27,339**	**28,002**	**28,618**	**29,248**

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

Nonproliferation and International Security

Funding Profile by Subprogram[a]

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nonproliferation and International Security			
Dismantlement and Transparency	72,763	49,207	0
Global Security Engagement and Cooperation	50,708	47,289	0
International Regimes and Agreements	42,703	39,824	0
Treaties and Agreements	21,028	19,610	0
Nuclear Safeguards and Security	0	0	53,925
Nuclear Controls	0	0	48,496
Nuclear Verification	0	0	46,995
Nonproliferation Policy	0	0	12,417
Total, Nonproliferation and International Security	**187,202**	**155,930**	**161,833**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Nonproliferation and International Security				
Nuclear Safeguards and Security	56,038	57,757	59,132	60,163
Nuclear Controls	50,396	51,942	53,178	54,106
Nuclear Verification	43,662	45,001	46,073	46,876
Nonproliferation Policy	12,904	13,300	13,616	13,854
Total, Nonproliferation and International Security	**163,000**	**168,000**	**171,999**	**174,999**

Mission

The Office of Nonproliferation and International Security (NIS) supports National Nuclear Security Administration (NNSA) efforts to prevent and counter the proliferation or use of weapons of mass destruction (WMD), including materials, technology and expertise, by state and non-state actors. The NIS focuses on strengthening the nonproliferation regime in order to reduce proliferation and terrorism risks by applying its unique expertise to safeguard nuclear material and strengthen its physical security; control the spread of WMD-related material, equipment, technology and expertise; verify nuclear reductions and compliance with nonproliferation treaties and agreements; and develop and implement Department of Energy (DOE)/NNSA nonproliferation and arms control policy. The NIS pursues these objectives through four programs: (1) Nuclear Safeguards & Security; (2) Nuclear Controls; (3) Nuclear Verification; and (4) Nonproliferation Policy.

Benefits

Within NIS, four subprograms make unique contributions to Government Performance and Results Act (GPRA) Unit Program Number 51. These are described below.

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[a] The Nonproliferation and International Security Program is proposing a budget structure change staring in FY 2012. The structure change creates a more efficient and clearer program organization with activities aligned along functional lines that reflect United States nonproliferation priorities and initiatives. The new structure depicts more clearly the alignment of people, technology, and resources to meet and implement nuclear nonproliferation objectives.

The Nuclear Safeguards and Security (NSS) subprogram coordinates and manages the Next Generation Safeguards Initiative (NGSI) to develop the policies, concepts, technologies, expertise, and infrastructure necessary to sustain the international safeguards system as its mission evolves over the next 25 years. This subprogram also implements DOE Additional Protocol and Voluntary Offer Agreement Safeguards activities at U.S. facilities and oversees DOE participation in the U.S. Support Program to International Atomic Energy Agency (IAEA) Safeguards. Additionally, the NSS subprogram works with the IAEA and other partners to enhance the application of physical protection and safeguards norms and best practices.

The Nuclear Controls (NC) subprogram coordinates and manages programs to control and limit the spread of WMD-related material, equipment, technology and expertise. This subprogram builds global capacity to prevent theft, diversion, and spread of nuclear materials, technologies, and expertise through activities that: strengthen international laws, regulations and standards governing nuclear controls; train international partners on export control, licensing, enforcement, and interdiction of nuclear materials; provide technical and financial support to strengthen nonproliferation regimes and multilateral organizations; and provide specialized support to domestic licensing, enforcement and interdiction agencies and the U.S. nuclear industry. The NC subprogram will promote global security by engaging international partners in a variety of activities, such as strengthening export control systems, assisting foreign countries to meet their nonproliferation obligations under the Nuclear Non-Proliferation Treaty (NPT), and helping to transition WMD scientific communities in high-risk nations. These activities strengthen overall security within volatile regions, create partnerships that can lead to international stability, and reduce the risk of scientist migration to states of proliferation concern and terrorists.

The Nuclear Verification (NV) subprogram negotiates, monitors, and verifies compliance with international arms control and nonproliferation treaties and agreements. This subprogram develops negotiating and ratification strategies to achieve U.S. national security objectives as related to arms control and nonproliferation; develops technologies tailored for monitoring compliance with arms control and nonproliferation treaties and agreements and detecting potential clandestine weapons programs or illicit diversions; and provides policy, technical and implementation expertise to support nonproliferation and arms control treaties and agreements.

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

In FY 2012, the NIS program will work to prevent WMD proliferation through the following activities: strengthening the international nonproliferation regime, including the Nuclear Non-Proliferation Treaty, the system of IAEA safeguards, multilateral supplier regimes, and bilateral nuclear cooperation agreements; cooperating with foreign partners to improve national export controls, safeguards, physical

protection systems, border security systems and to redirect WMD expertise; and applying technology in support of treaty and agreement verification and monitoring and international nuclear safeguards.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

Nuclear Safeguards and Security

- Engaged 16 countries, as well as the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC) and EURATOM, on 94 ongoing projects related to strengthening the application of IAEA safeguards, developing the safeguards infrastructure to support nuclear power, and testing new safeguards technologies for use in the field;
- Developed and released a software tool to assist countries with Additional Protocol (AP) declarations, and provided AP training and assistance to Vietnam, Thailand, Iraq and Malaysia;
- Hosted two regional infrastructure workshops for countries interested in pursuing nuclear power and established three new agreements for safeguards cooperation with United Arab Emirates (UAE), Malaysia and Kuwait;
- Developed 10 new safeguards technologies to strengthen IAEA capabilities to verify declared nuclear facilities and detect undeclared nuclear material and activities;
- Continued to lead U.S. Government efforts in the revision of International Atomic Energy Agency Information Circular (IAEA) INFCIRC/225, "*The Physical Protection of Nuclear Materials and Facilities*";
- Trained over 330 officials from 31 countries in IAEA physical protection practices and conducted bilateral physical protection assessments in four countries;
- Provided key policy and technical support to the development, negotiation, and implementation of nuclear security documents, including treaties and recommendations documents;
- Recruited over 100 students for international safeguards internships at 9 National Laboratories, funded post-doctoral positions in international safeguards at 8 National Laboratories, and conducted 6 summer courses on international safeguards for NGSI interns and students;
- Initiated a Nuclear Nonproliferation International Safeguards Graduate Fellowship course to support 6 graduate students in technical disciplines at eligible U.S. universities for 2-4 years of safeguards-related study, and
- Completed a comprehensive staffing study assessing the anticipated human resource needs in the U.S. nuclear security enterprise to support international safeguards objectives over the next decades.

Nuclear Controls

- Reviewed approximately 3,000 foreign WMD/missile procurements for sanctionable activity or diplomatic/interdiction response;
- Reviewed 6,900 export licenses/requests for proliferation risk, recommending denial of 240;
- Brought on-line the Proliferation Trade Control Directory;

- Engaged thousands of technical personnel at more than 100 former WMD facilities, in the former Soviet Union, Iraq, and Libya;
- Secured partnership between NNSA and the U.S. Department of Defense on Middle East/South Asia border security;
- Trained roughly 2,000 licensors, enforcement officials, and industry representatives on export controls (both domestically and internationally);
- Engaged South Africa on WMD Commodity Interdiction Training, re-established export control training and cooperation with Turkey, and expanded export control internal compliance engagement in Russia;
- Expanded industry outreach collaborations with India, China, Pakistan, and Argentina;
- Initiated proliferation risk analysis and commodity-based training in Southeast Asia;
- Conducted dozens of training sessions on all aspects of WMD fuel and weapons manufacturing technologies for U.S. enforcement agencies ((Department of Homeland Security (DHS), Federal Bureau of Investigation (FBI);
- Completed national versions of guidebooks to the Nuclear Suppliers Group (NSG) Trigger List with both Russia and China, and
- Engaged the Government of Iraq in border security capacity-building in line with its United Nations Security Council Resolution (UNSCR) 1540 request for assistance.

Nuclear Verification/Transparency

- Since 1995, monitored the conversion of a cumulative 393 metric tons (MT) of Russian highly-enriched uranium (HEU) from dismantled weapons (15,716 weapons) to low enriched uranium (30 MT/1,200 weapons converted in FY 2010);
- Completed 24 HEU Transparency Program monitoring visits annually to four Russian uranium processing facilities;
- Provided the senior DOE/NNSA representative to the negotiation of the New Strategic Arms Reduction Treaty (START), participated in interagency Treaty policy development and led the negotiation of three of the major components of the Treaty;
- Served as DOE/NNSA representative to the interagency process on the implementation of the Comprehensive Nuclear-Test-Ban Treaty;
- Monitored shutdown of reactors and over 9 MT of Russian weapons-grade plutonium under the Plutonium Production Reactor Shutdown Agreement;
- Continued develop of uranium ore concentrate database and query tool for determining the origin of undeclared uranium samples and coordinated and interfaced with U.S. interagency nuclear forensics efforts, and
- Developed capability to irreversibly disable graphite-moderated plutonium production reactors.

Nonproliferation Policy

- With Sandia National Laboratories and Texas A&M University, established a nuclear energy safety, safeguards and security educational institute in Abu Dhabi, United Arab Emirates;
- Advanced policy discussions on strengthened guidelines for enrichment and reprocessing technology in the Nuclear Suppliers Group (NSG) and led USG efforts to launch a Fundamental Review of the NSG Trigger and Dual-Use Lists;
- Supported the completion of negotiations on arrangements and procedures to effect reprocessing consent provisions contained in U.S.-India Agreement for Cooperation;

- Supported interagency efforts to advance negotiations on a Fissile Material Cut-Off Treaty;
- Commenced negotiations with URENCO countries and France on a nuclear cooperation agreement to create a legal framework for construction of an AREVA enrichment facility in the United States, and
- Supported the entry into force of the India Agreement for Cooperation.

Major Outyear Priorities and Assumptions

The NIS outyear funding profile totals $677,998,000 (FY 2013 – FY 2016). The NIS will place increasing emphasis on the Next Generation Safeguards Initiative (NGSI), a subprogram designed to strengthen IAEA safeguards and revitalize the U.S. technical and human capital base that supports them. The activity will address looming gaps in IAEA safeguards through generational improvements in safeguards technology, recruitment of expertise, political and technical analyses of issues and challenges, assistance in implementing safeguards, and collaboration with foreign partners.

The NGSI complements related NIS priorities to reduce proliferation risks associated with growing international interest in the use of nuclear power. IAEA safeguards must be credible and effective in deterring the diversion of nuclear materials and reassuring states that peaceful-use commitments are upheld. Another priority is the development and implementation of reliable fuel services as an alternative to the further spread of enrichment and reprocessing capabilities. The NIS will work with other Departmental elements and U.S. agencies to promote such concepts. Assuring that states adopt safeguards and security measures in line with the highest international nonproliferation standards is another priority.

The NIS will also support the applied development and evaluation of technologies to support U.S. arms control and nonproliferation initiatives separate from its work associated with NGSI. This will include advanced radiation measurement technologies that could be applied under the New START Treaty as well as other technologies for treaty verification, transparency and nonproliferation purposes.

The NIS funding profile also will provide for activities that prevent and counter WMD proliferation, including continued support for U.S. efforts to address proliferation by Iran, North Korea, and proliferation networks, implement nuclear arms reduction and associated agreements, strengthen international nonproliferation agreements and standards, implement statutory export control and safeguards requirements, encourage global adherence to and implementation of international nonproliferation requirements, and support high-priority diplomatic initiatives.

The table below provides a crosswalk from the FY 2011 Budget Structure to the proposed Budget Structure for FY 2012.

Activity	Subprogram FY 2011	Subprogram FY 2012
Safeguards Policy & Human Resources	Intl Regimes & Agreements	Nuclear Safeguards & Security
Safeguards Engagement	Global Sec. Engagement & Coop.	Nuclear Safeguards & Security
Nuclear Security & Physical Protection	Intl Regimes & Agreements	Nuclear Safeguards & Security
Safeguards Technology Development	Dismantlement and Transparency	Nuclear Safeguards & Security
Confidence Building Measures	Global Sec. Engagement & Coop.	Nuclear Controls
Export Control Licensing Compliance	Intl Regimes & Agreements	Nuclear Controls
International Nonproliferation Export Control	Global Sec. Engagement & Coop.	Nuclear Controls
Cooperative Border Security	Global Sec. Engagement & Coop.	Nuclear Controls
Weapons of Mass Destruction Interdiction	Intl Regimes & Agreements	Nuclear Controls
Global Initiatives for Proliferation Prevention	Global Sec. Engagement & Coop.	Nuclear Controls
Warhead Dismantlement and Fissile Material Transparency	Dismantlement and Transparency	Nuclear Verification
HEU Transparency Implementation	Dismantlement and Transparency	Nuclear Verification
Nuclear Noncompliance Verification	Dismantlement and Transparency	Nuclear Verification
Multilateral Supplier Policy	Intl Regimes & Agreements	Nonproliferation Policy
Global Regimes	Intl Regimes & Agreements	Nonproliferation Policy
Treaties & Agreements	Treaties & Agreements	Nonproliferation Policy

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Nuclear Safeguards and Security	**0**	**0**	**53,925**

The Nuclear Safeguards and Security (NSS) subprogram manages the Next Generation Safeguards Initiative (NGSI), oversees support for the U.S. Support Program (USSP) to IAEA Safeguards, is responsible for the implementation of DOE Additional Protocol (AP) and Voluntary Offer Agreement (VOA) Safeguards activities at U.S. sites and facilities, and works with the IAEA and other partners to enhance the application of physical protection and safeguards norms and best practices.

This subprogram consists of four activities: Safeguards Policy & Human Resources, which includes the development of safeguards policies, concepts and approaches, and human capital development; Safeguards Engagement; Safeguards Technology Development; and International Nuclear Security.

- **Safeguards Policy & Human Resources** **0** **0** **16,261**

  The Safeguards Policy & Human Resources activity leads three elements of NGSI – policy development, concepts and approaches, and human capital development – and manages the implementation of DOE AP and Voluntary Offer Agreement (VOA) Safeguards activities at U.S. sites and facilities. The activity conducts analyses of emerging international safeguards issues to provide timely information and recommendations that support DOE/NNSA and USG safeguards policy decisions. The activity also develops new approaches and safeguards concepts to improve the effectiveness and efficiency of IAEA safeguards, including the incorporation of safeguards into facility designs. To implement the Human Capital Development element, the subprogram seeks to reinvigorate the safeguards human capital base in the United States through internships, summer courses, university engagement, professional development, and fellowship opportunities.

  In FY 2012, the subprogram will investigate new safeguards concepts for enrichment plants and engage industry and the IAEA on Safeguards-by-Design. The subprogram also will provide technical analysis and support for international safeguards and nonproliferation policy, including the assessments necessary to support regulatory and governance processes and conduct proliferation risk assessments of new technologies and facilities including those related to the global expansion of nuclear power. The subprogram will continue to support human capital development efforts to attract and train new safeguards experts in order to staff international safeguards positions at the National Laboratories, federal agencies, and the IAEA with qualified U.S. candidates.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Safeguards Engagement**	**0**	**0**	**16,226**

The Safeguards Engagement activity (SE) strengthens the international safeguards regime through: (1) the development of a nuclear infrastructure that emphasizes safeguards, security and nonproliferation objectives; and (2) its focus on field-testing and implementing technologies and methodologies that address anticipated needs of the international community and that increase the effectiveness and efficiency of safeguards measures at specific facilities in partner countries.

In FY 2012, SE will work with foreign partners to develop safeguards technologies to detect illicit diversion or transfer of nuclear material throughout the nuclear fuel cycle and to strengthen indigenous safeguards systems. Also, SE will expand its cooperation with countries in the Middle East and North Africa that have credible plans for nuclear power development to establish infrastructures that emphasize security and appropriate safeguards.

• **Safeguards Technology Development**	**0**	**0**	**15,944**

The Safeguards Technology Development activity aims to strengthen international safeguards through the application and development of tools, technologies, and methods that optimize the effectiveness and efficiency of safeguards implementation at both the facility and state levels. Implementation of safeguards at declared facilities can be made more efficient and effective by incorporating advances in automation, measurement, and information technology and developing new tools for containment and surveillance, data integration and authentication, and remote monitoring. State-level safeguards implementation can be strengthened through the development multifunctional, field-portable safeguards tools and improved information analysis capabilities. Activities are closely coordinated with the work of the NNSA Nonproliferation and Verification Research and Development program.

In FY 2012, the Safeguards Technology Development activity will initiate development of three new non-destructive assay measurement instruments based on modeling work done in 2010-2011; demonstrate and/or deploy two new technologies for gas centrifuge enrichment plant safeguards; develop new safeguards data integration and information analysis algorithms; and address gaps in safeguards technical capabilities across the nuclear security enterprise. The activity will also continue to provide day-to-day technical oversight of the United States Support Program to the IAEA.

• **Nuclear Security & Physical Protection**	**0**	**0**	**5,494**

The Nuclear Security & Physical Protection activity works to strengthen physical security norms and practices worldwide by conducting bilateral physical protection assessments, as required under the Nuclear Nonproliferation Act of 1978 and the Atomic Energy Act of 1954, to verify that foreign sites holding U.S.-obligated nuclear material are adequately protected. The activity

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

also develops and conducts physical protection training courses for foreign officials, both bilaterally and in conjunction with the IAEA, and provides key policy and technical support to the development, negotiation, and implementation of nuclear security documents, including treaties and critical recommendations documents such as INFCIRC/225.

In FY 2012, the activity will conduct training on the new provisions of a revised IAEA INFCIRC/225 and work with international partners to ensure that applied physical protection measures are consistent with internationally agreed-upon physical protection standards. The activity will also provide assistance to the IAEA on document development associated with the new Nuclear Security Plan.

Nuclear Controls	**0**	**0**	**48,496**

The Nuclear Controls (NC) Subprogram supports domestic export licensing and interdiction operations and engages in global cooperative efforts to assist partner states in implementing and enforcing nonproliferation obligations and in detecting and deterring proliferators seeking WMD. The NC subprogram helps states to strengthen nuclear infrastructure requirements to prevent the diversion of nuclear materials; strengthen national WMD export control systems at the governmental and industry level; develop technically effective approaches to enhance regional security and prevent proliferation in volatile areas; and transition and engage WMD scientific communities to advance security objectives. This subprogram is responsible for the following engagement elements: International Nonproliferation Export Control (INECP); Global Initiatives for Proliferation Prevention (GIPP); Confidence Building Measures (CBM); Export Control Review and Compliance; and Weapons of Mass Destruction Interdiction.

• **International Nonproliferation Export Control**	**0**	**0**	**14,216**

The International Nonproliferation Export Control activity (INECP) strengthens national systems of export control, focusing on countries and regions of proliferation concern. The INECP has two primary components: international cooperation and training for USG export enforcement agencies. Internationally, INECP works with established and emerging supplier states, high volume trans-shipment countries, and transit states located close to suppliers.

In FY 2012, INECP will continue to focus on industry outreach and Commodity Identification Training, which teaches customs agents and other officials to recognize WMD-sensitive goods. In addition, INECP will capitalize on regional outreach opportunities and leverage INECP-trained experts in regional best practices engagements. Training for USG agencies will provide specialized, commodity-specific information to U.S. law enforcement agencies with the authority to investigate export control violations, including DHS/Custom and Border Protection, DHS/Immigration and Custom Enforcement, FBI and others. In addition, a Cooperative Border Security Initiative (CBSI) seeks to enhance under-developed enforcement

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

organizations' capacity so that they can effectively absorb INECP or other NNSA and USG border-security focused assistance. This initiative subsumes the former Cooperative Border Security Program, now incorporated as an element of INECP.

• **Global Initiatives for Proliferation Prevention**	**0**	**0**	**18,472**

The Global Initiatives for Proliferation Prevention (GIPP) activity advances global nonproliferation efforts by helping to impede transfers of weapons of mass destruction expertise and know-how to terrorist organizations and rogue states by working with former WMD scientists and technical personnel in non-weapons related activities aimed at advancing security and nonproliferation objectives.

In FY 2012, GIPP will continue to exclusively focus on high priority institutes in line with an interagency risk assessment. In Russia, new work will focus on technologies that support global security and nonproliferation and cost-share activities will be emphasized where possible. GIPP will increase the level of activity in the rest of the former Soviet Union and will continue activities in Iraq based on assessed risk.

• **Confidence Building Measures**	**0**	**0**	**1,922**

The Confidence-Building Measures (CBM) activity promotes international technical collaboration in regions of proliferation concern. The activity currently promotes international cooperation on nonproliferation nuclear forensics and seismic monitoring cooperation in the Middle East.

In FY 2012, CBM will support a number of seismology collaborations in the Middle East, such as assisting in the sustainment and operation of the Comprehensive Nuclear Test Ban Treaty (CTBT) International Monitoring System. The activity also will strengthen its support of regional centers of nonproliferation excellence to promote regional capacity-building and foster sustainability of assistance efforts. In particular, CBM will manage the Cooperative Monitoring Center in Amman, Jordan.

• **Export Control Review and Compliance**	**0**	**0**	**10,631**

The Export Control Review and Compliance activity has a statutory requirement to support domestic export licensing operations. This includes reviewing and providing advice on U.S. export license applications for dual-use items and munitions that could have uses in the development of nuclear, chemical, and biological weapons and their delivery systems. The activity maintains the Proliferation Information Network System (PINS), an automated, wide-area, classified system for the review and evaluation of export requests and technology transfers to foreign nationals and operates and maintains a state-of-the-art Nuclear Suppliers Group

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

(NSG) and Nuclear Information Sharing System (NISS). In FY 2012, the activity will continue to implement statutory export control reviews and finalize development of a new analytical capability to conduct support controls more effectively.

• **Weapons of Mass Destruction Interdiction**	**0**	**0**	**3,255**

The WMD Interdiction activity contributes to efforts at home and abroad. Specifically, the Interdiction Technical Analysis Group (ITAG) provides critical technical support, real-time "reach-back" capabilities, and policy guidance to USG interdiction groups and activities and support for the Proliferation Security Initiative and the implementation of U.S. nonproliferation sanctions.

In FY 2012, the activity will enhance DOE National Laboratory technical support to the USG interdiction groups; increase coverage of WMD technologies in the technical reference guides; and provide assessments of WMD-related items, proliferation program choke-points and international trade flows to determine interdiction opportunities. Also, the activity will continue a technical advisory role in supporting the multilateral control regimes, including the Australia Group, Missile Technology Control Regime (MTCR), and the Wassenaar Arrangement, to ensure evolving policy adequately reflects the latest technology.

Nuclear Verification	**0**	**0**	**46,995**

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

• **Warhead Dismantlement and Fissile Material Transparency**	**0**	**0**	**17,012**

The Warhead Dismantlement and Fissile Material Transparency (WDFMT) activity develops technologies and approaches for transparent reductions and monitoring of nuclear warheads and

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

fissile material, and supports U.S. Government policy development and implementation for potential future transparency initiatives and the following current treaties and agreements: New START, the Treaty of Moscow, the Threshold Test Ban Treaty; Limited Test Ban Treaty, the CWC, and the PPRA. The WDT activity is responsible for all monitoring and policy aspects of PPRA implementation, and works on behalf of the Secretary of Energy to fulfill DOE's responsibilities as the U.S. Government's Executive Agent for the Agreement. In addition, the WDT activity provides support to international organizations to develop an International Monitoring System for detecting nuclear explosions worldwide and serves as the DOE/NNSA focal point for implementation activities associated with the potential ratification and entry-into-force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT).

In FY 2012, the WDT activities include the development and assessment of advanced technical concepts for warhead and fissile material transparency, monitoring and dismantlement verification to assure the technologies needed to protect our national interests, including those needed to verify arms control and nonproliferation agreements essential to our security, are developed.

• **Nuclear Noncompliance Verification**	**0**	**0**	**8,338**

The Nuclear Noncompliance Verification (NNV) activity provides advanced technology applications to verify declared nuclear activities, detect undeclared nuclear materials and activities, and support the verifiable dismantlement of nuclear programs in countries of proliferation concern. Subprogram activities are closely coordinated with the work of the NNSA Nonproliferation and Verification Research and Development program. Other specially-designed tools and technologies will also be developed to address unique proliferation threats. In FY 2012, the NNV activity will complete the development of three verification tools, technologies, or analyses, and planning and readiness to support verifiable dismantlement of nuclear programs in countries of proliferation concern.

• **HEU Transparency Implementation**	**0**	**0**	**21,645**

The HEU Transparency Implementation activity annually monitors the conversion of 30 metric tons (MT) of Russian HEU from dismantled nuclear weapons into low enriched uranium (LEU), to provide confidence that the LEU purchased under the 1993 HEU Purchase Agreement is derived from dismantled Russian nuclear weapons processed and eliminated from Russia's weapons stockpile and used for peaceful purposes in the United States. Reciprocal transparency monitoring visits are conducted to ensure the nonproliferation objectives of the Agreement are met both in the Russian Federation and the United States. In FY 2012, the HEU Transparency Implementation activity will complete 24 monitoring visits, monitor the conversion of 30 MT of

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Russian HEU to LEU for a cumulative total of 462 MT downblended and verifiably eliminated, support a Russian monitoring visit to the United States, and continue to monitor and assess Russian transparency data.

Nonproliferation Policy	**0**	**0**	**12,417**

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

• **Global Regimes**	**0**	**0**	**4,641**

The Global Regimes activity develops policy and provides program oversight on nuclear nonproliferation and international security issues and nuclear treaties and agreements, including support for issues pertaining to the NPT, multilateral regimes and groups, and the United Nations Conference on Disarmament. Issues include negotiations on a Fissile Material Cut-Off Treaty; the IAEA Technical Cooperation (TC) Program that facilitates access by IAEA Member States to the peaceful use of nuclear energy; bilateral Agreements for Cooperation in the Peaceful Uses of Nuclear Energy (under Atomic Energy Act Section 123); the Biological Weapons and Toxins Convention (BWC); and development of reliable nuclear fuel service concepts.

In FY 2012, the activity will provide statutorily-mandated technical assistance to negotiations supporting agreements for cooperation and their administrative arrangements represent DOE/NNSA in potential negotiations on a Fissile Material Cut-Off Treaty (FMCT) and lead the development of assured fuel supply concepts and activities. The activity will also support the development and implementation of a new framework for civil nuclear cooperation as called for by the President to reduce reliance on indigenous development of enrichment and reprocessing efforts by recipient states.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Regional Analysis and Engagement**	**0**	**0**	**3,883**

The Regional Analysis and Engagement activity supports implementation of Presidential-directed or Congressionally-mandated nonproliferation and international security requirements stemming from high-level nonproliferation initiatives, agreements and treaties. Specifically, the activity conducts policy and technical analysis on urgent national security issues, strategic engagement, proliferation trends in regions of concern, and options to strengthen international mechanisms for preventing proliferation. This includes funding research and engagement activities by non-governmental organizations and institutes of higher learning that support NNSA's mission and policy requirements. Examples of this work include analysis of regional nuclear fuel cycle growth and engagement of technical experts in a dialogue on nonproliferation infrastructure requirements for emerging and existing nuclear power programs. The activity continues to provide for unexpected, unplanned responses to requirements of an immediate nature based on U.S. national security needs. Examples of unforeseen activities in the past have included: providing technical and policy support to U.S. delegations to the Six-Party Talks denuclearization and energy assistance working groups; analysis of procurement associated with the emergence of proliferation networks; and dismantlement and removal of nuclear materials from clandestine WMD programs.

In FY 2012, the activity will conduct policy studies/analyses undertaken by National Laboratories, non-government organizations, or institutes of higher learning in support of the Department's implementation of high-level nonproliferation initiatives. In addition, the activity will provide policy and technical analyses of, and responses to, emerging and immediate nonproliferation and counter-proliferation security issues including the global expansion of nuclear energy and evolution of the nuclear fuel cycle.

• **Multilateral Supplier Policy**	**0**	**0**	**3,893**

The Multilateral Supplier Policy activity provides technical and policy support to U.S. Government diplomacy within the Nuclear Suppliers Group (NSG) and the NPT Exporters' (Zangger) Committee, the Missile Technology Control Regime (MTCR), the Australia Group (AG) and the Wassenaar Arrangement. The activity draws on the unparalleled technical expertise in the national laboratories. This activity develops timely and topical analyses of WMD proliferation risk and programs of concerns, identifying export control vulnerabilities and critical technology needs of countries of proliferation concern (choke-points). In FY 2012 the activity will continue to lead the U.S. effort to conduct a fundamental review of the NSG control list to ensure it adequately reflects the latest technology developments in the nuclear fuel-cycle and dual-use technology.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Dismantlement and Transparency	**72,763**	**49,207**	**0**

Reflects realignment of this subprogram to the Nuclear Verification subprogram.

• **Warhead Dismantlement and Fissile Material Transparency**	**18,132**	**16,911**	**0**

Reflects realignment of this activity to the Nuclear Verification subprogram.

• **Nuclear Noncompliance Verification**	**36,865**	**15,728**	**0**

Reflects realignment to the Nuclear Verification subprogram with the Safeguards Technology Development portion of the activity realigning to the Nuclear Safeguards and Security subprograms.

• **HEU Transparency Implementation**	**17,766**	**16,568**	**0**

Reflects realignment of this activity to the Nuclear Verification subprogram.

Global Security Engagement and Cooperation	**50,708**	**47,289**	**0**

Reflects realignment of this subprogram to the Nuclear Controls subprogram.

• **Confidence Building Measures**	**2,000**	**1,911**	**0**

Reflects realignment of this activity to the Nuclear Controls subprogram.

• **International Nuclear Safeguards and Engagement**	**13,831**	**12,883**	**0**

Reflects realignment of this activity to the Nuclear Safeguards and Security subprogram, henceforth to be known as Safeguards Engagement.

• **International Nonproliferation Export Control**	**12,501**	**11,643**	**0**

Reflects realignment of this activity to the Nuclear Controls subprogram.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Cooperative Border Security**	**2,669**	**2,489**	**0**
Reflects merging of this activity with International Export Control in the Nuclear Controls subprogram.			
• **Global Initiatives for Proliferation Prevention**	**19,707**	**18,363**	**0**
Reflects realignment of this activity to the Nuclear Controls subprogram.			
International Regimes and Agreements	**42,703**	**39,824**	**0**
Reflects realignment of the activities under this subprogram to Nuclear Safeguards and Security, Nuclear Controls, and Nonproliferation Policy subprograms.			
• **WMD Interdiction and Multilateral Supplier Policy**	**4,136**	**7,107**	**0**
Reflects realignment of the WMD Interdiction portion of this activity to the Nuclear Controls subprogram, and the realignment of the Multilateral Supplier Policy portion of this activity to the Nonproliferation Policy subprogram.			
• **Global Regimes**	**7,628**	**3,864**	**0**
Reflects realignment of this activity to the Nonproliferation Policy subprogram.			
• **Nuclear Safeguards**	**12,946**	**12,073**	**0**
Reflects realignment of this activity to the Nuclear Safeguards and Security Subprogram, henceforth to be known as Safeguards Policy and Human Resources.			
• **Export Control Licensing Operations**	**12,136**	**11,318**	**0**
Reflects realignment of this activity to the Nuclear Controls subprogram, henceforth to be known as Export Control Review and Compliance.			
• **International Nuclear Security**	**5,857**	**5,462**	**0**
Reflects realignment of this activity to the Nuclear Safeguards and Security subprogram, henceforth to be known as Nuclear Security.			

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Treaties and Agreements	**21,028**	**19,610**	**0**
Reflects realignment of this subprogram to an activity under the Nonproliferation Policy subprogram, henceforth to be known as Regional Engagement and Analysis.			
Total, Nonproliferation and International Security	**187,202**	**155,930**	**161,833**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Nuclear Safeguards and Security	
In FY 2012, activities from the former Dismantlement and Transparency, International Regimes and Agreements, and Treaties and Agreements were reorganized into the Nuclear Safeguards and Security subprogram. Increase is due to normal escalation of labor and travel.	**+318**
Nuclear Controls	
In FY 2012, activities from the former Global Security Engagement and Cooperation and International Regimes and Agreements were reorganized into the Nuclear Controls subprogram. Increase is due to normal escalation of labor and travel.	**+286**
Nuclear Verification	
In FY 2012, activities from the former Dismantlement and Transparency Program were reorganized into the Nuclear Verification subprogram. Increase is due to normal escalation of labor and travel.	**+5,227**
Nonproliferation Policy	
In FY 2012, activities from the former Treaties and Agreements and International Regimes and Agreements were reorganized into the Nonproliferation Policy subprogram. Increase is due to normal escalation of labor and travel.	**+72**
Total Funding Change, Nonproliferation and International Security	**+5,903**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	460	470	480
Capital Equipment	1,200	1,226	1,253
Total, Capital Operating Expenses	**1,660**	**1,696**	**1,733**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	491	502	513	524
Capital Equipment	1,281	1,309	1,338	1,367
Total, Capital Operating Expenses	**1,772**	**1,811**	**1,851**	**1,891**

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

International Nuclear Materials Protection and Cooperation

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
International Nuclear Materials Protection and Cooperation			
Navy Complex	33,880	34,322	33,664
Strategic Rocket Forces/12th Main Directorate	48,646	51,359	59,105
Rosatom Weapons Complex	71,517	105,318	80,735
Civilian Nuclear Sites	63,481	59,027	59,117
Material Consolidation and Conversion	13,611	13,867	14,306
National Programs and Sustainability	68,469	60,928	60,928
Second Line of Defense	272,446	265,297	263,784
International Contributions [a]	699	0	0
Total, International Nuclear Materials Protection and Cooperation	**572,749**	**590,118**	**571,639**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
International Nuclear Materials Protection and Cooperation				
Navy Complex	8,146	3,900	3,750	3,600
Strategic Rocket Forces/12th Main Directorate	42,014	6,150	5,900	5,650
Rosatom Weapons Complex	51,560	46,061	39,442	38,876
Civilian Nuclear Sites	48,292	44,249	46,996	46,996
Material Consolidation and Conversion	64,627	64,627	66,433	50,000
National Programs and Sustainability	39,006	39,006	41,734	39,006
Second Line of Defense	265,355	429,007	451,745	347,595
Total, International Nuclear Materials Protection and Cooperation	**519,000**	**633,000**	**656,000**	**531,723**

Mission

The International Nuclear Materials Protection and Cooperation (INMP&C) program prevents nuclear terrorism by working in Russia and other regions of concern.

Benefits

Within INMP&C, seven subprograms each make unique contributions to Government Performance and Results Act (GPRA) Unit Program Number 49, which supports the international effort to secure all vulnerable nuclear material around the world within 4 years.

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[a] FY 2010 total includes international contributions of $250,000 from South Korea, $140,000 from the United Kingdom of Great Britain, and $308,775 from Finland.

In February 2005, the Bratislava Initiative resulted in a comprehensive plan for the cooperation on security upgrades of Russian nuclear facilities at Rosatom and Ministry of Defense sites and cooperation in the areas of nuclear regulatory development, sustainability, secure transportation, Materials Protection Control and Accounting (MPC&A) expertise training, and protective force equipment. Workscope as of February 2005 was completed at the end of 2008. However, a number of important areas/buildings have been added to the scope of joint work since February 2005. The MPC&A upgrades at most of these additional areas/buildings were completed in 2010, while some work scope will continue through 2018.

The Navy Complex program element improves security of Russian Navy warhead and weapons exploitable material by installing improved security systems at Russian Navy nuclear warhead sites, Russian Navy HEU fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. There are 39 Russian Navy nuclear warhead sites and 8 Russian Navy fuel/nuclear material storage sites. The program also improves security systems at checkpoints near upgraded sites, the Personnel Reliability Program (PRP) for the Russian Ministry of Defense (MOD), and sustainability activities consisting of training and site-level maintenance support for upgraded MOD sites.

The Strategic Rocket Forces (SRF)/12th Main Directorate program element improves security of Russian warheads maintained by the Russian Ministry of Defense by installing improved security systems at Strategic Rocket Forces and 12th Main Directorate nuclear warhead sites. A total of 25 SRF sites (at 11 bases) and nine 12th Main Directorate sites have received MPC&A upgrades.

The Rosatom Weapons Complex program element improves the security of nuclear weapons and materials at seven Rosatom nuclear weapons, uranium enrichment, and material processing/storage sites, which are located within the closed cities of the Rosatom Weapons complex. The Civilian Nuclear Sites program improves security at 32 civilian nuclear sites (19 Russian and 13 sites outside of Russia).

The Material Consolidation and Conversion (MCC) program element reduces the complexity and the long-term costs of securing weapons exploitable nuclear material in Russia. The MCC program is designed to significantly reduce the proliferation risk associated with weapons exploitable nuclear materials by consolidating excess, non-weapons exploitable highly enriched uranium (HEU) and plutonium into fewer, more secure locations. The MCC program achieves further risk reduction by downblending weapons exploitable HEU to non-weapons exploitable low enriched uranium (LEU).

The National Programs and Sustainability element assists Russia and other partner countries in developing and maintaining a nation-wide MPC&A infrastructure, thereby ensuring that U.S.-funded security upgrades and an effective infrastructure can be sustained. Activities include developing and revising regulations, developing inspection capabilities, training, education and regional support, site sustainability planning, nuclear security culture activities, secure transportation and protective force improvements, developing and revising measurement methodologies, and maintaining material control and accounting measurement capabilities.

The Second Line of Defense (SLD) program strengthens the capability of foreign governments to deter, detect, and interdict illicit trafficking in nuclear and other radioactive materials across international borders and through the global maritime shipping system. The SLD Program also provides training in the use of the equipment to appropriate law enforcement officials and initial system sustainability

support and maintenance as the host government assumes full operational responsibility for the equipment. Implementation of the SLD Program in any given country is contingent upon the agreement/invitation of the government in that country.

The SLD Core Program installs radiation detection equipment at borders, airports, and strategic ports in Russia, other former Soviet Union states, Eastern Europe**,** and other key countries. Under the Core Program, detection equipment is deployed to scan commercial cargo, passenger vehicles, and pedestrians regardless of direction or destination. Approximately 650 sites in 30 countries have been identified to potentially receive detection equipment installations under the Core Program, including approximately170 sites in Russia.

The SLD Megaports Initiative provides radiation detection equipment to key international seaports to screen cargo containers for nuclear and other radioactive materials regardless of the container destination. The Megaports Initiative also cooperates closely with the U.S. Department of Homeland Security's Bureau of Customs and Border Protection (CBP) to support the Container Security Initiative (CSI) and to implement the Secure Freight Initiative (SFI) at international ports. The primary goal of the Megaports Initiative is to scan as much container traffic for radiation as possible (including imports, exports, and trans-shipments), regardless of destination and with minimal impact to port operations. Under this initiative, NNSA plans to implement this program in up to 100 international seaports by the end of 2018. NNSA is currently engaged in negotiations with governments in Europe, Asia**,** the Middle East, Latin America, the Caribbean**,** and Africa for the implementation of the Megaports Initiative. NNSA continues to engage with governments and commercial terminal operators in those countries where it is important to implement the Megaports Initiative.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments:

- Completed MPC&A upgrades at a cumulative total of 213 of 229 buildings containing weapons exploitable material in Russia and NIS/Baltics;
- Downblended approximately a cumulative total of 12.6 metric tons (MTs) of HEU to LEU;
- Facilitated the enactment of 26 additional MPC&A regulations in the Russian Federation and FSU countries;
- Placed a cumulative total of 186 MPC&A regulations in the development phase for Russia and other FSU countries, and
- Completed installation of radiation detection equipment at a cumulative total of 399 sites, 365 SLD Core sites and 34 Megaports.

Major Outyear Priorities and Assumptions

The outyear projections for the INMP&C program total approximately $2,339,723,000 (FY 2013 – FY 2016). The Program supports efforts to secure and eliminate vulnerable nuclear weapons and weapons exploitable materials in Russia and other countries of concern and efforts to prevent and detect the illicit transfer of nuclear material. Outyear funding reflects the completion of MPC&A post-Bratislava upgrades to warhead and material sites in Russia, security upgrades to address insider threats, and support for sustainability activities with increased Russian cost sharing to transition full security maintenance to the Russian Federation. Funding for the SLD program increases as the program is expanded to include additional land border sites and Megaports in targeted countries of strategic interest and in countries where NNSA is working with its Department of Homeland Security counterparts to implement requirements of the "Implementing Recommendations of the 9/11 Commission Act of 2007."

To meet the NNSA strategic long-term goal of Nuclear Nonproliferation, the INMP&C program completed MPC&A upgrades in Russia at a total of 73 warhead sites at the end of calendar year 2008 and plans to: (1) complete upgrades to approximately 229 buildings containing weapons exploitable nuclear material by the end of fiscal year 2013; (2) downblend a total of approximately 17 MTs of HEU by the end of fiscal year 2015; and (3) install radiation detection equipment at approximately 650 border crossings around the world and at approximately 100 ports of interest in approximately 40 countries by the end of 2018. These results will directly support the goal of Nuclear Nonproliferation by providing a first line of defense (securing warheads and weapons exploitable nuclear materials at their source), and a second line of defense (preventing and detecting the illicit transfer of nuclear materials).

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Navy Complex	**33,880**	**34,322**	**33,664**

The Navy Complex program element was established to improve security of Russian Navy warhead and weapons exploitable material by installing improved security systems at Russian Navy nuclear warhead sites, Russian Navy Highly Enriched Uranium (HEU) fuel storage facilities (fresh and damaged fuel), and shipyards where nuclear materials are present. These sites include a total of 47 sites: 39 Russian Navy nuclear warhead sites and 8 Russian Navy fuel and other nuclear material storage sites.

Comprehensive upgrades were completed at all 8 Navy fuel and other nuclear material storage sites in FY 2004. No new work is planned at those sites; however, sustainability and training efforts will continue for 7 of these sites to ensure that the equipment provided is effective in protecting the material. In addition, retrofit of MPC&A equipment at the end of its service life will be performed at 1 site, and upgrades to address insider threats will be completed at another site.

The INMP&C program completed MPC&A upgrades at the final 2 Russian Navy nuclear warhead sites in FY 2006 (increasing the total Navy warhead sites secured with either completed rapid and/or comprehensive upgrades) to 39 sites. In FY 2012, INMP&C will provide: (1) sustainability support such as training and site level maintenance of installed MPC&A upgrades to 12 of these 39 sites which meet interagency requirements for such support; (2) nuclear detection at closed city entrances, including security upgrades to one checkpoint and sustainability support to 3 checkpoints with previously installed security upgrades; (3) support for personnel reliability programs; (4) replacement of outdated security equipment, and (5) additional upgrades for training and maintenance centers to ensure sustainability of upgrades.

Strategic Rocket Forces/12th Main Directorate	**48,646**	**51,359**	**59,105**

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

In FY 2012, INMP&C plans to provide sustainability support for 23 SRF and three 12th Main Directorate sites which will include: (1) development of training curriculum and courses; (2) construction and support of technical centers to ensure that the Russian Ministry of Defense will

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

have a sufficient cadre of technicians and trainers to assume maintenance and sustainability of the installed upgrades at all Russian Ministry of Defense sites; (3) infrastructure development, including performance assurance and procedure development, and (4) site level maintenance of installed MPC&A upgrades at these sites. The INMP&C will also provide additional MPC&A upgrades to other SRF sites that will provide additional protection from theft and/or diversion of warheads from these sites.

Rosatom Weapons Complex	**71,517**	**105,318**	**80,735**

The Rosatom Weapons Complex program element improves the security of nuclear weapons and materials at seven Rosatom nuclear weapons, uranium enrichment, and material processing/storage sites, which are located within the closed cities of the Rosatom Weapons Complex. The Rosatom Weapons Complex element primarily focuses on upgrades at seven large sites which have many nuclear material storage and handling locations. The goal of this joint cooperative program is to provide protection from internal and external theft scenarios at areas that handle highly attractive material.

In FY 2012, INMP&C will continue to fund selective new upgrades to buildings/areas at these sites that were added to the cooperative after the Bratislava Summit, including: (1) nuclear detection on closed city borders; (2) expanded MPC&A upgrades at some buildings to address both outsider and insider threats; (3) Rosatom protective force training center development; (4) improvements to site-wide material measurement and accounting practices, and (5) internal site nuclear transport security. The majority of this work is expected to be located at the All Russian Scientific Research Institute of Experimental Physics (A-16), the Mayak Production Association, and the Mining and Chemical Combine (K-26).

Significant efforts will be directed towards implementing a comprehensive MPC&A sustainability effort at all sites to include: (1) efforts to improve MPC&A management infrastructures, (2) training, (3) procedural development and adherence, (4) system maintenance and repair, (5) performance testing, (6) configuration management, and (7) operational cost analysis. Where necessary, the program will also finance the replacement of systems that were upgraded earlier in the cooperative agreement that are at the end of their operational lifecycles.

Funding supports continued MPC&A activities outside of Russia, including sustainability activities at nine sites in Kazakhstan, Ukraine, Belarus, and Uzbekistan, and engagement with the International Atomic Energy Agency to promote best practices related to nuclear material control, accounting, and sustainability. Funding will also be allocated to the continued engagement with India on nuclear material security best practices.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Civilian Nuclear Sites	**63,481**	**59,027**	**59,117**

The Civilian Nuclear Sites program element improves security at 31 civilian nuclear sites (18 Russian sites and 13 sites outside of Russia). The basic MPC&A upgrade objective is to employ a cost-effective, graded approach with an initial focus on installing upgrades for the most highly proliferant-attractive nuclear material at each site. Rapid MPC&A upgrades are installed to mitigate the immediate risk of theft and diversion, until long term, more comprehensive MPC&A upgrades are designed, installed, and placed into operation. Following the completion of initial rapid and comprehensive site upgrades, U.S. funding will continue at a reduced level to: (1) help foster site capabilities to operate and maintain installed security systems, and (2) support replacement of equipment and possible additional security enhancements, e.g., perimeter upgrades, as warranted. This program element will also continue to support those sites with completed MPC&A comprehensive upgrades.

In FY 2012, INMP&C plans to provide sustainability support to 15 civilian nuclear sites with completed MPC&A upgrades including support for training, procedures, maintenance, equipment repair, critical spare parts, performance testing, and other activities at these sites, in order to ensure the sustainability of those upgrades and support additional MPC&A upgrades focused on addressing outsider and insider threats within the Civilian Nuclear sites. Sustainability support is not being provided to four Russian Civilian sites because three sites have withdrawn from cooperation, and all of the highly attractive nuclear material has been transferred from the fourth site.

In addition, in FY 2012, INMP&C plans to continue to cooperate with countries outside of Russia and the Former Soviet States in order to increase MPC&A awareness and to provide assistance to protect weapons exploitable materials. This will include engagement with China on modern nuclear material security methodologies and best practices. Planned activities generally include training, technical exchanges, and consultations to improve security at nuclear material locations. It may be appropriate with some partners to support security upgrades for sites with weapons exploitable nuclear materials which are the most vulnerable to theft and/or diversion. This MPC&A assistance is expected to significantly reduce the risk of theft and/or diversion of weapons exploitable materials by potential terrorists seeking to produce nuclear weapons.

Material Consolidation and Conversion	**13,611**	**13,867**	**14,306**

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

This approach can decrease the number of proliferant-attractive theft targets and the equipment and personnel costs associated with securing such material. The MCC also converts weapons exploitable

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

special nuclear material (SNM) to a less proliferation-attractive form. By the end of FY 2015, it is planned that the MCC project will convert approximately 17 MTs of HEU to LEU.

In FY 2012, INMP&C plans to continue to implement the MPC&A strategy to simplify the nuclear security situation in Russia by converting attractive SNM to a less proliferant-attractive form (e.g., HEU to LEU) and to consolidate material to fewer sites and fewer buildings where possible. The program is expecting to convert an additional 0.9 MTs of the total 17 MTs of HEU to LEU, (for a cumulative total converted of 13.5 MTs).

National Programs and Sustainability	**68,469**	**60,928**	**60,928**

The National Programs and Sustainability element assists Russia and other partner countries in developing and maintaining a nation-wide MPC&A infrastructure, thereby ensuring that U.S.-funded security upgrades and an effective infrastructure can be sustained. Projects include developing and revising regulations, developing inspection capabilities, training, education and regional support, site sustainability planning, nuclear security culture activities, secure transportation, protective force improvements, developing and revising measurement methodologies, and maintaining material control and accounting measurement capabilities. These projects develop the necessary MPC&A infrastructure for sustaining long-term MPC&A operations in Russia and other partner countries as well as the conditions by which U.S. technical and financial support can be transitioned to the partner countries.

In FY 2012, INMP&C will accelerate projects to assist Russia and other partner countries in establishing the necessary MPC&A support infrastructure to sustain effective MPC&A operations in the long term. Since a re-baseline was established in 2005, the Regulatory Development Project is working to develop or revise MPC&A regulations for the Russian Federation and Ukraine to support sustainable MPC&A operations. In FY 2012, a cumulative total of 204 MPC&A regulations will be in the development phase, 240 regulations will be in the development phase by the end of FY 2016 for the Russian Federation and FSU countries. Regulatory analyses for the Russian Ministry of Defense (MOD), 12th Main Directorate, Navy, and Strategic Rocket Forces were completed in 2007-2008, and work to develop and revise regulations will culminate in a total of 120 regulations being completed by 2013. The Russian Federation MOD will complete 45 of the 120 regulations with the U.S. funding 75 total regulations. The MOD has decided to complete all Air Force regulations without U.S. assistance. Regulatory revisions for all agencies will commence in 2013 as part of MOD sustainability activities; and in FY 2012 Rostechnadzor will complete 5 advanced MPC&A inspection exercises and Rosatom will complete 16 MPC&A inspections. The program will work cooperatively with Rosatom to sustain existing railcars and trucks. In addition, the program will support training activities, performance testing, and maintenance systems for transportation security. INMP&C will assist the Russian Federation in improving the security of weapons exploitable nuclear material at high risk of insider theft or diversion. This will be done by helping to support a sustainable and effective measurement-based Material Control and Accountability (MC&A) program. The MC&A Measurements Project is working to develop or revise measurement methodologies and provide reference material for measurements calibration and operation. In FY2012, eight measurement

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

methodologies will be developed for approximately 13 sites, and 150 reference material standards will be developed for MC&A equipment calibration and operation. The program will also continue to evaluate and provide updated command and control communications systems at Rosatom sites to improve response times of protective forces to potential threats. The Protective Force Project will sustain 3 national level training academies for MVD-IT nuclear guards at Gorelovo, Lunevo, and Ozersk in FY 2012. The Protective Force Project will install command and control radio systems at 5 Rosatom sites and sustain protective force equipment, e.g. tactical radios and response vehicles, at 26 Russian sites in FY 2012. The Project will also provide replacements for 150 explosive detectors at Rosatom site entry control points and other critical locations.

INMP&C will continue to operate and maintain three regional technical support facilities to provide equipment repair, maintenance, calibration assistance, operations assistance, configuration control, warranty service, spare parts inventories, and training for critical MPC&A systems and components; and continue to develop MPC&A training, infrastructure curricula, and support provisions of MPC&A courses. In FY 2012, 25 physical protection classes with 430 participants, 40 material control and accounting classes with 600 participants, and 20 protective force courses with 250 participants will be conducted. Approximately 15 students will graduate from the Engineering Degree Program at the National Research Nuclear University (MEPhI); and Tomsk Polytechnic University will graduate its fourth class of 15 students from their Engineering Degree Program in February 2012.

INMP&C will also assist partner countries in achieving long-term effective operation of their MPC&A programs by assisting sites to establish dedicated MPC&A organizations, and develop site MPC&A management plans, operating procedures, human resource programs, operational cost analysis, and performance test plans. The program will also work to bolster the nuclear security culture in Russia through various security culture enhancement efforts.

In addition, INMP&C will continue implementation of an MPC&A sustainability and transition strategy to achieve the goal of fully transitioning operations and maintenance of MPC&A upgrades to full-partner country responsibility by working with these partner countries to develop the capabilities they need to maintain the safeguards and security of their weapons exploitable nuclear material.

Second Line of Defense	**272,446**	**265,297**	**263,784**
▪ **Core Program**	**98,432**	**140,413**	**129,402**

The Second Line of Defense (SLD) Core Program installs radiation detection equipment at borders, airports, and strategic ports in Russia, other former Soviet Union states, Eastern Europe, and other key countries. The SLD Core Program also provides training and technical support for appropriate law enforcement officials and initial system sustainability support as the host government assumes operational responsibility for the equipment. The program selects sites to be addressed, through a site prioritization and selection methodology so as to effectively plan and utilize program resources.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

In FY 2012, the SLD Core program plans to install radiation detection equipment at an additional 30 foreign sites in Estonia, Kazakhstan, Lithuania, Latvia, Romania, Bulgaria, Ukraine, Kyrgyzstan, Poland, Mongolia, Croatia, and Mexico, increasing the total non-Megaport sites with completed installations to 450. Training will be provided in equipment maintenance and alarm response to law enforcement personnel in these countries. The SLD Core program plans to continue to provide mobile detection and stationary detection capability at points internal to borders of countries of strategic interest. The SLD Core program provides sustainability support in the form of maintenance and/or repair of equipment, training, and/or technical collaboration and support for radiation detection systems at approximately 400 sites in countries where the SLD Core Program has installed such equipment, including Russia, Azerbaijan, Armenia, Austria, Estonia, Greece, Latvia, Lithuania, Mongolia, Kazakhstan, Kyrgyzstan, Romania, Turkmenistan, Slovakia, Slovenia, Romania, Georgia, and Ukraine. Additionally, the program will continue to maintain equipment installed by the U.S. Department of Defense in Uzbekistan. In addition to ongoing activities to implement the SLD Core program in countries of strategic importance, efforts to deploy radiation detection technologies at key land border crossings, airports, and seaports in support of various United Nations Security Council Resolutions will continue.

- **Megaports** **174,014** **124,884** **134,382**

The SLD Megaports Initiative is pursuing cooperation with international partners to deploy and equip key ports with radiation detection equipment and to provide training to appropriate law enforcement officials, in order to provide the technical means to detect, deter, and interdict illicit trafficking in nuclear and other radioactive materials. The ports of interest to NNSA have been identified based upon a risk-based approach to guide implementation priorities considering factors such as container volume to the U.S., routing criteria, regional threat, strategic location, and traffic flow characteristics to guide the implementation priorities.

This program is closely coordinated with, and complements the Department of Homeland Security's (DHS) Bureau of Customs and Border Protection's Container Security Initiative (CSI) with DHS's Secure Freight Initiative (SFI), introduced on December 7, 2006. NNSA efforts under the Megaports Initiative also support implementation of new requirements in the "Implementing Recommendations of the 9/11 Commission Act of 2007," which call for the integrated scanning of 100 percent of U.S.-bound container cargo at foreign seaports. The Megaports program is also planning to provide a single radiation portal monitor (RPM) in close proximity to the non-intrusive imaging (NII) system at CSI ports to allow for the integration of RPM alarm data with the NII images.

By adding radiation detection capabilities at seaports, NNSA will be able to screen container cargo for nuclear and radioactive materials that could be used in a weapon of mass destruction or a radiological dispersal device (RDD) (dirty bomb) against the U.S., the host country, and/or our allies. Under SFI, NNSA will continue to work with DHS to provide the integrated scanning of

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

containers bound for the U.S. with radiation detection equipment (provided by NNSA) and non-intrusive imaging equipment (provided by DHS) and the transmission of integrated data from the equipment to U.S. teams both in-country and in the U.S.

In FY 2012, the program plans to complete installations at three additional Megaports (increasing the number of completed ports to 48). This involves providing site surveys, engineering assessments, radiation detection equipment design procurement and installation. Sustainability support including equipment, maintenance, system checkups, and diagnostics and supplemental training and technical collaboration will be provided for approximately 29 of the sites which have completed installations. In addition, NNSA will continue to work with DHS and other NNSA components to test new technologies that may be used to scan transshipped containers, including mobile technologies and crane-based technologies. The NNSA will continue to pursue cooperation with international partners interested in participating in the Megaports initiative.

International Contributions	**699**	**0**	**0**

Section 3114 of the John Warner National Defense Authorization Act for FY 2007 authorized the Department of Energy to receive and use financial contributions, including from foreign governments, for activities undertaken by the Second Line of Defense Program. This provision was amended by Section 3115 of the Duncan Hunter National Defense Authorization Act for FY 2009 which extended this authority to the entire INMP&C program.

FY 2010 total includes international contributions of $250,000 from South Korea, $140,000 from the United Kingdom of Great Britain, and $308,775 from Finland.

Total, International Nuclear Materials Protection and Cooperation	**572,749**	**590,118**	**571,639**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
▪ **Navy Complex**	
Decrease reflects shift towards more sustainability support for installed MPC&A upgrades.	**-658**
▪ **Strategic Rocket Forces/12th Main Directorate**	
Increase reflects additional support for the sustainability of installed MPC&A upgrades which includes the development of training curriculum and courses, construction and support of technical centers, and infrastructure development, including performance assurance and procedure development.	**+7,746**
▪ **Rosatom Weapons Complex**	
Decrease reflects programmatic shift from large-scale MPC&A upgrades at Russian sites towards more sustainability support.	**-24,583**
▪ **Civilian Nuclear Sites**	
Increase maintains sustainability support to civilian nuclear sites and plans to continue to cooperate with countries outside of Russia and the Former Soviet States.	**+90**
▪ **Material Consolidation and Conversion**	
Increase due to a higher projected availability of excess HEU to be downblended to LEU.	**+439**
▪ **Second Line of Defense**	
Decrease in core activities, reflecting fewer radiation detection equipment installations, is partially offset by increase in Megaport program activities.	**-1,513**
Total Funding Change, International Nuclear Materials Protection and Cooperation	**-18,479**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011	FY 2012
General Plant Projects	0	0	0
Capital Equipment	942	963	984
Total, Capital Equipment	**942**	**963**	**984**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	1,006	1,028	1,051	1,074
Total, Capital Equipment	**1,006**	**1,028**	**1,051**	**1,074**

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

Elimination of Weapons-Grade Plutonium Production

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Elimination of Weapons-Grade Plutonium Production (EWGPP)			
Zheleznogorsk Plutonium Production Elimination (ZPPEP)	22,507	0	0
Crosscutting and Technical Support Activities	2,000	0	0
Total, Elimination of Weapons-Grade Plutonium Production (EWGPP)	**24,507**	**0**	**0**
Cancellation of unobligated balalnces			**-30,000**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Elimination of Weapons-Grade Plutonium Production	0	0	0	0

Mission

The Elimination of Weapons-Grade Plutonium Production (EWGPP) program enabled the Russian Federation (RF) to permanently cease production of weapons-grade plutonium by replacing the heat and electricity produced by the plutonium-producing reactors. The cancellation of unobligated balances of $30 million in FY 2012, is associated with the completion of the EWGPP and was proposed for cancellation to offset requirements elsewhere within DOE.

Benefits

The EWGPP program achieved a major U.S. non-proliferation policy objective by permanently halting weapons-grade plutonium production in Russia. Within the EWGPP program, three subprograms make unique contributions to Government Performance and Results ACT (GPRA) Unit Program Number 99.

The Seversk Plutonium Production Elimination Project subprogram enabled the shutdown of two of the last three weapons-grade plutonium production reactors by providing heat and electricity through refurbishment of an existing 1950s fossil-fueled facility. The two reactors at Seversk were shut down more than six months early (April and June 2008). The program received Critical Decision (CD)-4 approval on September 26, 2008, effectively terminating the project. The remaining project closeout activities to expend the full U.S. commitment of $285,000,000 for the Seversk Project to the Russian Federation were completed in early FY 2010.

The Zheleznogorsk Plutonium Production Elimination Project subprogram enabled the early shut down of the last weapons-grade plutonium production reactor by constructing a replacement fossil-fueled facility, expected to be completed in FY 2011. The ADE-2 reactor at Zheleznogorsk was shut down in April 2010. Zheleznogorsk plant completion is scheduled for FY 2011.

Crosscutting and Technical Support Activities provided resources for crosscutting efforts, such as the Reactor Shutdown Project, and international participation coordination.

FY 2010 Accomplishments

Major Outyear Priorities and Assumptions

FY 2010 was the final year of funding for the EWGPP program. The program will be complete in FY 2011 following completion of the remaining Zheleznogorsk construction activities.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Zheleznogorsk Plutonium Production Elimination	**22,507**	**0**	**0**

By the end of FY 2011, the project will be completed. In FY 2011, through the use of remaining prior year balances, the project will complete and commission four boilers from Startup Areas One and Two, coal plant construction and all supporting infrastructure to supply hot water to Zheleznogorsk. Remaining activities, including final documentation and outstanding invoices, will complete the post closeout phase.

Crosscutting and Technical Support Activities	**2,000**	**0**	**0**

The crosscutting and technical support activities funding provides the program with internal and external project reviews, preparation of external reporting (including reports to Congress), contract administration, intergovernmental contract negotiation support, quality assurance, foreign logistical support, and program financial management support. The crosscutting and technical support activities also provide the necessary supporting technical and engineering expertise for independent analyses of management processes, crosscut of project management systems, and support to the Moscow Resident Officer for Construction.

Total, Elimination of Weapons-Grade Plutonium Production	**24,507**	**0**	**0**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Zheleznogorsk Plutonium Production Elimination	
Final funding received in FY 2010.	**0**
Crosscutting and Technical Support Activities	
Final funding received in FY 2010.	**0**
Total Funding Change, Elimination of Weapons-Grade Plutonium Production	**0**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	0	0	0
Capital Equipment	0	0	0
Total, Capital Operating Expenses	**0**	**0**	**0**

Outyear Capital Operating Expenses

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	0	0	0	0
Total, Capital Equipment	**0**	**0**	**0**	**0**

Fissile Materials Disposition

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Current Appropriation	FY 2011 Request	FY 2012 Request
Fissile Materials Disposition (FMD)			
U.S. Surplus Fissile Materials Disposition			
Operations and Maintenance (O&M)			
U.S. Plutonium Disposition	91,659	278,940	274,790
U.S. Uranium Disposition	34,691	25,985	26,435
Supporting Activities	312	0	0
Subtotal, O&M	**126,662**	**304,925**	**301,225**
Construction	574,238	612,788	578,754
Total, U.S. Surplus FMD	**700,900**	**917,713**	**879,979**
Russian Surplus FMD			
Russian Materials Disposition	1,000	113,000	10,174
Total, Fissile Materials Disposition	**701,900**	**1,030,713**	**890,153**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Fissile Materials Disposition				
U.S. Surplus Fissile Materials Disposition (O&M)	422,575	480,280	531,134	686,135
Construction	637,802	430,661	402,773	354,805
Russian Surplus Fissile Materials Disposition	52,500	52,750	57,750	31,000
Total, Fissile Materials Disposition	**1,112,877**	**963,691**	**991,657**	**1,071,940**

Description

The program goal is to eliminate surplus Russian weapon-grade plutonium and surplus United States (U.S.) weapon-grade plutonium and highly enriched uranium.

Benefits

Within the Fissile Materials Disposition (FMD) Program, two subprograms each make unique contributions to Government Performance and Results Act (GPRA) Unit Program Number 50.

Plutonium Disposition – The goal of the U.S. Plutonium Disposition program is to dispose of at least 34 metric tons (MT) of surplus U.S. weapon-grade plutonium in accordance with long-standing U.S. policy and the amended U.S. - Russia Plutonium Management and Disposition Agreement (PMDA). Three key U.S. facilities are being built at the Savannah River Site (SRS) in South Carolina to accomplish this goal: a Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) to fabricate plutonium oxide into MOX fuel for irradiation in domestic reactors; a pit disassembly and conversion capability to disassemble nuclear weapon pits and convert the resulting plutonium metal to a powder form suitable for MOX; and a Waste Solidification Building (WSB) to handle waste from the MFFF and pit disassembly operations. The MFFF is scheduled to start operations to produce MOX fuel in October 2016. The WSB is scheduled to begin operations in September 2013 to support MOX cold start-up. To produce feedstock for the MFFF, the Department is exploring the combination of NNSA's Pit Disassembly and Conversion Facility (PDCF) and Environmental Management's (EM) Plutonium

Preparation (PuP) project into a single project to be located in K-Area Reactor Facility at the SRS and managed by NNSA. Upon CD-1 approval of the combined project, the project will be renamed the "Pit Disassembly and Conversion (PDC) Project." FMD has identified approximately 10 MT of plutonium feed material that can be used as feedstock for MOX in advance of PDC coming on line. In addition, the program continues to evaluate other options to (1) supply plutonium oxide to MOX and (2) adjust fuel supply commitments consistent with the output of the MFFF.

The goal of the Russian Plutonium Disposition program is to work with Russia to dispose of at least 34 MT of surplus Russian weapon-grade plutonium. In April 2010, the U.S. and Russian governments signed a Protocol to amend the PMDA to reflect Russia's revised program to dispose of its surplus weapon-grade plutonium. The amended PMDA stipulates that Russia will rely on the use of fast reactors for plutonium disposition, the existing BN-600 and the BN-800 currently under construction, operating under certain nonproliferation restrictions. Simultaneously, the U.S. and Russia continue to support, on a cost shared basis, research and development of the Gas Turbine-Modular Helium Reactor (GT-MHR), which could also be used for disposition should that technology become operational during the disposition period. According to the amended PMDA, disposition is agreed to begin in both countries in 2018.

Uranium Disposition – The NNSA is also responsible for disposing of U.S. highly enriched uranium (HEU) that has been declared surplus to defense needs by down-blending it into low enriched uranium (LEU). Once down-blended, the material can no longer be used for nuclear weapons. To the extent practical, the program seeks to recover the economic value of the material by using the resulting LEU as commercial or research reactor fuel. Four separate projects are underway: Tennessee Valley Authority (TVA) HEU Down-blending, MOX LEU Inventory, Reliable Fuel Supply, and Research Reactor Fuel projects. Additional projects are being planned.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

- Completed construction of 11 of the 16 auxiliary MOX buildings.
- Completed assembly of the first On-Site Process Unit demonstrating successful conversion from the French reference plant process unit design into a U.S. design.
- Completed first in-advance test on a glovebox, demonstrating successful conversion and function from the French reference plant technology and designs to the U.S. design.
- Completed MOX glovebox process design to meet U.S. codes, standards and regulatory requirements.
- Installed over 76,000 cubic yards of reinforced concrete and more than 15,000 tons of rebar for the MFFF, and installed all 23 "trapped tanks" on the first floor.

- Achieved over 4 million safe work hours for the MFFF. Completed facility structural foundation for the WSB, and initiated Balance-of-Plant (BOP) construction activities for the WSB.
- Completed conceptual design of the PDC project in support of Critical Decision 1 (CD-1).
- Executed an Interagency Agreement with the TVA to evaluate the irradiation of MOX Fuel in up to 5 TVA reactors.
- Certified Los Alamos National Laboratory (LANL) as supplier of plutonium oxide to MOX Services, and began production of certified oxide at LANL as early feedstock for MOX.
- Signed a Protocol to amend the 2000 PMDA to reflect a revised Russian plutonium disposition program.
- Reached agreement with Russia on the key elements of a PMDA monitoring and inspection regime and began discussions with the International Atomic Energy Agency on its potential participation in such a regime.

Major Out Year Priorities and Assumptions

The outyear requirements for FMD total $4,140,165,000 (FY 2013– FY 2016). The funding trend for the four-year period for FMD addresses the start of operations for MOX and the WSB, and beginning construction of the PDC project. Funding for the U.S. Uranium Disposition program is declining in the outyears because the future supply of HEU for disposition from weapons dismantlement and Naval Reactors rejects will be at a lower rate. The HEU disposition program funding depends on the continuing ability to use barter arrangements to pay for commercial down-blending services by transferring title to a portion of the resulting low-enriched uranium to the contractors.

The revised PMDA calls for the U.S. to make available up to $400,000,000 to support plutonium disposition in Russia including the Russian monitoring and inspection regime, subject to future appropriations. The balance of the more than approximately $2,000,000,000 remaining cost of Russia's plutonium disposition would be borne by Russia and, if available, non-U.S. government contributions. Additional funds separate from the $400,000,000 will be required to continue U.S. cost sharing of GT-MHR research and development in Russia, U.S. management and oversight of the overall Russian plutonium disposition program and the U.S. monitoring and inspection regime.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
U.S. Surplus Fissile Materials Disposition (O&M)	**126,662**	**304,925**	**301,225**
▪ **U.S. Plutonium Disposition**	**91,659**	**278,940**	**274,790**
• **MOX Irradiation, Feedstock, and Transportation**	**26,454**	**107,787**	**66,967**

Funding supports programmatic activities that are not part of the line item construction projects but are necessary to support the overall program to dispose of surplus weapon-grade plutonium as MOX fuel. These activities include: The MOX fuel qualification and irradiation, obtaining plutonium feedstock from LANL, and depleted uranium oxide feedstock, storage of feed materials, and transportation.

Irradiation—Funding supports qualification, licensing, and irradiation of MOX fuel in existing nuclear reactors. In FY 2012, funding will support completion of studies of MOX fuel use in TVA reactors, submission of topical reports to the Nuclear Regulatory Commission, and qualification of MOX fuel designs for pressurized water reactors and boiling water reactors from multiple fuel suppliers, and execution of fuel supply agreements with TVA and potentially other utilities.

Feedstock—Funding supports activities necessary to characterize and convert plutonium and depleted uranium into chemical forms that can be used to fabricate MOX fuel. In FY 2012, LANL will continue to disassemble limited quantities of nuclear weapon pits and convert the resulting plutonium metal into an oxide form using the Advanced Recovery and Integrated Extraction System (ARIES) process. Operations of ARIES is part of the 7 year campaign to produce 2 MT of feedstock to be used during start-up and initial operation of the MFFF. Activities to support the conversion of DOE-owned depleted uranium hexafluoride to uranium dioxide necessary for MOX fuel fabrication will continue in FY 2012. Activities to further characterize non-pit feed materials for MFFF will also continue.

Storage—Funding supports safe storage of surplus weapon-grade plutonium, both pits and oxide, including surveillance and monitoring activities. FY 2012 activities include continuing to store surplus plutonium at Pantex and LANL; and continuing to package surplus pits for shipment from Pantex to LANL for ARIES conversion activities.

Transportation—Funding supports the development, certification, and maintenance of containers and fuel loading equipment to transport pits, plutonium oxide, and fresh MOX fuel necessary for plutonium disposition. In FY 2012, work will continue to develop a MOX fresh fuel shipping container and a new

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

container for transporting MOX fuel for boiling water reactors. Continue to procure containers for transportation of plutonium pits and plutonium oxide. Packaging and loading equipment development will continue during FY 2012.

• **MOX Other Project Cost Activities (OPC)**	**56,466**	**30,000**	**97,035**

The MOX OPC Activities support project activities such as management oversight, design reviews, facility start-up, testing and licensing. The FY 2012 activities include continuing management oversight and licensing activities as well as planning for start-up and operation of the MFFF along with safety, security, and physical protection activities. The OPC will continue to fund the design and testing support of the aqueous polishing process located at the front end of the MOX facility, environmental permitting, and the monitoring and support for the Nuclear Regulatory Commission (NRC) review of the possession and use-license application for the MFFF. In addition, OPC funds will support ramp-up of operating start-up staffing and related training, NNSA oversight, and additional NRC inspection levels.

• **MOX Operating Expenses (OPEX)**	**976**	**865**	**100**

The MOX Operating Expenses support activities associated with hot start-up testing and operations of the MFFF. FY 2012 activities include efforts to maintain the hot start-up bases of estimate and schedule, including analysis and review of changes. Additionally, funds will support the costs associated with background investigations and security clearances for MOX operators.

• **Waste Solidification Building (WSB) (OPC)**	**7,000**	**21,500**	**23,345**

The WSB OPC funding supports planning for facility operations (development of operating procedures and training program), program development activities (start-up testing, spare parts, emergency preparedness), waste management planning (development of waste compliance plans), interface management, and use of the Smart Plant foundation database (a software relationship management tool that provides the capability to transition engineering/project documents from design/construction/testing to eventual operations while maintaining requirements and configuration control).

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Pit Disassembly and Conversion (PDC) Project (OPC)**	**0**	**112,999**	**45,600**

The PDC OPC funding supports Critical Decision (CD) package development addressing four interrelated sub-projects (1) stabilization and packaging (S&P) line, 2) material storage (MS), 3) infrastructure, and 4) pit processing). In addition, funding is needed to support project management, project risk management, design authority, design oversight and reviews, planning for facility operations (development of operating procedures and training program), program development activities, waste management planning (development of waste compliance plans), interface management, and use of the Smart Plant foundation database. The LANL will continue Demonstration and Testing (D&T) preparations for hot testing of the hydride/dehydride furnace.

In FY 2010, funding of $58,780,000 was provided within the Weapons Activities appropriation, RTBF for PDCF.

• **Plutonium Disposition Integration Program**	**763**	**5,789**	**41,743**

This funding supports the integration of the MOX, WSB and pit disassembly activities to ensure that the three projects are managed in an integrated manner to accomplish the Department's plutonium disposition objective in a safe, secure, and environmentally sound manner. This includes the development of an integrated program plan and schedule and programmatic risk analyses to assess and manage risk and uncertainty within the program. Funds also support development and maintenance of infrastructure activities (such as road maintenance, power sub-station maintenance, fire protection etc.) that are required to support the three interrelated projects, previously funded under Supporting Activities.

▪ **U.S. Uranium Disposition**	**34,691**	**25,985**	**26,435**

This funding supports the disposition of surplus U.S. HEU by down-blending it to LEU. Four separate disposition activities are on-going and additional projects are being planned as HEU becomes available from planned weapon dismantlements. FY 2012 activities include:

- TVA HEU Down-blending Project: Continue down-blending of 0.9 MT of off-spec HEU at SRS. Seven (7) MT of derived LEU will be transferred to TVA under the existing DOE-TVA Interagency Agreement.
- Research Reactor Fuel Project: Continue down-blending of HEU to LEU for use as fuel for foreign research reactors as part of the Reduced Enrichment for Research and Test Reactors program.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- MOX LEU Inventory Project: Complete down-blending of HEU at Nuclear Fuel Services (NFS) by the end of 2012. The resulting LEU will create an inventory for potential backup use by utilities participating in the MOX plutonium disposition program.

- Reliable Fuel Supply Project: Complete down-blending in December 2011. All HEU shipments were provided to the contractor in December 2009. Barter funding is used to pay the down-blending contractor.

- Planning for Additional Projects: Prepare plans to process, characterize, and package additional surplus HEU for down-blending and ultimate disposition. The material is located at various sites in the DOE complex, including Y-12, SRS, LANL, Idaho National Laboratory, and Lawrence Livermore National Laboratory.

▪ **Supporting Activities**	**312**	**0**	**0**

- **Monitoring and Inspection**

  This subprogram was realigned and is funded under the Russian Surplus Fissile Materials Disposition Program beginning in FY 2011.

▪ **Construction**	**574,238**	**612,788**	**578,754**
• **99-D-141-01, Pit Disassembly and Conversion (PDC)**	**0**	**80,000**	**176,000**

Approximately 75 percent of surplus plutonium to be dispositioned is in pit form. These pits must be disassembled and the plutonium converted to an oxide form useable as feedstock for the MFFF. The NNSA and EM conducted an alternative analysis to identify potential cost-saving alternatives for the PDC mission. On November 22, 2009, the Department approved exploring the combination of NNSA's PDCF and EM's PuP projects into a single project to be located in K-Area Reactor Facility at the SRS and managed by the NNSA. As a result, the project team is currently developing a conceptual design report, including NEPA and other documentation to support Critical Decision (CD) -1 (Approve Alternative Selection and Cost Range), in accordance with DOE Order 413.3B. CD-1 is expected to be approved in the 2nd quarter of FY 2011. As part of the preliminary execution strategy for the combined approach, the project has been divided into four sub-projects. These are: 1) stabilization and packaging (S&P) line, 2) material storage (MS), 3) infrastructure and 4) pit processing, respectively. Establishing these sub-projects will enhance NNSA's ability to manage smaller, stand-alone scopes-of-work, while still managing the interface between the sub-projects and to provide additional feedstock to MOX in advance of PDC becoming operational.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

For FY 2012, the planned activities based on the conceptual integrated plan are: 1) continuing the S&P line design and receiving required critical decision approvals and 2) completing the MS design and receiving required critical decision approvals. Completing material storage is on the critical path for completion of the pit processing sub-project.

In FY 2010, PDCF funding of $30,321,000 was provided within the Weapons Activities appropriation, RTBF program.

- **99-D-141-02 Waste Solidification Building (WSB)** **70,000** **57,000** **17,582**

  The WSB will receive liquid waste streams from the MOX facility and the PDC operations. The waste will be chemically treated and solidified for ultimate disposal. The WSB is a reinforced concrete facility that will contain storage tanks, evaporators, cementation equipment, and will include an adjacent storage area for drums awaiting transfer to SRS packaging facilities. Construction of the WSB began in FY 2009.

  In FY 2012, planned activities will focus on the completion of physical construction, including the installation of mechanical and electrical systems inside the facility and the construction and installation of outside equipment and ancillary structures. Component and integrated system testing will be conducted. Operator training will continue, as will development of operating and maintenance procedures, development of facility and system start-up procedures, and planning for the Operational Readiness Review (ORR).

- **99-D-143, MOX Fuel Fabrication Facility (MFFF)** **504,238** **475,788** **385,172**

  The MFFF will fabricate plutonium oxide into MOX fuel for subsequent use in commercial nuclear reactors. The facility will contain the following key areas: shipping and receiving, storage, chemical processing, pellet manufacturing, fuel rod loading, fuel bundle assembly, fuel bundle storage and an analytical laboratory. Key supporting facilities include: an administration building, material receipt warehouse, technical support building, emergency and diesel standby generator buildings, and a chemical reagent building.

  The FY 2012 planned activities include completion of the main MFFF process building structure and continued installation of ventilation equipment, process piping, and electrical equipment. Assembly and testing of gloveboxes and process equipment in the Process Assembly Facility will continue as will construction of the Emergency Diesel Generator Building. The Technical Support Building will also be completed.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Russian Surplus Fissile Materials Disposition	**1,000**	**113,000**	**10,174**
• **Russian Surplus Fissile Materials Disposition (funds spent in the U.S.)**	**1,000**	**8,000**	**7,174**

The FY 2012 funding will continue to support U.S. technical oversight of work in Russia associated with the disposition of surplus Russian weapon-grade plutonium in the BN-600 and BN-800 fast reactors as well as the research and development of the GT-MHR technology. Funding will be used to continue with DOE contractual management and oversight of the Russian plutonium disposition program and research and development of the GT-MHR. In addition, these funds will support the implementation of a monitoring and inspection (M&I) regime in Russia and the U.S. verifying that both countries are disposing of 34 MT of surplus weapon-grade plutonium, and support negotiations among the U.S., Russia, and the International Atomic Energy Agency (IAEA) on M&I issues.

• **Russian Surplus Fissile Materials Disposition (funds spent in Russia)**	**0**	**105,000**	**3,000**

This current assumption is that uncosted carryover balances from FY 2011 will be used to continue activities in FY 2012. However, if the $100,000,000 Request is not fully appropriated, this strategy may have to be revisited. The following major activities are planned: modifying the existing BN-600 MOX fuel fabrication facility at the Research Institute for Atomic Reactors (RIAR), fabricating and installing non-plutonium breeding assemblies in the BN-600 to replace the plutonium breeding blanket assemblies, modifying the BN-600 reactor so it can be used to irradiate MOX fuel, modifying facilities to fabricate MOX fuel for the BN-800, and implementing an M&I regime at Russian disposition facilities to provide confidence that Russia is disposing of 34 MT of surplus weapon-grade plutonium.

The FY 2012 request will support research and development (R&D) of the GT-MHR in Russia including fabrication and testing of particle nuclear fuels and testing of vertical turbo machine components. Funds used for the GT-MHR are not part of the $400,000,000 U.S. contribution.

Total, Russian Surplus Fissile Materials Disposition	**1,000**	**113,000**	**10,174**
Total, Fissile Materials Disposition	**701,900**	**1,030,713**	**890,153**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
U.S. Surplus Fissile Materials Disposition	
U.S. Plutonium Disposition: The overall decrease results from a combination of decreasing PDC OPC since the majority of the workscope will be funded from TEC until the project is baselined, decreased MIFT funding reflecting the decision to proceed with a dry versus wet process for depleted uranium conversion, and delays in implementing reactor modifications for MOX fuel use.	**-4,150**
U.S. Uranium Disposition: The increase supports the contractor projected escalation rates applied to the down-blending of surplus HEU for disposition.	**+450**
Total, U.S. Fissile Materials Disposition O&M	**-3,700**
U.S. Fissile Materials Disposition Construction	
▪ **99-D-141-02 Waste Solidification Building (WSB):** The decrease reflects the completion of initial large outlays needed by the Balance of Plant sub-contractor and a decline in long-lead procurements, as well as completion of physical construction.	**-39,418**
99-D-141-01 Pit Disassembly and Conversion (PDC): The increase supports PDC critical design work scope and documentation supporting stabilization and packaging (S&P) and material storage (MS) Critical Decisions in FY 2012 and the initiation of long-lead procurement to support the early MOX feed portion of the project.	**+96,000**
99-D-143 Mixed Oxide (MOX) Fuel Fabrication Facility: The decrease reflects the completion of long-lead equipment procurements and facility design activities.	**-90,616**
Total, U.S. Fissile Materials Disposition Construction	**-34,034**

	FY 2012 vs. FY 2011 Request ($000)
Russian Surplus Fissile Materials Disposition	
▪ **U.S. Support for Russian Plutonium Disposition (funds spent in Russia):** The decrease reflects the decision to wait until the United States and Russia have agreed on detailed milestones comprising the $400,000,000 U.S. pledge before requesting the balance of the pledge, DOE will request additional increments as needed to support the Russian plutonium disposition including the R&D of the GT-MHR in Russia.	**-102,826**
Total, Russian Fissile Materials Disposition	**-102,826**
Total Funding Change, Fissile Materials Disposition	**-140,560**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2010	FY 2011	FY 2012
General Plant Projects	0	0	0
Capital Equipment	336	343	351
Total, Capital Operating Expenses	**336**	**343**	**351**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	0	0	0	0
Capital Equipment	359	367	375	383
Total, Capital Operating Expenses	**359**	**367**	**375**	**383**

Construction Projects

	(dollars in thousands)					
	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2010	FY 2011	FY 2012	Unappro-priated Balance
99-D-141-01, Pit Disassembly and Conversion (PDC)	TBD	272,169	30,321 [b]	80,000	176,000	TBD
99-D-141-02, Waste Solidification Building (WSB)	244,331	99,749	70,000	57,000	17,582	0
99-D-143, MOX Fuel Fabrication Facility	3,975,828	2,014,589	504,238	475,788	385,172	596,041
Total, Construction		**2,386,507**	**604,559**	**612,788**	**578,754**	

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

[b] In FY 2010, PDCF funding was requested under the Weapons Activities appropriation under the Readiness in Technical Base and Facilities Program.

Construction Projects Total Project Cost (TPC)

	(dollars in thousands)				
	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
99-D-141-01, PDC OPC	45,600	47,507	50,512	61,000	90,000
99-D-141-01, PDC TEC	176,000	315,000	321,000	227,000	317,000
99-D-141-01, PDC TPC	221,600	362,507	371,512	338,000	407,000
99-D-141-02, WSB OPC	23,345	25,798	0	0	0
99-D-141-02, WSB TEC	17,582	0	0	0	0
99-D-141-02, WSB TPC	40,927	25,798	0	0	0
99-D-143, MOX OPC	97,035	246,669	230,697	91,603	5,999
99-D-143, MOX TEC	385,172	322,802	109,661	125,773	37,805
99-D-143, MOX TPC	482,207	569,471	340,358	217,376	43,804

Outyear Construction Projects

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
99-D-141-01, Pit Disassembly and Conversion (PDC)	315,000	321,000	277,000	317,000
99-D-141-02, Waste Solidification Building (WSB)	0	0	0	0
99-D-143, MOX Fuel Fabrication Facility	322,802	109,661	125,773	37,805
Total, Construction	**637,802**	**430,661**	**402,773**	**354,805**

99-D-143, Mixed Oxide Fuel Fabrication Facility,
Savannah River Site, Aiken, South Carolina
Project Data Sheet is for Construction

1. Significant Changes

The most recent Department of Energy (DOE) Order 413.3B approved Critical Decision (CD) is CD-3, Start of Construction, and was approved on April 11, 2007, with a Total Project Cost (TPC) of $4,814,329 and CD-4 of FY 2017. However, as directed by the Revised Continuing Resolution, 2007, Public Law 110-5, construction began on August 1, 2007. The latest approved baseline change was on December 17, 2008, with a TPC of $4,857,129 and CD-4 of FY 2017.

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

This Project Data Sheet (PDS) is an update of the FY 2011 PDS. Significant changes include the following:

The project has had continued difficulty identifying suppliers and subcontractors with the ability and experience to fabricate and install equipment to the requirements of Nuclear Quality Assurance (NQA) -1 standard for nuclear work. It has been necessary to station dedicated MOX facility quality assurance and engineering personnel at supplier and subcontractor locations to train personnel and ensure fabricated equipment and installations meet NQA-1 requirements. The lack of experienced nuclear equipment suppliers has in turn resulted in a lack of competition for the work and higher than expected bids as the inexperienced suppliers are uncertain how much effort is required to meet NQA-1 requirements. In cases where qualified suppliers and subcontractors are not available, too expensive, or are so inexperienced as to present unacceptable risk, DOE has authorized the MOX facility prime contractor, Shaw AREVA MOX Services, to “self-perform” a limited amount of fabrication and installation activities.

Shaw AREVA MOX Services is also experiencing significantly greater than expected turnover of experienced personnel due to the expansion of the U.S. commercial nuclear industry. Over 15 percent of the project’s engineering and technical personnel have left for other nuclear industry jobs in the last year with pay increases of at least 25 percent. Finding experienced replacements has become difficult and expensive. In most cases, replacement personnel are being hired without the requisite nuclear experience and therefore must be trained prior to performing NQA-1 work.

The MOX project has allocated contingency and management reserve funds when needed to address these issues and to mitigate overall project risks. While allocation of reserves funds has remained within overall planning limits, the project team must continue to actively manage these issues in the future to mitigate any potential cost and schedule impacts.

DOE has announced its intent to modify the scope of the Surplus Plutonium Disposition (SPD) Supplemental Environmental Impact Statement (EIS) and conduct additional public scoping as stated in the Federal Register dated July 19, 2010. The revised scope of the SPD Supplemental EIS includes disposition alternatives for plutonium declared surplus to the Nation's defense needs in 2008 and

additional alternatives for disposition of certain non-pit plutonium materials currently in safe storage at the Savannah River Site (SRS) in South Carolina. In addition, DOE will analyze, in the SPD Supplemental EIS, the potential environmental impacts of using MOX fuel in up to five reactors owned by the Tennessee Valley Authority (TVA) at the Sequoyah (near Soddy-Daisy, TN) and Browns Ferry (near Athens, AL) nuclear stations. The TVA is a cooperating agency with DOE for preparation and review of the sections of the SPD Supplemental EIS that address operation of TVA reactors.

Responding to the TVA stated interest in using MOX fuel assemblies in its three Browns Ferry Boiling Water Reactors (BWR), DOE is evaluating changes to the MOX facility design that will allow production of BWR MOX fuel in addition to the current MOX facility design for Pressurized Water Reactor (PWR) MOX fuel. Supplying BWR MOX fuel to the Browns Ferry BWR's would account for 50 percent of the MOX facility's production. The design changes are straightforward and would be based on known designs from the French reference plant which currently is producing both BWR and PWR MOX fuel. The proposed changes will also allow the MOX program to produce and market MOX fuel based on the designs of several fuel vendors. The DOE is also evaluating a change to the MOX facility design to use depleted uranium feed material prepared using the latest "dry" fabrication process versus the baselined "wet" fabrication process. These design modifications will be part of a project Baseline Change Proposal to be submitted in FY 2011.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2000	N/A	2QFY1999	4QFY2001	N/A	1QFY2002	4QFY2005	N/A	N/A
FY 2001	N/A	2QFY1999	3QFY2002	N/A	4QFY2002	1QFY2006	N/A	N/A
FY 2002	N/A	2QFY1999	4QFY2002	N/A	2QFY2003	1QFY2007	N/A	N/A
FY 2003	N/A	2QFY1999	4QFY2003	N/A	2QFY2004	4QFY2007	N/A	N/A
FY 2004	N/A	2QFY1999	1QFY2004	N/A	2QFY2004	4QFY2007	N/A	N/A
FY 2005	N/A	2QFY1999	3QFY2004	N/A	3QFY2005	2QFY2009	N/A	N/A
FY 2006	N/A	2QFY1999	1QFY2005	N/A	3QFY2005	TBD	N/A	N/A
FY 2007	N/A	2QFY1999	4QFY2009	N/A	2QFY2007	4QFY2014	N/A	N/A
FY 2008	1QFY1997	2QFY1999	2QFY2011	2QFY2007	2QFY2007	4QFY2013	N/A	N/A
FY 2009	1QFY1997	03/22/1999	2QFY2013[a]	04/11/2007	4/11/07[b]	4QFY2016	N/A	N/A
FY 2010	1QFY1997	03/22/1999	2QFY2013	04/11/2007	4/11/07	1QFY2017	N/A	N/A
FY 2011	1QFY1997	03/22/1999	2QFY2013	04/11/2007	4/11/07	1QFY2017	N/A	N/A
FY 2012	1QFY1997	03/22/1999	2QFY2013	04/11/2007	4/11/07	1QFY2017	N/A	N/A

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

[a] Facility and process design were (confirm) completed in FY 2010, the equipment design will be completed in FY 2011 and the software design will be completed in FY 2013.

[b] The Department approved CD-3 (Start of Construction) on April 11, 2007, however, as directed by the Revised Continuing Resolution, 2007, Public Law 110-5, construction began on August 1, 2007.

CD-4 – Approve Start of Operations or Project Closeout
D&D Start – Start of Demolition & Decontamination (D&D) work
D&D Complete – Completion of D&D work

(fiscal quarter or date)

	NRC Construction Authorization	CD 2A/3A	Performance Baseline Validation	CD 2B/3B
FY 2005	03/30/2005	09/30/2005	N/A	N/A
FY 2006	N/A	N/A	07/07/2006	N/A
FY 2007	N/A	N/A	N/A	04/06/2006

CD 2A/3A - Approval to start Site Preparation
CD 2B/3B - Approval to begin long lead procurements ("trapped" tanks, steel embeds, reinforcing steel, barrier doors)

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2000	TBD	TBD	383,186	0	N/A	TBD	N/A
FY 2001	TBD	TBD	398,186	0	N/A	TBD	N/A
FY 2002	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2003	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2004	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2005	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2006	TBD	TBD	TBD	TBD	N/A	TBD	N/A
FY 2007	TBD	TBD	3,277,984	354,108	N/A	354,108	3,632,092
FY 2008	TBD	TBD	3,868,628	830,701	N/A	830,701	4,699,329
FY 2009	TBD	TBD	3,938,628	875,701	N/A	875,701	4,814,329
FY 2010	TBD	TBD	3,975,828	881,301	N/A	881,301	4,857,129
FY 2011	960,925	3,014,903	3,975,828	881,301	N/A	881,301	4,857,129
FY 2012	978,073	2,997,755	3,975,828	881,301	N/A	881,301	4,857,129

4. Project Description, Justification, and Scope

Description and Scope

The U.S. Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) at the Savannah River Site will combine surplus weapon-grade plutonium oxide with depleted uranium oxide to form MOX fuel assemblies that will be used as fuel for U.S. commercial nuclear reactors. Once irradiated and converted into spent fuel, the resulting plutonium can no longer be readily used for nuclear weapons. The nominal design life of the facility is 40 years; however, it will take approximately 13 years to complete the 34 MT mission with additional surplus plutonium disposition planned. After completing its mission, the facility can be deactivated, decontaminated, and decommissioned in approximately three to four years.

The MOX facility has been designed with the capacity needed to receive and process 3.5 MT of plutonium oxide per year. The plutonium oxide will come from pit disassembly and conversion

operations and from other selected inventories of weapon-grade plutonium within the Enterprise. The facility will have the capacity to store sufficient plutonium oxide for two years of operations.

The MOX facility will be approximately 441,000 square feet in size and provide all of the material processing and fabrication operations needed to produce MOX fuel. The MOX facility operations include: aqueous polishing (AP) to purify the plutonium oxide; blending and milling; pelletizing; sintering; grinding; loading fuel rods; bundling fuel assemblies; and storing feed material, pellets, and fuel assemblies. The facility also includes a laboratory and space for material sampling and use by a monitoring and inspection team. Adjacent to the MOX process areas is the secure shipping and receiving area to support material receipt, utilities, and technical support.

The design of the MOX Fuel Fabrication Facility (MFFF) is based on technologies, processes, and facilities that have been successfully operating in France for decades, specifically AREVA's MELOX and La Hague facilities. The facility will meet U.S. conventions, codes, standards, and regulatory requirements, and will be licensed by the Nuclear Regulatory Commission (NRC).

The MFFF has the following key performance parameters: (1) fabricate 3.5 MT of weapon-grade plutonium annually into mixed-oxide fuel qualified for use in U.S. commercial nuclear power plants; and (2) provide the capability to successfully process alternate (non-pit) feedstock.

FY 2010 Current Project Status:
Project activities continue to focus on the completion of engineering, civil/structural construction, the procurement and receipt of long-lead equipment, along with the assembly and testing of process units. Through August 2010, the project has installed over 76,000 cubic yards of reinforced concrete and more than 15,000 tons of rebar in the MFFF. Initial testing was completed on the first gloveboxes and process equipment, and piping/heating ventilation and air conditioning **(**HVAC) installation began this year. Tank installation and coatings are continuing. Permanent underground utility installation continued, including domestic water, electrical, fire protection, and sanitary sewer, along with installation of the radioactive liquid waste transfer lines. The project also completed construction of two more buildings; a Secured Warehouse and a new Electrical Substation. Eleven auxiliary buildings are now complete. The project completed this work while achieving over four million safe work hours.

FY 2011 and FY 2012 Description of Activities
In FY 2011, construction will continue with the third floor slab and walls being completed in Aqueous Polishing (AP) and the second floor slab being completed in the MOX processing area. Trapped equipment will continue to be installed as the main processing facility construction progresses. Process piping installation will continue as will the design and construction of the Technical Support Building. Electrical conduit and raceway installation will begin along with initiation of the fire protection system installation. The HVAC will continue and construction of the Reagent Building and the Emergency Diesel Generator Building will begin.

In FY 2012, the MFFF structural construction package will be completed, including completion of the primary exterior wall and MFFF roof. HVAC, Reagent Building, Emergency Diesel Generator Building, and Technical Support Building construction will continue. Process piping installation will continue as will glovebox installation/connections and electrical installation.

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

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 1999	28,000	9,600	2,545
FY 2000	12,375	30,775	33,512
FY 2001	25,943	25,943	29,938
FY 2002	65,993	65,993	52,513
FY 2003	92,088	92,088	82,022
FY 2004	81,081	81,081	93,457
FY 2005	251,195	251,195	216,801
FY 2006	119,853	119,853	165,618
FY 2007	65,133	65,133	62,342
FY 2008	56,045	56,045	58,958
FY 2009	72,509	72,509	68,395
FY 2010	70,987	70,987	65,066
FY 2011	35,134	35,134	36,400
FY 2012	1,582	1,582	10,301
FY 2013	155	155	205
Total, Design	978,073	978,073	978,073
Construction			
FY 2004	279,193	0	0
FY 2005	113,892	44,100	0
FY 2006	97,947	217,469	15,210
FY 2007	197,367	197,367	115,065
FY 2008	175,676	290,139	209,174
FY 2008 (rescinded PY unobligated balance)	-115,000	0	0
FY 2009	395,299	395,299	301,323
FY 2010	433,251	433,251	429,316
FY 2011	440,654	440,654	497,077
FY 2012	383,590	383,590	527,931
FY 2013	322,647	322,647	491,676
FY 2014	109,661	109,661	238,858
FY 2015	125,773	125,773	128,207
FY 2016	37,805	37,805	43,918
FY 2017	0	0	0
Total, Construction	2,997,755	2,997,755	2,997,755

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 1999	28,000	9,600	2,545
FY 2000	12,375	30,775	33,512
FY 2001	25,943	25,943	29,938
FY 2002	65,993	65,993	52,513
FY 2003	92,088	92,088	82,022
FY 2004	360,274	81,081	93,457
FY 2005	365,087	295,295	216,801
FY 2006	217,800	337,322	180,828
FY 2007	262,500	262,500	177,407
FY 2008	231,721	346,184	268,132
FY 2008 (rescinded PY unobligated balance)	-115,000	0	0
FY 2009	467,808	467,808	369,718
FY 2010	504,238	504,238	494,382
FY 2011	475,788	475,788	533,477
FY 2012	385,172	385,172	538,232
FY 2013	322,802	322,802	491,881
FY 2014	109,661	109,661	238,858
FY 2015	125,773	125,773	128,207
FY 2016	37,805	37,805	43,918
FY 2017	0	0	0
Total, TEC	3,975,828	3,975,828	3,975,828
Other Project Cost (OPC)			
OPC except D&D			
FY 1999	5,000	5,000	4,500
FY 2000	5,000	5,000	4,500
FY 2001	5,000	5,000	5,000
FY 2002	5,000	5,000	5,000
FY 2003	8,000	8,000	5,000
FY 2004	9,292	9,292	11,500
FY 2005	9,357	9,357	3,749
FY 2006	28,200	21,300	7,023
FY 2007	915	7,792	9,278
FY 2008	47,068	47,068	15,746
FY 2009	0	0	21,451
FY 2010	56,466	56,466	19,344
FY 2011	30,000	30,000	26,776
FY 2012	97,035	97,035	158,108
FY 2013	246,669	246,669	206,261
FY 2014	230,697	230,697	177,010
FY 2015	91,603	91,603	136,417
FY 2016	5,999	6,022	64,638
FY 2017	0	0	0
Total, OPC except D&D	881,301	881,301	881,301
D&D			
FY	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 1999	33,000	14,600	7,045
FY 2000	17,375	35,775	38,012
FY 2001	30,943	30,943	34,938
FY 2002	70,993	70,993	57,513
FY 2003	100,088	100,088	87,022
FY 2004	369,566	90,373	104,957
FY 2005	374,444	304,652	220,550
FY 2006	246,000	358,622	187,851
FY 2007	263,415	270,292	186,685
FY 2008	278,789	393,252	283,878
FY 2008 (rescinded PY unobligated balance)	-115,000	0	0
FY 2009	467,808	467,808	391,169
FY 2010	560,704	560,704	513,726
FY 2011	505,788	505,788	560,253
FY 2012	482,207	482,207	696,340
FY 2013	569,471	569,471	698,142
FY 2014	340,358	340,358	415,868
FY 2015	217,376	217,376	264,624
FY 2016	43,804	43,827	108,556
FY 2017	0	0	0
Total, TPC	4,857,129	4,857,129	4,857,129

6. Details of Project Cost Estimate

(dollars in thousands)

	Current[a] Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	978,073	960,925	916,148
Contingency	0	0	0
Total, PED	978,073	960,925	916,148
Construction			
Site Preparation	39,957	39,957	39,929
Equipment (MOX & AP equip.)	384,590	344,590	251,791
Other Construction	2,242,035	2,197,139	2,067,639
Contingency	331,173	433,217	663,121
Total, Construction	2,997,755	3,014,903	3,022,480
Total, TEC	3,975,828	3,975,828	3,938,628
Contingency, TEC	331,173	433,217	663,121
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	37,723	37,723	37,723
Conceptual Design	0	0	0
Start-Up	639,124	672,903	650,468
Contingency	204,454	170,675	187,510
Total, OPC except D&D	881,301	881,301	875,701
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	881,301	881,301	875,701
Contingency, OPC	204,454	170,675	187,510
Total, TPC	4,857,129	4,857,129	4,814,329
Total, Contingency	535,627	603,892	850,631

[a] Estimate shown reflects project status as of June, 2010.

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2009 Performance Baseline	TEC	2,360,263	308,722	301,938	382,802	158,325	125,611	300,967	0	3,938,628
	OPC	228,832	87,036	180,269	136,669	149,192	85,771	7,932	0	875,701
	TPC	2,589,095	395,758	482,207	519,471	307,517	211,382	308,899	0	4,814,329
FY 2010	TEC	2,518,827	475,788	385,172	322,802	109,661	125,773	37,805	0	3,975,828
	OPC	179,298	30,000	97,035	246,669	230,697	91,603	5,999	0	881,301
	TPC	2,698,125	505,788	482,207	569,471	340,358	217,376	43,804	0	4,857,129
FY 2011	TEC	2,518,827	475,788	385,172	322,802	109,661	125,773	37,805	0	3,975,828
	OPC	179,298	30,000	97,035	246,669	230,697	91,603	5,999	0	881,301
	TPC	2,698,125	505,788	482,207	569,471	340,358	217,376	43,804	0	4,857,129
FY 2012	TEC	2,518,827	475,788	385,172	322,802	109,661	125,773	37,805	0	3,975,828
	OPC	179,298	30,000	97,035	246,669	230,697	91,603	5,999	0	881,301
	TPC	2,698,125	505,788	482,207	569,471	340,358	217,376	43,804	0	4,857,129

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY2017
Expected Useful Life (number of years) (after hot startup)[a]	13
Expected Future Start of D&D of this capital asset (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Ave. Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	314,600	142,900	4,089,800	1,857,100
Security	41,500	41,500	1,288,300	539,500
Total, Operations & Security[b]	356,100	184,400	5,378,100	2,396,600

[a] The nominal design life of the facility is 40 years, however, it will take approximately 13 years to complete the 34 MT mission.

[b] The current estimates are expressed in 2010 dollars and should be considered preliminary. The Government is negotiating Option II of the MFFF contract to add start-up and initial operation of the facility to the current contract scope in order to reduce the government's risk that the facility will be unable to produce specification MOX fuel. NNSA is also negotiating security and other overhead costs with Environmental Management -- the SRS Landlord. When the process is completed, the project life cycle costs will be updated.

9. Required D&D Information

Area	Square Feet
Area of new construction	441,000
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced:
The new construction is not replacing an existing facility.

10. Acquisition Approach

The procurement strategy for the MOX facility involved awarding a base contract to Duke Cogema Stone & Webster (now Shaw AREVA MOX Services) in March 1999 for design, licensing, and irradiation services associated with fuel qualification activities and reactor licensing. Three options were included in the base contract for: (1) construction and management oversight; (2) hot start-up, operations, and irradiation services; and (3) deactivation—which can be awarded separately. Option 1 was exercised by DOE in May 2008. In January 2009, an Early Option 2 proposal was submitted to NNSA for consideration. The proposed work scope included the fabrication of eight fuel assemblies as a part of the facility hot start-up plan. Negotiations on Early Option 2 are currently in process.

Actual physical construction is being conducted through a combination of fixed-price sub-contracts and MOX Services' direct managed construction crafts. A combination of award fees and incentive fees are included in the overall contract with MOX Services to reward performance within established project baselines.

99-D-141-02, Waste Solidification Building (WSB)
Savannah River Site, Aiken, South Carolina
Project Data Sheet is for Construction

1. Significant Changes

The most recent Department of Energy (DOE) Order 413.3B approved Critical Decision (CD) is CD-3, Start of Construction, and was approved on December 10, 2008 with a Total Project Cost (TPC) of $344,455 and CD-4 of FY 2013.

A Federal Project Director (FPD), certified at the appropriate level has been assigned to this project.

This Project Data Sheet (PDS) is an update of the FY 2011 PDS. Significant changes include:

The Balance of Plant (BOP) sub-contract for the second phase of construction was awarded in July 2009 for the amount of $91,500. Work scope for this contract includes facility construction, system testing, and turnover. Construction is scheduled to be complete in 2012.

The most significant project risk involves the early use of approximately one third of the total contingency ($20,000). The early use of such a significant portion of contingency reduces the level of confidence of successful completion from 85 percent (at baseline) to approximately 50 percent, and will continue to affect the flexibility of the project team to address unforeseen changes for the duration of the project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0[a]	CD-1[b]	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 1999	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2000	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2001	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2002	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2003	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2004	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2005	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2006	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2007	10/31/1997	10/31/1997	TBD	TBD	TBD	TBD	N/A	N/A
FY 2008	10/31/1997	10/31/1997	3QFY2008	4QFY2008	1QFY2009	TBD	N/A	N/A
FY 2009	10/31/1997	10/31/1997	3QFY2008	4QFY2008	4QFY2008	1QFY2013	N/A	N/A
FY 2010	10/31/1997	10/31/1997	05/09/2008	12/10/2008	12/10/2008	4QFY2013	N/A	N/A
FY 2011	10/31/1997	10/31/1997	05/09/2008	12/10/2008	12/10/2008	4QFY2013	N/A	N/A
FY 2012	10/31/1997	10/31/1997	05/09/2008	12/10/2008	12/10/2008	4QFY2013	N/A	N/A

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 1999	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2000	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2001	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2002	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2003	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2004	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2005	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2006	25,700	TBD	TBD	TBD	N/A	TBD	25,700
FY 2007	29,300	160,000	189,300	36,708	N/A	36,708	226,008

[a] Approval of mission need for waste treatment activities was originally obtained in 1997 as part of the scope of the Pit Disassembly and Conversion Facility (PDCF) project and was reinforced in the Record of Decision (ROD).

[b] Preliminary design activities for the Waste Solidification Building (WSB) were initiated in February 2003, but suspended in 2004 due to uncertainties in the schedule of the overall plutonium disposition program and the counterpart Russian disposition program. These issues have been resolved and design activities were resumed in October 2006.

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2008	31,183	171,013	202,196	42,908	N/A	42,908	245,104
FY 2009	36,102	159,367	195,469	82,718	N/A	82,718	278,187
FY 2010	42,542	201,789	244,331	100,124	N/A	100,124	344,455
FY 2011	42,652	201,679	244,331	100,124	N/A	100,124	344,455
FY 2012	42,652	201,679	244,331	100,124	N/A	100,124	344,455

4. Project Description, Justification, and Scope

Waste Solidification Building (WSB):

The WSB will process radioactive liquid waste streams from the Mixed Oxide Fuel Fabrication Facility (MFFF) and pit disassembly and conversion operations into a solid form for ultimate disposal. The MFFF will produce approximately 85 percent of the waste that the WSB will process. The WSB must be operational to support mixed oxide (MOX) cold start-up testing activities scheduled in the 2013 timeframe. The radioactive liquid waste consists of one high-activity and two low-activity streams. The high-activity stream contains significant amounts of americium removed from plutonium oxide during MOX aqueous polishing operations. The low-activity streams contain stripped uranium also removed from MOX aqueous polishing operations and laboratory waste from pit disassembly and conversion operations. The WSB operating life is expected to be approximately 15 years; however the facility has a design life of 30 years and could easily be extended to accommodate disposition of additional surplus plutonium. After completing its mission, the WSB will be deactivated, decontaminated, and decommissioned over three to four years.

The scope of this project consists of the following activities: design, construction, procurement, installation, testing, demonstration, and start-up testing of structures and equipment. The processing facility will be approximately 33,000 square feet and is designed as a single story structure of hardened concrete. An additional separate structure consisting of a covered concrete pad will be constructed to provide temporary storage of containerized waste following treatment prior to packaging for shipment. The major process equipment includes tanks, evaporators, and solidification equipment.

The WSB has the following key performance parameters: (1) demonstrate the ability to process the anticipated waste volumes of the high activity waste stream and the two low activity waste streams, and (2) demonstrate the ability to produce waste products that are within the established limits of the Waste Acceptance Criteria and/or Documented Safety Analysis of the receiving facilities.

FY 2010 Project Status:

Project activities continue to focus on the civil/structural construction and the procurement and receipt of long lead equipment. The early site construction sub-contract has completed all site preparation and installation of underground utilities (service water, fire mains, process sewer, sanitary sewer, and electrical feeds). The structural basemat has been completed and work continues on the facility wall construction. Reinforcing steel, the floor drain tank, the electrical substation, gloveboxes, safety-related ventilation fans, and HEPA filter housings have been received as part of the long-lead procurement activities. Fabrication is continuing on the process tanks, evaporators, and cementation units, with delivery anticipated in 4Q FY 2010 or 1Q FY 2011.

FY 2011 and FY 2012 Description of Activities

In FY 2011, planned activities include completion of facility walls, completion of fabrication/testing/site acceptance of cementation equipment, procurement of major equipment (including long-lead equipment), installation of "trapped" equipment, and installation of the facility roof.

In FY 2012, planned activities will focus on the completion of physical construction, including the installation of mechanical and electrical systems inside the facility and the construction and installation of outside equipment and ancillary structures. Component and integrated system testing will be conducted. Operator training will continue, as will development of operating and maintenance procedures, development of facility and system start-up procedures, and planning for the Operational Readiness Review (ORR).

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

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	6,195	6,195	4,610
FY 2004	2,100	2,100	3,114
FY 2005	0	0	0
FY 2006	2,354	2,354	1,003
FY 2007	15,500	15,500	11,745
FY 2008	16,393	16,393	20,072
FY 2009	110	110	2,108
Total, PED	42,652	42,652	42,652
Construction			
FY 2006	0	0	0
FY 2007	0	0	0
FY 2008	17,207	17,207	0
FY 2009	39,890	39,890	15,859
FY 2010	70,000	70,000	49,541
FY 2011	57,000	57,000	88,036
FY 2012	17,582	17,582	41,755
FY 2013	0	0	6,488
Total, Construction	201,679	201,679	201,679

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	6,195	6,195	4,610
FY 2004	2,100	2,100	3,114
FY 2005	0	0	0
FY 2006	2,354	2,354	1,003
FY 2007	15,500	15,500	11,745
FY 2008	33,600	33,600	20,072
FY 2009	40,000	40,000	17,967
FY 2010	70,000	70,000	49,541
FY 2011	57,000	57,000	88,036
FY 2012	17,582	17,582	41,755
FY 2013	0	0	6,488
Total, TEC	244,331	244,331	244,331
Other Project Cost (OPC)			
OPC except D&D			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	4,071	4,071	2,650
FY 2004	0	0	1,041
FY 2005	(50)	(50)	208
FY 2006	1,400	1,400	79
FY 2007	5,060	5,060	2,145
FY 2008	5,000	5,000	5,415
FY 2009	7,000	7,000	4,526
FY 2010	7,000	7,000	5,486
FY 2011	21,500	21,500	17,221
FY 2012	23,345	23,345	33,366
FY 2013	25,798	25,798	27,987
Total, OPC except D&D	100,124	100,124	100,124
D&D			
FY	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	4,071	4,071	2,650
FY 2004	0	0	1,041
FY 2005	(50)	(50)	208
FY 2006	1,400	1,400	79

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2007	5,060	5,060	2,145
FY 2008	5,000	5,000	5,415
FY 2009	7,000	7,000	4,526
FY 2010	7,000	7,000	5,486
FY 2011	21,500	21,500	17,221
FY 2012	23,345	23,345	33,366
FY 2013	25,798	25,798	27,987
Total OPC	100,124	100,124	100,124
Total Project Cost (TPC)			
FY 1999	0	0	0
FY 2000	0	0	0
FY 2001	0	0	0
FY 2002	0	0	0
FY 2003	10,266	10,266	7,260
FY 2004	2,100	2,100	4,155
FY 2005	(50)	(50)	208
FY 2006	3,754	3,754	1,082
FY 2007	20,560	20,560	13,890
FY 2008	38,600	38,600	25,487
FY 2009	47,000	47,000	22,493
FY 2010	77,000	77,000	55,027
FY 2011	78,500	78,500	105,257
FY 2012	40,927	40,927	75,121
FY 2013	25,798	25,798	34,475
Total, TPC	344,455	344,455	344,455

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	42,652	42,652	41,825
Contingency	0	0	717
Total, PED	42,652	42,652	42,542

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Construction			
Site Preparation	1,300	1,300	1,300
Equipment	42,585	42,585	42,585
Other Construction	135,443	135,443	118,025
Contingency	22,351	22,351	39,879
Total, Construction	201,679	201,679	201,789
Total, TEC	244,331	244,331	244,331
Contingency, TEC	22,351	22,351	40,596
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	2,650	2,650	2,650
Conceptual Design	27,440	27,440	27,277
Start-Up	49,500	49,500	49,500
Contingency	20,534	20,534	20,697
Total, OPC except D&D	100,124	100,124	100,124
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	100,124	100,124	100,124
Contingency, OPC	20,534	20,534	20,697
Total, TPC	344,455	344,455	344,455
Total, Contingency	42,885	42,885	61,293

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2008	TEC	0								0
	OPC	24,508	12,200	6,200						42,908
	TPC	24,508	12,200	6,200	0	0	0	0	0	42,908
FY 2009 Performance Baseline	TEC	153,749	38,100	3,620						195,469
	OPC	25,881	14,731	31,647	10,459					82,718
	TPC	179,630	52,831	35,267	10,459	0	0	0	0	278,187
FY 2010	TEC	169,749	57,000	12,927	4,655					244,331
	OPC	29,481	21,500	28,000	21,143					100,124
	TPC	199,230	78,500	40,927	25,798	0	0	0	0	344,455
FY 2011	TEC	169,749	57,000	12,927	4,655					244,331
	OPC	29,481	21,500	28,000	21,143					100,124
	TPC	199,230	78,500	40,927	25,798	0	0	0	0	344,455
FY 2012	TEC	169,749	57,000	17,582	0	0	0	0	0	244,331
	OPC	29,481	21,500	23,345	25,798					100,124
	TPC	199,230	78,500	40,927	25,798	0	0	0	0	344,455

8. Related Operations and Maintenance Funding Requirements

99-D-141-02 – Waste Solidification Building

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY2013
Expected Useful Life (number of years)[a]	15
Expected Future Start of D&D of this capital asset (fiscal quarter)	4QFY2028

(Related Funding requirements)

99-D-141-02 – Waste Solidification Building

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	47,911	47,911	718,663	718,663
Maintenance	3,278	3,278	49,170	49,170
Total, Operations & Maintenance	51,189	51,189	767,833	767,833

[a] The WSB operating life is expected to be approximately 15 years; however the facility has a design life of 30 years and could easily be extended to accommodate disposition of additional surplus plutonium.

9. Required D&D Information

Area	Square Feet
Area of new construction	33,000
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

Name(s) and site location(s) of existing facility(s) to be replaced:
The new construction is not replacing an existing facility.

10. Acquisition Approach

99-D-141-02 – Waste Solidification Building
The WSB design service was procured through the Savannah River Site Management and Operating (M&O) contract. Purchase orders for procurement of long-lead equipment for the WSB were issued in FY 2009. The Savannah River Site M&O will serve as the construction manager. Fixed-price construction sub-contracts for the WSB were awarded on the basis of competitive bidding. The acquisition strategy has been finalized.

99-D-141-01, Pit Disassembly and Conversion (PDC) Project
Savannah River Site, Aiken, South Carolina
Project Data Sheet (PDS) is for Construction

1. Significant Changes

The most recent Department of Energy (DOE) approved Critical Decision (CD) for the Pit Disassembly and Conversion Facility (PDCF) Line Item is CD-0/1, Approve Mission Need and Alternative Selection and Cost Range, was approved on October 31, 1997. At that time, the project completion date was estimated to be 4Q FY 2004. The preliminary cost range to design, construct, and start-up the facility is $3,200,000 - $4,500,000. These estimates would be adjusted upon establishment of a project baseline. The PDCF design is approximately 65 percent complete. In 2009, however, the Department of Energy (DOE) began consideration of combining the PDCF with another approved project – the Plutonium Preparation Project (PuP) – and expects CD-1 for the combined project, renamed the Pit Disassembly and Conversion (PDC) Project, in the second quarter of FY 2011. There will be a new preliminary cost range for this project.

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

This Project Data Sheet (PDS) is an update of the FY 2011 PDS. Significant changes include:

Previously, the Department of Energy (DOE) approved two major capital construction projects – the Pit Disassembly and Conversion Facility project (PDCF) and the Plutonium Preparation Project (PuP) – at Savannah River Site (SRS) involving separate plutonium processing capabilities in support of efforts to dispose of surplus, weapon-usable plutonium. The PDCF, which NNSA previously decided to construct at SRS, would disassemble nuclear weapon pits, convert the plutonium metal into an oxide form, and temporarily store the material for subsequent fabrication into mixed oxide (MOX) fuel at the MOX Fuel Fabrication Facility (currently under construction at SRS). Similarly, the PuP, a planned EM capability (in the conceptual design phase) to be constructed in the K-Area at SRS, would include storage, oxidization, stabilization, and packaging of surplus non-pit plutonium metal and oxides. Those materials were previously included in NNSA's mission, prior to cancellation of the NNSA program to immobilize certain weapon-usable fissile materials. Following processing in the PuP, the non-pit metal and oxides suitable for fabrication into MOX fuel would be processed at the MOX Fuel Fabrication Facility.

A 2008 feasibility study of alternatives for siting the pit disassembly and conversion mission at SRS identified an opportunity to reduce overall departmental life cycle costs and/or schedule by combining the PuP and PDCF capabilities into one project within the K-Area. Combining the two projects offers the following departmental benefits: 1) avoids the expenditure of resources associated with design, construction, operation, and decontamination and demolition of an additional Hazard Category 2, Secure Category 1 facility; 2) allows for greater program and funding flexibility by executing a single project in a phased approach; 3) provides additional opportunities for early plutonium consolidation and storage; and 4) levels out the demand for NNSA's secure transport operations. A subsequent Independent

Review Team (IRT), comprised of subject matter experts from across the Enterprise, concurred with the overall conclusion and recommended combining the two projects.

On November 22, 2009, the Department approved exploring the combination of NNSA's PDCF and EM's PuP projects into a single project to be located in the K-Area Reactor Facility at the SRS and managed by the NNSA. The project team developed a conceptual design report, including NEPA and other documentation to support Critical Decision (CD) -1 (Approve Alternative Selection and Cost Range), in accordance with DOE Order 413.3B. The single project will be renamed the "Pit Disassembly and Conversion (PDC) Project." CD-1 is expected to be approved in the 2nd quarter of FY 2011. As part of the preliminary execution strategy, the PDC project has been divided into four sub-projects that align with the scope and schedule associated with the program requirements. The PDC sub-projects are: 1) stabilization and packaging (S&P) line, 2) material storage (MS), 3) infrastructure, and 4) pit processing. Establishing these sub-projects will enhance NNSA's ability to manage smaller, stand-alone scopes-of-work, while still managing the interface between the sub-projects.

The current conceptual integrated project plan maximizes the combined project's ability to support the program requirements. One of the most significant risks associated with the current conceptual plan is associated with receipt of the full budget requirements to support construction readiness and long-lead procurements, associated with S&P, MS, infrastructure, and support facilities, which could further delay the sub-projects' start-up and operation and increase the overall program/projects risks associated with supplying plutonium feedstock for steady-state MOX fuel fabrication. Other high risks identified are primarily associated with the sufficiency of skilled engineering, construction resources, and NQA-1 suppliers for all sub-projects as well as technology maturity for pit processing sub-project and construction within a secure operating facility. For each of these risks, the project has identified and is managing risk mitigation strategies.

An integrated conceptual project execution plan has been developed. The funding profile for future years will be updated when the estimates are validated and a baseline has been approved as part of the critical decision process. As a result, all funding estimates shown in this PDS are unvalidated. As the project design continues to mature in FY 2011, and upon approval of CD-1, construction funds may be needed in FY 2012 to support MS and S&P activities such as long-lead procurements and demolition and removal.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1 Select/Cost	CD-1 Design	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2000	10/31/1997	10/31/1997	07/17/1999	4QFY2001	N/A	2QFY2001	4QFY2004	N/A	N/A
FY 2001	10/31/1997	10/31/1997	07/17/1999	1QFY2002	N/A	1QFY2002	3QFY2005	N/A	N/A
FY 2002	10/31/1997	10/31/1997	07/17/1999	TBD	N/A	TBD	TBD	N/A	N/A
FY 2003	10/31/1997	10/31/1997	07/17/1999	1QFY2004	N/A	TBD	TBD	N/A	N/A
FY 2004	10/31/1997	10/31/1997	07/17/1999	2QFY2004	N/A	TBD	TBD	N/A	N/A
FY 2005	10/31/1997	10/31/1997	07/17/1999	4QFY2005	N/A	2QFY2005	TBD	N/A	N/A
FY 2006	10/31/1997	10/31/1997	07/17/1999	4QFY2005	N/A	3QFY2010	TBD	N/A	N/A
FY 2007	10/31/1997	10/31/1997	07/17/1999	4QFY2007	N/A	1QFY2011	4QFY2015	N/A	N/A
FY 2008	10/31/1997	10/31/1997	07/17/1999	4QFY2009	2QFY2007	1QFY2011	2QFY2019	N/A	N/A
FY 2009	10/31/1997	10/31/1997	07/17/1999	2QFY2011	4QFY2008	TBD	TBD	N/A	N/A
FY 2010	10/31/1997	10/31/1997	07/17/1999	4QFY2011	3QFY2009	TBD	TBD	N/A	N/A
FY 2011	10/31/1997	TBD	TBD	TBD	TBD	TBD	TBD	N/A	N/A
FY 2012	10/31/1997	2/28/2011[a]	02/28/2011	TBD	TBD	TBD	TBD	N/A	N/A

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2000	N/A	N/A	346,192	0	N/A	N/A	N/A
FY 2001	N/A	N/A	346,192	0	N/A	N/A	N/A
FY 2002	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2003	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2004	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2005	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2006	N/A	N/A	TBD	TBD	N/A	N/A	N/A
FY 2007	N/A	N/A	1,243,428	481,628	N/A	481,628	1,725,056
FY 2008	255,391	1,388,226	1,643,617	805,435	N/A	805,435	2,449,052
FY 2009	312,700	TBD	TBD	TBD	N/A	TBD	TBD
FY 2010	380,664	TBD	TBD	TBD	N/A	TBD	TBD
FY 2011	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2012	TBD	TBD	TBD	TBD	N/A	TBD	TBD

[a] This date supports the CD-1 for PDC which is expected to be approved in February 2011.

4. Project Description, Justification, and Scope

The PDC will be a first of its kind facility. The United States has never before constructed and operated a production-scale facility for disassembling nuclear weapon pits. The PDC, which will be built at the Savannah River Site, will disassemble surplus nuclear weapon pits and convert the resulting weapon-grade non-pit plutonium metal to an oxide form which then can be fabricated into mixed oxide (MOX) fuel for irradiation in U.S. commercial nuclear reactors. Once irradiated and converted into spent fuel, the plutonium can no longer be readily used for nuclear weapons. After completing its mission, the PDC project will be deactivated, decontaminated, and decommissioned over a three to four year period.

Establishing the PDC capability within the 350,000 square feet K-Area facility will utilize approximately 150,000 square feet and contain the following key areas: pit and non-pit material receiving, assay, and storage; pit disassembly and metal-to-oxide conversion; and plutonium oxide packaging, assay, storage, and shipment. This facility will be equipped with storage capacity for incoming pit and non-pit materials and include areas for recovery, decontamination, and declassification of non-nuclear components resulting from the disassembly of the nuclear weapon pits.

Conventional/commercial support facilities and structures will also be constructed, which will not contain radioactive materials, totaling approximately 150,000 square feet (i.e., facilities to support construction/maintenance craft, technical support, warehouse space, etc.).

FY 2010 Current Project Status:

Project activities were realigned consistent with the conceptual execution strategy for the combined approach. FY 2010 activities focused on development of the PDC project conceptual design documentation necessary to support Critical Decision 1 (CD-1) approval expected in the 2nd Quarter of FY 2011, as well as preliminary design activities that support either alternative prior to a CD-1 decision. The Conceptual Design Report revised Alternative Analysis and CD-1 package for the combined project were completed in September 2010. Continued design and construction planning activities continue to support long-lead procurements, infrastructure, and demolition and removal. Demonstration and Testing (D&T) of plutonium processing gloveboxes and associated equipment continued, along with essential activities associated with the Los Alamos National Laboratory's (LANL) and support of conceptual design and ongoing preliminary design activities related to the PDC work scope, including the completion of design packages associated with LANL Government Furnished Equipment (GFE).

FY 2011 and FY 2012 Description of Activities:

The FY 2011 scope includes preparing and submitting the PDC project conceptual design documentation necessary to support CD-1 approval expected in the 2nd Quarter of FY 2011. During the 1st Quarter of FY 2011, both an Independent Project Review and an Independent Cost Estimate Review were completed to support the CD-1 decision process. FY 2011 work also includes initiation of the preliminary design for the S&P, MS, and infrastructure sub-projects, continuation of preliminary design for the pit processing sub-project, and preparation of documentation necessary to support critical decisions for the S&P and MS sub-projects in FY 2012. The nature of the PDC project is such that there are elements of the overall design and support documentation at varying stages of maturity

(i.e., conceptual, preliminary, and detailed). As a result, continued project and design efforts will be funded by both OPC and TEC funds in FY 2011, consistent with the level of design maturity of those facility systems and components. LANL will continue the associated D&T scope of the PDC technology. Subsequent to the approval of CD-1, the PDC Project design staff will be moved to the Savannah River Site in late FY 2011.

The FY 2012 planned activities, based on the conceptual integrated plan, include: 1) continuing the S&P design to provide early feedstock for MOX and receiving required critical decision approvals; 2) completing design and receiving required critical decision approvals for MS, which is the critical path for completion of the pit processing sub-project; 3) completing infrastructure design and receiving required critical decision approvals; and 4) continuing pit processing design. The pit processing design activities include plutonium glovebox and process systems, along with development of the balance-of-plant systems including civil, structural, ventilation, electrical, water, fire, and security systems. LANL will continue the associated D&T scope of the PDC technology. When the S&P and MS critical decisions are approved, removal of existing equipment from the lower levels of the K-Building will commence, along with demolition and removal of existing infrastructure (piping, tanks, platforms, concrete, and electrical conduit) in the K-Area facility required to support S&P and MS construction in FY 2013. Additionally, initiation of long-lead procurement of equipment to support both S&P and MS may be required in FY 2012 to support the early MOX feed portion of the project. Stabilization and packaging equipment includes procurement of gloveboxes (shells and components, to include fabrication and assembly), calorimeters and standards, Waste Handling System Non-Destructive Assay (NDA), and Material Control and Accountability (MC&A) equipment. Material Storage equipment includes procurement of NDA and MC&A equipment (including a Californium Shuffler and components). Temporary infrastructure support activities (site preparation, roads, parking lots, lighting, and utilities for temporary facilities), as well as procurement and installation of equipment in the Project's office trailer complex will begin in late FY 2012.

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

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 1999	20,000	20,000	211
FY 2000	18,751	17,396	13,449
FY 2001	19,956	17,804	17,834
FY 2002	11,000	14,507	23,377
FY 2003	28,462	28,462	38,052
FY 2004	40,420	39,820	32,026
FY 2005	32,044	32,644	40,626
FY 2006	21,406	21,406	18,384
FY 2007	32,789	32,789	18,081
FY 2008	22,447	22,447	22,882
FY 2009	24,894	24,894	32,841
FY 2010	30,321	30,321	22,010
FY 2011	80,000	80,000	53,933
FY 2012	176,000	176,000	125,000
FY 2013	125,000	125,000	120,000
FY 2014	135,000	135,000	125.000
FY 2015	135,000	135,000	134,000
FY 2016	91,000	91,000	85,000
FY 2017	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2006	0	0	0
FY 2007	0	0	0
FY 2008	0	0	0
FY 2009	0	0	0
FY 2010	0	0	0
FY 2011	0	0	0
FY 2012	0	0	0
FY 2013	190,000	190,000	175,000
FY 2014	186,000	186,000	170,000
FY 2015	142,000	142,000	120,000
FY 2016	226,000	226,000	221,000
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 1999	20,000	20,000	211
FY 2000	18,751	17,396	13,449
FY 2001	19,956	17,804	17,834
FY 2002	11,000	14,507	23,377
FY 2003	28,462	28,462	38,052
FY 2004	40,420	39,820	32,026

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2005	32,044	32,644	40,626
FY 2006	21,406	21,406	18,384
FY 2007	32,789	32,789	18,081
FY 2008	22,447	22,447	22,882
FY 2009	24,894	24,894	32,841
FY 2010	30,321	30,321	22,010
FY 2011	80,000	80,000	53,933
FY 2012	176,000	176,000	125,000
FY 2013	315,000	315,000	295,000
FY 2014	321,000	321,000	295,000
FY 2015	277,000	277,000	254,000
FY 2016	317,000	317,000	306,000
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
Total TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 1999	18,378	18,378	17,401
FY 2000	29,369	29,369	24,488
FY 2001	27,193	27,193	29,191
FY 2002	27,699	27,699	23,649
FY 2003	27,884	27,884	29,970
FY 2004	33,161	32,935	30,828
FY 2005	25,658	25,658	26,727
FY 2006	47,395	47,298	33,770
FY 2007	22,000	22,273	21,930
FY 2008	7,314	7,314	19,030
FY 2009	28,450	28,450	24,536
FY 2010	58,780	58,780	44,649
FY 2011	112,999	112,999	51,594
FY 2012	45,600	45,600	42,500
FY 2013	47,507	47,507	47,000
FY 2014	50,512	50,512	47,500
FY 2015	61,000	61,000	58,450
FY 2016	90,000	90,000	82,000
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
FY 2019	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	TBD	TBD	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 1999	38,378	38,378	17,612
FY 2000	48,120	46,765	37,937
FY 2001	47,149	44,997	47,025
FY 2002	38,699	42,206	47,026
FY 2003	56,346	56,346	68,022
FY 2004	73,581	72,755	62,854
FY 2005	57,702	58,302	67,353
FY 2006	68,801	68,704	52,154
FY 2007	54,789	55,062	40,011
FY 2008	29,761	29,761	41,912
FY 2009	53,344	53,344	57,377
FY 2010	89,101	89,101	66,659
FY 2011	192,999	192,999	105,527
FY 2012	221,600	221,600	167,500
FY 2013	362,507	362,507	342,000
FY 2014	371,512	371,512	342,500
FY 2015	338,000	338,000	312,450
FY 2016	407,000	407,000	388,000
FY 2017	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD
FY 2019	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
Site Preparation	TBD	TBD	TBD
Equipment	TBD	TBD	TBD
Other Construction	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Contingency, TEC	TBD	TBD	TBD

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	TBD	TBD
Conceptual Design	TBD	TBD	TBD
Start-Up	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	TBD	TBD	TBD
Contingency, OPC			
Total, TPC	TBD	TBD	TBD
Total, Contingency	TBD	TBD	TBD

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2009	TEC	387,665	195,000	225,000	224,960	TBD	TBD	TBD	TBD	1,032,625
	OPC	336,422	49,603	36,145	39,710	TBD	TBD	TBD	TBD	461,880
	TPC	724,087	244,603	261,145	264,670	TBD	TBD	TBD	TBD	1,494,505
FY 2010	TEC	303,679	76,985	178,622	234,546	216,566	TBD	TBD	TBD	1,010,398
	OPC	403,403	69,620	48,686	56,805	71,304	TBD	TBD	TBD	649,818
	TPC	707,082	146,605	227,308	291,351	287,870	TBD	TBD	TBD	1,660,216
FY 2011	TEC	303,679	80,000	158,000	200,000	200,000	157,000	TBD	TBD	1,098,679
	OPC	391,954	112,999	30,141	44,992	41,143	35,441	TBD	TBD	656,670
	TPC	695,633	192,999	188,141	244,992	241,143	192,441	TBD	TBD	1,755,349
FY 2012	TEC	302,491	80,000	176,000	315,000	321,000	277,000	317,000	TBD	1,788,491
	OPC	353,281	112,999	45,600	47,507	50,512	61,000	90,000	TBD	760,899
	TPC	655,772	192,999	221,600	362,507	371,512	338,000	407,000	TBD	2,549,390

8. Related Operations and Maintenance Funding Requirements

Sub-Project 01 – Pit Disassembly and Conversion Facility	
Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

(Related Funding requirements)

Sub-Project 01 – Pit Disassembly and Conversion Facility

(dollars in thousands)

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

9. Required D&D Information

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

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

10. Acquisition Approach

Pit Disassembly and Conversion (Combined Project)

The Acquisition strategy for the PDC project has been developed as part of the CD-1 process that is scheduled for approval in FY 2011.

Global Threat Reduction Initiative (GTRI)

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Global Threat Reduction Initiative			
Highly Enriched Uranium (HEU) Reactor Conversion	**102,772**	**119,000**	**148,269**
Nuclear and Radiological Material Removal			
Russian-Origin Nuclear Material Removal	94,167	145,191	147,000
U.S.-Origin Nuclear Material Removal	9,889	16,500	9,000
Gap Nuclear Material Removal	9,111	108,000	56,000
Emerging Threats Nuclear Material Removal	5,556	16,000	5,000
International Radiological Material Removal	8,333	45,000	20,000
Domestic Radiological Material Removal (Homeland Security) [a]	17,778	25,000	20,000
Subtotal, Nuclear and Radiological Material Removal	**144,834**	**355,691**	**257,000**
Nuclear and Radiological Material Protection			
BN-350 Nuclear Material Protection	9,109	2,000	2,000
International Material Protection	41,463	57,000	50,000
Domestic Material Protection (Homeland Security) [a]	35,322	25,147	51,000
Subtotal, Nuclear and Radiological Material Protection	**85,894**	**84,147**	**103,000**
Total, Global Threat Reduction Initiative	**333,500**	**558,838**	**508,269**

[a] Office of Management and Budget (OMB) Homeland Security designation.

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Global Threat Reduction Initiative				
HEU Reactor Conversion	**175,000**	**230,000**	**254,000**	**269,000**
Nuclear and Radiological Material Removal				
Russian-Origin Nuclear Material Removal	112,000	110,000	105,000	100,000
U.S.-Origin Nuclear Material Removal	8,000	3,000	3,000	3,000
Gap Nuclear Material Removal	56,000	20,000	10,000	5,000
Emerging Threats Nuclear Material Removal	5,000	5,000	5,000	5,000
International Radiological Material Removal	20,000	20,000	25,000	25,000
Domestic Radiological Material Removal (Homeland Security) [a]	20,000	20,000	28,000	29,000
Subtotal, Nuclear and Radiological Material Removal	**221,000**	**178,000**	**176,000**	**167,000**
Nuclear and Radiological Material Protection				
International Material Protection	50,000	86,000	87,000	91,000
Domestic Material Protection (Homeland Security) [a]	51,000	143,000	144,000	213,278
Subtotal, Nuclear and Radiological Material Protection	**101,000**	**229,000**	**231,000**	**304,278**
Total, Global Threat Reduction Initiative	**497,000**	**637,000**	**661,000**	**740,278**

[a] Office of Management and Budget (OMB) Homeland Security designation.

Mission:

The Global Threat Reduction Initiative (GTRI) program reduces and protects vulnerable nuclear and radiological materials located at civilian sites worldwide.

Benefits

GTRI efforts are focused on the first line of defense, which is to secure or remove vulnerable nuclear and radiological material at the source. GTRI's Reactor Conversion subprogram, along with the Nuclear and Radiological Removal subprograms offer permanent threat reduction through the elimination of materials. GTRI directly supports the Administration's goal announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years. The Joint Statement from the Moscow Summit in July 2009, the September 2009 United Nations Security Council (UNSC) Resolution 1887 and the 47 nation Nuclear Security Summit in April 2010 amplified global commitments to secure or remove nuclear and radioactive materials.

GTRI supports the U.S. Department of Energy's Nuclear Security Goal by preventing terrorists from acquiring nuclear and radiological materials that could be used in weapons of mass destruction (WMD) or other acts of terrorism. GTRI does so by: 1) converting research reactors and isotope production facilities from the use of highly enriched uranium (HEU) to low enriched uranium (LEU); 2) removing and disposing of excess nuclear and radiological materials; and 3) protecting high-priority nuclear and radiological materials from theft and sabotage. These three key subprograms -- Convert, Remove, and Protect -- provide a comprehensive approach to achieving its mission and denying terrorists access to nuclear and radiological materials. The GTRI subprograms that make important and unique contributions to Government Performance and Results (GPRA) Unit Program Number 48 are discussed below.

The **HEU Reactor Conversion** subprogram supports the conversion of domestic and international civilian research reactors and isotope production facilities from HEU to LEU. These efforts result in permanent threat reduction by minimizing and, to the extent possible, eliminating use of HEU in civilian applications. This includes working with Molybdenum-99 (Mo-99) producers to convert their existing operations to use LEU targets and developing new non-HEU-based Mo-99 production capabilities in the United States. The Convert subprogram is critical to GTRI's mission because it removes the need for HEU at civilian sites. Once the need is eliminated, any remaining fresh and spent HEU fuel can be permanently disposed of by GTRI's Remove subprogram.

The **Nuclear and Radiological Material Removal** subprogram supports the removal and disposal of excess and vulnerable nuclear and radiological material from civilian sites worldwide. These efforts result in permanent threat reduction by eliminating nuclear and radiological materials that terrorists could acquire. The Remove subprogram is key to the GTRI mission because each kilogram or curie of this dangerous material that is removed reduces the risk of a terrorist bomb. This subprogram includes:

- Russian-origin nuclear material removal. This activity supports the removal and disposal of Russian-origin nuclear material from research reactors worldwide.

- U.S.-origin nuclear material removal. This activity supports the removal and disposal of U.S.-origin HEU and LEU from Training, Research, Isotopes, General Atomics (TRIGA) and Materials Test Reactor (MTR) research reactors. U.S. origin fuel will be returned to the United States until 2019 as an incentive for reactor conversion.

- Gap nuclear material removal. This activity supports the removal and disposal of vulnerable, high-risk nuclear materials that are not covered under the Russian-origin and U.S.-origin nuclear removal activities. This includes U.S.-origin HEU other than TRIGA and MTR fuel; HEU of non-U.S. and non-Russian-origin; and separated plutonium.

- Emerging threats nuclear material removal. This activity develops the capability to rapidly denuclearize a country ensuring that when opportunities present themselves, such as Libya in 2004, the U.S. is able to respond quickly. This includes in-country stabilization, packaging, and removal of nuclear materials through the deployment of self-sufficient, trained rapid response teams and mobile facilities.

- International radiological material removal. This activity supports the removal and disposal of excess or abandoned radiological material in other countries. This includes Russian radioisotopic thermoelectric generators (RTGs), U.S.-origin sealed sources in other countries, and other orphaned radiological materials.

- Domestic radiological material removal. This activity supports the removal and disposal of domestic radiological materials by working in cooperation with Federal, State, and local agencies, and private industry to recover and permanently dispose of excess radiological sources in the United States.

The **Nuclear and Radiological Material Protection** subprogram supports the securing of high priority nuclear and radiological material worldwide from theft and sabotage. These efforts result in threat reduction by improving security of bomb material remaining at civilian sites. The Protect subprogram is

vital to GTRI's mission because it upgrades security until a permanent threat reduction solution can be implemented. This subprogram includes:

- Liquid-Metal Fast Breeder Reactor (BN-350) nuclear material protection. This activity provides safe and secure long-term storage of approximately 3,000 kilograms of weapon-grade plutonium and 10,000 kilograms of HEU in spent fuel from the shutdown BN-350 fast breeder reactor in Kazakhstan.

- International material protection. This activity works in cooperation with foreign counterparts and international agencies to install security upgrades at buildings containing high-priority, vulnerable nuclear and radiological materials located at civilian sites outside the United States.

- Domestic material protection. This activity works in cooperation with Federal, State, and local agencies, and private industry to install security upgrades at buildings containing high-priority nuclear and radiological materials located at civilian sites in the United States.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

FY 2010 Accomplishments

Through September 2010, GTRI has accelerated threat reduction efforts by: 1) converting or verifying the shutdown of a cumulative 72 research reactors from use of HEU fuel to LEU fuel; 2) removing a cumulative 2,852 kilograms of HEU and plutonium, enough material to make more than 110 nuclear bombs; 3) removing a cumulative 26,172 excess and unwanted radiological sources in the United States, containing more than 780,000 curies; and 4) protecting a cumulative 971 nuclear and radiological buildings worldwide with vulnerable high-priority nuclear and radiological materials.

Major Outyear Priorities and Assumptions

The outyear projections for the GTRI program total $2,535,278,000 (FY 2013 – FY 2016). GTRI plays a key role in support of the international effort the President announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit, the September 2009 UNSC Resolution 1887 and the April 2010 Nuclear Security Summit. GTRI has worked in 118 countries around the world to implement nuclear and radiological threat reduction in line with this goal. By the end of 2016, GTRI will have converted 129 (65 percent) of the 200 HEU reactors, removed 4,801 kilograms vulnerable weapons-useable (100 percent) of the approximately 4,801 kilograms of nuclear material at civilian sites, and protected 2,607 (31 percent) of the estimated 8,500 buildings with high-priority nuclear and radiological materials.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
HEU Reactor Conversion	**102,772**	**119,000**	**148,269**

GTRI's Convert subprogram supports the conversion of domestic and international civilian research reactors and isotope production facilities from HEU to LEU. These efforts result in permanent threat reduction by minimizing and, to the extent possible, eliminating use of HEU in civilian applications. This includes working with Mo-99 producers to convert their existing operations to use LEU targets and developing new non-HEU-based Mo-99 production capabilities in the United States. The Convert subprogram meets the GTRI mission by removing the need for HEU at civilian sites globally. Once the need is eliminated, any remaining fresh and spent HEU fuel can be permanently disposed of by GTRI's Remove subprogram.

In FY 2012, GTRI will convert, or verify as shutdown, an additional 5 HEU research reactors, bringing the cumulative total to 83. This includes for example the conversion of HEU research reactors in Russia. In addition, GTRI will continue efforts required to fabricate the new high-density LEU fuel needed to convert the 27 HEU research reactors around the world that cannot convert with existing LEU fuel. The conversion of these 27 high performance reactors will result in HEU avoidance of an additional 520 kilograms per year. GTRI will also provide technical and financial support to the U.S. private sector to accelerate the establishment of a reliable domestic production capability for the critical medical isotope Mo-99 without the use of HEU. These activities support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, and further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit, the September 2009 UNSC Resolution 1887 and the April 2010 Nuclear Security Summit.

Nuclear and Radiological Material Removal	**144,834**	**355,691**	**257,000**

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

• **Russian-Origin Nuclear Material Removal**	**94,167**	**145,191**	**147,000**

This activity supports the removal and disposal of Russian-origin nuclear material from research reactors worldwide. These activities collectively support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit, the September 2009 UNSC Resolution 1887 and the April 2010 Nuclear Security Summit. In accordance with these goals, GTRI is accelerating the return of Russian-origin HEU fuel**.**

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

In FY 2012, GTRI will return to Russia and dispose of an additional 401 kilograms of Russian-origin HEU fuel from facilities located in Belarus and Ukraine, resulting in a cumulative total of 2,004 kilograms of HEU removed, enough material for 80 nuclear bombs. Funds will also be used for preparatory activities for removals planned for 2013.

- **U.S.-Origin Nuclear Material Removal** **9,889** **16,500** **9,000**

This activity supports the removal and disposal of U.S.-origin HEU and LEU from TRIGA and MTR research reactors. U.S.-origin fuel will be returned to the United States until 2019 as an incentive for reactor conversions. These activities collectively support the goals contained in the Administration's nonproliferation initiative announced in Prague on April 5, 2009 to secure all vulnerable nuclear material around the world within four years, which was further strengthened in the July 2009 Joint Statement resulting from the Moscow Summit, the September 2009 UNSC Resolution 1887 and the April 2010 Nuclear Security Summit. In accordance with these goals, GTRI is accelerating the return of U.S.-origin HEU fuel.

In FY 2012, GTRI will return to the United States an additional 15 kilograms of U.S.-origin HEU from several countries, including Mexico resulting in a cumulative total of 1,265 kilograms of HEU removed, enough material for 50 nuclear bombs. Funds will also be used for preparatory activities for removals planned for 2013.

- **Gap Nuclear Material Removal** **9,111** **108,000** **56,000**

This effort additionally supports the GTRI mission of removal and disposal of vulnerable, high-risk nuclear materials that are not covered by the Russian-origin and U.S.-origin Nuclear Material Remove activities. This includes U.S.-origin HEU other than TRIGA and MTR fuel, HEU of non-U.S.- and non-Russian-origin, and separated plutonium. These combined efforts directly support the goals contained in the Administration's nonproliferation initiative to security all vulnerable nuclear material within four years that was announced in Prague on April 5, which was further strengthened in the July 2009 Joint Statement, the September 2009 UNSC Resolution 1887, and the April 2010 Nuclear Security Summit. In accordance with these goals, GTRI is accelerating the return of Gap material from third countries**.**

In FY 2012, GTRI will remove or facilitate disposition of an additional 36 kilograms of Gap HEU and plutonium from several countries resulting in a cumulative total of 286 kilograms of HEU and plutonium removed, enough material for more than 10 nuclear bombs. Funds will also be used for preparatory activities for removals planned for 2013.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **Emerging Threats Nuclear Material Removal**	**5,556**	**16,000**	**5,000**

This activity develops the capability to rapidly denuclearize a country, ensuring that when opportunities present themselves, such as Libya in 2004, the United States is able to respond quickly. This includes in-country stabilization, packaging, and removal of nuclear materials through the deployment of self-sufficient, trained rapid response teams and mobile facilities.

In FY 2012, GTRI will train rapid response teams, and field test all capabilities. Additional efforts over the long term address maintaining a short-term readiness posture to deploy assets rapidly to assist in recovery of nuclear materials. In addition, the program provides life-cycle replacement of equipment to maintain state-of-the-art technical capability.

• **International Radiological Material Removal**	**8,333**	**45,000**	**20,000**

This activity supports the removal and disposal of excess or abandoned radiological materials in other countries. This includes Russian radioisotopic thermoelectric generators (RTGs), U.S.-origin sealed sources in other countries, and other orphaned radiological materials.

In FY 2012, GTRI will complete the removal of an additional 34 RTGs, resulting in a cumulative total of 461 RTGs removed by GTRI through direct funding and international contributions (e.g. Canada). Attesting to the cooperative nature of these tasks, by the end of FY 2012, our international partners (e.g. Russia, Norway, and France) are expected to have funded the recovery of an additional cumulative 319 RTGs for a grand total of 780 of the 851 RTGs being completed. Funds will also be used to recover and dispose of orphaned radioactive sources in other countries.

• **Domestic Radiological Material Removal (Homeland Security)**	**17,778**	**25,000**	**20,000**

This effort supports the rapid removal and disposal of domestic radiological materials by working in close cooperation with Federal, State, and local agencies, and private industry to recover and permanently dispose of excess radiological sources in the United States.

In FY 2012, GTRI will remove at least an additional 1,900 excess and unwanted sealed sources from locations in the United States, resulting in a cumulative total of 29,900 excess sealed sources removed.

Nuclear and Radiological Material Protection	**85,894**	**84,147**	**103,000**

GTRI's Protect subprogram supports the securing of high priority nuclear and radiological material worldwide from theft and sabotage. These efforts result in threat reduction by improving security on the bomb material remaining at civilian sites. The Protect subprogram is key to the GTRI mission because it upgrades security until a permanent threat reduction solution can be implemented.

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
• **BN-350 Nuclear Material Protection**	**9,109**	**2,000**	**2,000**

This activity provides for the safe and secure long-term storage of approximately 3,000 kilograms of weapons-grade plutonium and 10,000 kilograms of HEU in spent fuel from the shutdown BN-350 fast breeder reactor in Kazakhstan. The BN-350 shipments were completed in November 2010; and these minimal funds will support the project close out activities and verify all security systems are fully operational.

• **International Material Protection**	**41,463**	**57,000**	**50,000**

This activity works in cooperation with foreign counterparts and international agencies to install security upgrades on high-priority, vulnerable nuclear and radiological materials located at civilian sites outside the United States.

In FY 2012, GTRI will complete security upgrades at an additional 43 research reactor and radiological buildings, resulting in a cumulative total of 822 international buildings secured. Efforts also include working with the International Atomic Energy Agency (IAEA), foreign regulators, and sites to support the sustainability of previously installed security upgrades at 779 buildings in over 70 countries.

• **Domestic Material Protection (Homeland Security)**	**35,322**	**25,147**	**51,000**

This activity works in close cooperation with Federal, State, and local agencies, and private industry to install security upgrades on high-priority nuclear and radiological materials located at civilian sites in the United States to prevent theft.

In FY 2012, GTRI will complete security upgrades at an additional 115 research reactor and radiological buildings, resulting in a cumulative total of 417 domestic buildings secured. Efforts also include working with Federal, State, and local authorities and the sites to support the sustainability of previously installed security upgrades at 302 buildings and conduct 24 Alarm Response Training sessions for over 900 first responders.

Total, Global Threat Reduction Initiative	**333,500**	**558,838**	**508,269**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
HEU Reactor Conversion	
Increase to accelerate the establishment of a reliable domestic production capability for Mo-99 using LEU and to develop new high-density LEU fuel.	**+29,269**
Nuclear and Radiological Material Removal	
Decrease is consistent with the four year program plan. Funding was requested in FY 2011 for removal efforts that will occur in early 2012 to meet goal.	**-98,691**
Nuclear and Radiological Materials Protection	
Increase accelerates the security upgrades on high activity radiological materials in the United States and worldwide (an increase in buildings secured from 110 in FY 2011 to 158 in FY 2012).	**+18,853**
Total Funding Change, Global Threat Reduction Initiative	**-50,569**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses[a]

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects	815	833	851
Capital Equipment	984	1,006	1,028
Total, Capital Operating Expenses	**1,799**	**1,839**	**1,879**

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects	870	889	909	929
Capital Equipment	1,051	1,074	1,098	1,122
Total, Capital Operating Expenses	**1,921**	**1,963**	**2,007**	**2,051**

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

Congressionally Directed Projects

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	**250**	**0**	**0**

Description

Starting in FY 2008, funding for Congressionally Directed projects was appropriated as a separate funding line although specific projects may relate to ongoing work in a particular programmatic area. The FY 2009 Omnibus Appropriations Act (P.L. 111-8) included one Congressionally Directed project within the Defense Nuclear Nonproliferation program. The FY 2010 Energy and Water Development and Related Agencies Appropriations Act (P.L. 111-85) included $250,000 for one Congressionally Directed project for Global seismographic network equipment renewal. For FY 2011 and FY 2012, no follow-on funding is requested.

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects			
• Global seismographic network equipment renewal.	250	0	0
Total, Congressionally Directed Projects	**250**	**0**	**0**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Congressionally Directed Projects	
No funding is requested for these activities in FY 2011 or FY 2012 under Congressionally Directed Projects.	0
Total, Congressionally Directed Projects	**0**

Naval Reactors

Naval Reactors

Naval Reactors

Proposed Appropriation Language

For Department of Energy expenses necessary for naval reactors activities to carry out the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition (by purchase, condemnation, construction, or otherwise) of real property, plant, and capital equipment, facilities, and facility expansion, $1,153,662,000, to remain available until expended.

Explanation of Change

Change from the language proposed in FY 2011 consists of a change to the requested funding amount.

Naval Reactors

Overview

Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriations	FY 2011 Request	FY 2012 Request*
Naval Reactors Development			
Operations and Maintenance (O&M)	877,533	997,886	1,069,262
Program Direction	36,800	40,000	44,500
Construction	30,800	32,600	39,900
Total, Naval Reactors Development	**945,133**	**1,070,486**	**1,153,662**

* FY 2012 includes $27,800 DoD support for the Expended Core Facility M-290 Receiving Discharge Station line-item construction project.

Public Law Authorizations:

P.L. 83-703, "Atomic Energy Act of 1954"
"Executive Order 12344 (42 U.S.C. 7158), "Naval Nuclear Propulsion Program"
P.L. 107-107, "National Defense Authorizations Act of 2002", Title 32, "National Nuclear Security Administration"
John Warner National Defense Authorization Act for FY 2007, (P.L. 109-364)
FY 2008 Consolidated Appropriations Act (P.L. 110-161)
National Nuclear Security Administration Act, (P.L. 106-65), as amended
FY 2009 Consolidated Appropriations Act (P.L. 111-8)
FY 2010 Energy and Water and Related Agencies Appropriations Act (P.L. 111-85)

Outyear Appropriation Summary by Program*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Naval Reactors Development				
Operations and Maintenance	1,093,038	1,181,847	1,234,610	1,245,900
Program Direction	47,040	49,670	52,390	54,200
Construction	92,200	58,400	187,200	269,700
Total, Naval Reactors Development	**1,232,278**	**1,289,917**	**1,474,200**	**1,569,800**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts included for Naval Reactors from this DoD account are FY 2013, $5.7 million; FY 2014 $1.7 million; and FY 2015 $0.4 million.

FY 2010 Budget Execution

(dollars in thousands)

	FY 2010 Appropriation	PY Balance/ General Reduction	Supplemental Appropriation	Reprogramming And Other Transfers	Total Adjustments	Final FY 2010
Naval Reactors	**945,133**	**0**	**0**	**0**	**0**	**945,133**

Mission

Naval Reactors is responsible for all naval nuclear propulsion work, beginning with reactor technology development, continuing through reactor operation, and ending with reactor plant disposal. The Program ensures the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers (constituting 40 percent of the Navy's combatants), and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements.

Benefits

The National Nuclear Security Administration (NNSA) is working to provide the U.S. Navy with nuclear propulsion plants that are capable of responding to the challenges of the 21st century security environment.

Naval Reactors' corporate performance measures, by providing accountability for miles steamed on nuclear power and program operations with no adverse effects on people or the environment, directly contribute to the NNSA strategy to design and develop Navy integrated nuclear propulsion systems to support national security in a environmentally safe and militarily effective manner.

Annual Performance Results and Targets

The Department is in the process of updating its strategic plan, and has been actively engaging stakeholders including Congress. The draft strategic plan is being released for public comment concurrent with this budget submission, with the expectation of official publication this spring. The draft plan and FY 2012 budget are consistent and aligned. Updated measures will be released at a later date and available at the following link http://www.mbe.doe.gov/budget/12budget/index.htm.

Major Outyear Priorities and Assumptions

The outyear requirements for Naval Reactors total $5,566,195,000 (FY 2013-FY 2016). This level of funding supports Naval Reactors' continued achievement of its core objective of ensuring the safe and reliable operation of the Nation's Nuclear Fleet. This includes providing proper maintenance and safety oversight, as well as addressing emergent operational issues and technology obsolescence, for 72 submarines, 11 aircraft carriers, and four research and development and training platforms, constituting 104 reactor plants. This level of funding also supports Naval Reactor's continued achievement of ongoing new plant design projects (i.e., reactor plant for the GERALD R. FORD-class aircraft carrier and alternative lower-cost core for VIRGINIA-class submarines), as well as continued achievement of its legacy responsibilities such as ensuring proper storage of naval spent nuclear fuel, prudent recapitalization of aging facilities, and cleanup of environmental liabilities. In addition, the following transfers from the Department of Defense to Naval Reactors will occur in the corresponding budget year: FY 2013, $5.7 million; FY 2014, $1.7 million; and FY 2015, $0.4 million. These allocations represent DoD's support for the Expended Core Facility M-290 Receiving/Discharge Station line-item construction project.

OHIO-Class Ballistic Missile Submarine Replacement
The OHIO-class ballistic missile submarines (SSBNs) have been the backbone of the Nation's Sea-Based Strategic Deterrent since the early-1980s. The Navy intends to replace the OHIO-class SSBNs at a reduced force structure beginning in FY 2027 when the first of 14 is retired. In order to have a replacement available in FY 2027 and consistent with the Navy's 30-year shipbuilding plan, the Navy would need to procure this ship in FY 2019. Research, development, and design for the OHIO-class SSBN began in FY 2010. Design of a new reactor plant is required to meet required capabilities, maximize operational availability, and reduce acquisition and life-cycle costs. This new design will leverage VIRGINIA-class technology, as well as manufacturing development and demonstration efforts to be performed as part of the Land-Based Prototype Refueling program. Central to this work and to enabling a reduced SSBN force structure is the development of a reactor plant core that operates for the life of the ship without refueling. The DOE reactor plant design and development work for the OHIO-class replacement will continue in FY 2012 and beyond to ensure sufficient maturity of detailed design to support initial fabrication and procurement of long-lead nuclear components in FY 2017 and ship construction in FY 2019. Funding has been identified within Naval Reactors Operations and Maintenance in the estimated amount of $121,300,000 to fund this effort in FY 2012.

S8G Prototype Refueling
The S8G Prototype (located in upstate New York), which serves as a critical operating reactor platform to demonstrate technology advancements for fleet application, will be depleted and will require refueling beginning in FY 2017. Originally built as a prototype for the OHIO-class submarine propulsion plant [S8G], this testing platform has been integral to the development of technologies including the VIRGINIA-class and SEAWOLF-class fuel systems, which have resulted in improved performance and reliability while reducing life-cycle costs. Continued operation of this land-based prototype and development of advanced core technology will enable extended core lifetimes, more efficient use of nuclear fuel, greater compactness, and cross-platform adaptability. Integral to development of a life of the ship core for the OHIO-class replacement, core manufacturing and demonstration will be performed as part of this refueling effort. By constructing the replacement core for the prototype with technologies and capabilities planned for the OHIO-class replacement, technical, cost, and schedule risk to the ship construction program will be significantly mitigated. This manufacturing development and demonstration work, as well as development of new core technologies, began in FY 2010. To preserve this critical research and development asset for the long term and to achieve a life-of-the ship core for the OHIO-class replacement submarine, core development and refueling overhaul work must continue in FY 2012 and beyond. Funding has been identified within Naval Reactors Operations and Maintenance in the estimated amount of $99,500,000 to fund this effort in FY 2012.

Recapitalization of Spent Nuclear Fuel Infrastructure
All spent naval nuclear fuel from Navy shipyards is shipped to the Naval Reactors Facility (NRF), located at the Idaho National Laboratory, for examination and disposal per the 1995 agreement signed by Department of Navy, DOE, and the State of Idaho. Compliance with this agreement and Naval Reactors' resultant ability to continue work in Idaho is dependant upon a viable, efficient fuel-handling infrastructure. However, major portions of the existing infrastructure (i.e., water pools and related support facilities) and equipment (i.e., examination equipment, cranes, etc.) are 50+ years old. Consequently, the magnitude of required sustainment efforts and incremental infrastructure upgrades pose substantial risk to operations and production workflow. An interruption to refueling and defueling schedules for nuclear-powered vessels, as required by existing maintenance schedules, would adversely

affect the operational availability of the nuclear Fleet. If this interruption were to extend over long periods, the ability to sustain Fleet operations would be impacted, resulting ultimately in a significant decrement to the Navy's responsiveness and agility to fulfill military missions worldwide. The National Environmental Policy Act (NEPA) and conceptual design efforts began in FY 2010. As the timing for completion of this recapitalization effort prudently balances risks and directly supports significant cost avoidance associated with scheduled aircraft carrier refueling and defueling, work will continue in FY 2012 and beyond to support project engineering and design in FY 2013, construction in FY 2015, and facility completion by FY 2020.

In accordance with 50 United States Code (USC), Section 2746, which requires the Department to request funds for conceptual designs that exceed the $3,000,000 threshold, funding for conceptual design and ongoing NEPA efforts has been estimated at approximately $53,800,000 for FY 2012.

Historically Black Colleges and Universities (HBCU) Support

The NNSA has established program to target research opportunities for HBCU institutions to increase their participation in national security-related research and to train and recruit qualified HBCU graduates for employment within the nuclear security enterprise. The majority of the efforts directly support program activities, and programs funded in the Naval Reactors appropriation plans to fund research with the HBCU totaling up to approximately $1,000,000 in FY 2012.

Department of Energy Working Capital Fund Support

The DOE Working Capital Fund (WCF) Board has extended the policy for using program funding to finance WCF activities. In FY 2011, NNSA programs will continue to fund a pro rata share by Appropriation of certain DOE Working Capital Fund activities. FY 2012 projected NNSA program allocations are as follows: DOEnet ($237,000) for DOE telecommunications services; Financial Statement Audits ($4,188,000), previously budgeted by the DOE Office of Inspector General; Defense Contract Audit Agency (DCAA) Audits ($2,329,000) for procurement management; iManage ($3,679,000) for corporate systems that support the DOE accounting, finance, procurement and budgeting processes; and Financial Control Reporting Assessment ($1,396,000). The NNSA's total contribution to the WCF from both Program ($12,029,000) and Program Direction ($26,239,000) funds for FY 2012 is projected at $38,268,000.

The NNSA Naval Reactors appropriation projected allocation of the DOE Working Capital Fund for FY 2012 is $1,122,000 from program and $293,000 from program direction funds. This proportional share of program funding includes financial statement audits $397,000, DCAA $350,000, iManage $421,000, financial control reporting assessments $133,000, DOE telecommunications $92,000 and corporate training $22,000.

Naval Reactors – Operations and Maintenance

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Maintenance (O&M)			
Plant Technology	142,000	154,200	175,700
Reactor Technology and Analysis	266,900	301,100	339,200
Materials Development and Verification	106,100	109,600	117,600
Evaluation and Servicing	252,533	325,700	320,904
ATR Operations and Test Support	61,800	63,100	64,300
Facility Operations	48,200	44,186	51,558
Total, Operations and Maintenance	**877,533**	**997,886**	**1,069,262**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Maintenance				
Plant Technology	205,100	225,200	248,800	240,000
Reactor Technology and Analysis	375,700	403,000	405,100	358,100
Materials Development and Verification	120,500	123,500	126,600	129,800
Evaluation and Servicing	276,238	283,848	316,910	374,759
ATR Operations and Test Support	65,600	66,900	68,200	70,041
Facility Operations	49,900	79,399	69,000	73,200
Total, Operations and Maintenance	**1,093,038**	**1,181,847**	**1,234,610**	**1,245,900**

Mission

The Operations and Maintenance subprogram funds continued efforts by the Bettis Atomic Power Laboratory, Knolls Atomic Power Laboratory, Kesselring Site, and Naval Reactors Facility in support of the Program's cradle-to-grave responsibility for all naval nuclear propulsion work. These focused-mission laboratories perform complex engineering and technical work to develop highly capable reactor plants and associated equipment for naval propulsion, evaluate advanced fuel systems and materials for future application, and design and demonstrate more efficient manufacturing processes, as well as provide the necessary support to ensure safe and reliable operation and future disposition of naval nuclear power plants.

Benefits

Naval Reactors contributes to the Government Performance and Results Act (GPRA) Unit Program Number 55 which allows maintaining cradle-to-grave responsibility for naval nuclear propulsion work, beginning with technology development and continuing through reactor operation, and ultimately ensuring appropriate and responsible reactor plant disposal. An over-arching theme is maintaining national security and nuclear preeminence, which Naval Reactors achieves by developing new or back fit applications which are implemented in the operating Fleet, maintaining oversight during the operational stage to ensure technologies perform as intended, and supporting the operation, installation, maintenance and inactivation/D&D work related to land-based prototypes and test facilities.

Major Outyear Priorities and Assumptions

OHIO-class Replacement Submarine: To recapitalize the most survivable leg of the nuclear triad, NR is developing a life-of-ship reactor plant for the OHIO-class Replacement submarine that will serve in excess of 40 years. Lead times associated with designing, building, testing, and deploying new nuclear warships, specifically submarines, are particularly long with exacting deadlines for delivery of components to shipyards for timely construction making full funding for this program crucial.

Work to support the OHIO-class replacement submarine is tightly synchronized with Navy-funded propulsion plant work. This DOE-funded design work includes reactor plant component design and development, core arrangement, instrumentation and control design and development, reactor plant configuration, systems development and integration, and reactor performance analysis and validation. Completion of this work drives the overall design maturity of the reactor and propulsion plant thereby significantly minimizing risk during component procurement (beginning in FY 2017) and ship construction (beginning in FY 2019).

OHIO-class Replacement Submarine
(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Maintenance	121,300	149,700	169,800	205,000	150,300

S8G Prototype Refueling: The S8G Prototype reactor plant provides a cost-effective test and evaluation platform for new technologies, materials, and components before they are introduced to the Fleet, and provides a vital training platform for reactor plant operators. The S8G Prototype has been integral to the development of technologies including the current VIRGINIA-class and SEAWOLF-class fuel systems, which have resulted in improved performance and reliability while reducing life-cycle costs. This approach will significantly mitigate technical, cost, and schedule risk to the ship construction program by testing and proving the manufacturability of the fuel system prior to full-scale construction.

Refueling for the land-based S8G Prototype will allow the insertion of the new cladding and fuel system technology for the OHIO-class Replacement with the prototype refueling core. This will enable the testing and demonstration of core manufacturability necessary for production and delivery of the OHIO-class Replacement submarine reactor. One of the most significant requirements for the OHIO-class Replacement submarine is the life-of-the-ship (40+ years) core, which is impossible with the current conventional cladding. Alternate clad manufacturing development will enable the development of mature production processes for the OHIO-class Replacement submarine core prior to full-scale production and procurement.

S8G Prototype Refueling
(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Maintenance	99,500	123,100	138,000	168,000	222,500

Spent Fuel Handling Infrastructure Recapitalization: The Spent Fuel Handling Project (SFHP) will replace the over 50-year old Expended Core Facility (ECF) as the location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage. Naval Reactors' resultant ability to continue work in Idaho is dependent upon a viable, efficient fuel-handling infrastructure. Although the ECF continues to be maintained and operated in a safe and environmentally responsible manner, it no longer efficiently supports the nuclear Fleet. Uninterrupted receipt of naval spent nuclear fuel is vital to the timely, constant throughput of ship refuelings and return of these warships to full operational status in the Fleet. If an interruption were to extend over long periods, the ability to sustain Fleet operations would be impacted. Completion of the SFHP by 2020 is urgently needed to support the Navy's tight refueling and defueling schedule for nuclear-powered aircraft carriers. A delay to delivery of this new facility will be cost prohibitive as it will require the procurement of additional M-290 shipping containers and A1G closure heads.

The FY 2012 funding continues the conceptual design for the facility, equipment, and related systems. This is necessary to validating and approving the preliminary baseline and to initiate detailed project engineering and design. FY 2012 funding also supports continued NEPA-related efforts and project oversight (e.g., engineering procurement and construction management). Detailed project engineering and design work will commence in FY 2013 and construction will commence in FY 2015.

Spent Fuel Handling Infrastructure Recapitalization
(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Maintenance	53,800	8,800	9,500	14,800	15,000

The table below shows a breakout of these three major work scopes by subprogram for FY 2012:

	OHIO-class Replacement Submarine	S8G Prototype	Spent Fuel Handling Recapitalization
Plant Technology	55,800	0	0
Reactor Technology & Analysis	65,500	81,500	0
Materials Development & Verification	0	8,700	0
Evaluation & Servicing	0	9,300	53,800
Total, Major Work Scopes	**121,300**	**99,500**	**53,800**

Detailed Justification

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Plant Technology	**142,000**	**154,200**	**175,700**

Plant Technology work focuses on the components and systems of the ship's nuclear power plant. These components and systems transfer, convert, store and measure power to facilitate reductions in maintenance costs over the life of the plant while improving reliability, efficiency, and operational performance. Reactor plant performance, reliability, and safety are maintained via a thorough understanding of component performance and system condition throughout the life of a ship. Also, new components and systems are needed to support new reactor plants and to replace obsolete or degraded equipment and systems. Development and application of new analytical methods, predictive tests, and design tools are required to identify potential concerns before they become actual problems. This enables preemptive actions to ensure the continued safe operation of reactor plants and the minimization of maintenance costs. Plant Technology work is concentrated in the following areas: (1) Steam Generator, (2) Instrumentation and Control Technology, (3) Plant Arrangement/Development, and (4) Plant Performance and Primary Chemistry.

Steam Generator: This work focuses on ensuring satisfactory reactor plant operation throughout life and improving steam generator operation and steam generator chemistry technologies to enhance performance and reduce maintenance costs. This work also focuses on the development of new energy conversion methods for simplicity, cost savings, and potential replacement of the conventional steam cycle. Funding has been identified in the estimated amount of $25,000,000 to support this work in FY 2012, including the following:

- Continue development of improved steam generator chemistry and corrosion instrumentation through prototype and laboratory testing.
- Support the qualification of an alternate steam generator tubing vendor.
- Develop improvements to existing conventional horizontal steam generator designs to optimize arrangement flexibility that improve lifetime and power capabilities and lower manufacturing costs.
- Provide test data to qualify analysis tools used to design steam generators.
- Develop higher speed and more accurate inspection systems to reduce the time and effort required for steam generator inspections.
- Perform structural and functional analysis of the steam generator heat exchanger and perform verification testing of critical new design features, with emphasis on further enhancements and means to reduce manufacturing costs.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Instrumentation and Control Technology: This work focuses on developing instrumentation and control (I&C) equipment to replace obsolete equipment, improve reliability and performance and reduce costs. Funding has been identified in the estimated amount of $72,300,000 to support this work in FY 2012, including the following:

- Continue qualification of the A1B reactor plant I&C, including new technologies and architectures.
- Develop generic instrumentation and control systems that are suitable for use on all reactor plant types.
- Continue advanced display and control methodologies in the OHIO-class Replacement submarine rapid prototype.
- Design and develop network-based communications system and test architecture for Type 2 I&C systems.
- Develop replacement instrumentation and control equipment that utilizes state-of-the-art electronics based on commercially available hardware.
- Develop solid state power conversion and motor control equipment components and advanced power electronic controls to improve efficiency, performance and/or flexibility of use.
- Develop the reactor plant I&C equipment for the next generation plants and performs acceptance testing to demonstrate operational characteristics meet design requirements.
- Develop human-machine interface and data collection schemes that allow incorporation of new display technologies while presenting data to the operator in a more effective manner.
- Increase the use of automation and drive commonality and plant simplification to reduce maintenance requirements.

Plant Arrangement/Development: This work focuses on developing and testing reactor plant components and applicable emergent energy conversion technologies for converting high temperature reactor heat to electricity. These efforts address known limitations and have as a goal improved overall reactor plant systems performance and reliability. Funding has been identified in the estimated amount of $53,000,000 to support this work in FY 2012, including the following:

- Continue evaluation, development, and testing of new features/materials for various main coolant pump designs.
- Continue design of the A1B reactor plant and development of the A1B reactor plant operating procedures.
- Continue design activities necessary to support VIRGINIA-class cost reduction initiatives.
- Continue development of OHIO-class Replacement submarine propulsion plant arrangement studies and system designs to meet performance functional requirements.
  Develop component designs, perform design analyses and fabricate pre-production units for testing.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Develop enabling technologies for the development of advanced reactor plant designs that will improve the affordability of future naval nuclear propulsion plants.
- Develop and maintain test facilities for evaluating emergent problems and developing corrective action.
- Test components to allow troubleshooting in a non-radioactive environment and demonstration of corrective actions before installation of shipboard components.

Plant Performance and Primary Chemistry: This work focuses on performing reactor plant analyses to ensure safe operation and improving reactor plant chemistry controls to reduce corrosion and plant radiation levels. Funding has been identified in the estimated amount of $25,400,000 to support this work in FY 2012, including the following:

- Continue to implement fleet-wide use of improved primary chemistry analysis techniques.
- Assess impacts of reactor plant materials substitutions on corrosion and radiation levels for new plant designs.
- Continue support and development and modifications of the A1B Chemistry Analysis Room as necessary to support Secondary Chemistry Automated Analysis Systems and Automated Coolant Analysis Systems designs.
- Perform a Reactor Systems Performance Analysis for new plant designs (e.g., OHIO-class replacement submarine).
- Perform laboratory design testing and reactor protection system acceptance testing on new designs prior to initial operation.
- Develop primary coolant system additives and develop designs, materials, and operating parameters that inhibit corrosion product activation, transport and deposition.
- Analyze and evaluate new component and system designs that have the potential to reduce acquisition costs while maintaining or improving operating performance.

Reactor Technology and Analysis	**266,900**	**301,100**	**339,200**

Reactor Technology and Analysis supports the work required to ensure the operational safety and reliability of operating reactor plants in U.S. warships, extend the operational life of Navy nuclear propulsion plants, support Navy acoustic requirements, and preserve the Program's level of excellence in radiological and environmental control. Work focuses on developing a better understanding of reactor behavior fundamentals; designing new, reduced cost reactors with improved reliability, and efficiency; improving and streamlining manufacturing and assembly processes to achieve cost savings and reduce waste; developing production techniques that incorporate new materials and processes; and continuing a record of excellence in safety. Reactor Technology and Analysis work is concentrated in the following areas: (1) Advanced Core and Reactor Technology, (2) Advanced Thermal-Hydraulic Technology, (3) Advanced Fuel and Manufacturing Technology, (4) Control Drive Mechanism and Other Reactor Equipment

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Technology, (5) Reactor Physics, (6) Safety Analysis and Shielding, and (7) Radiological Controls, Environmental, Safety, and Quality Efforts.

Advanced Core and Reactor Technology: This work focuses on improving the nuclear heat source (core) design and analysis methods and developing improved designs to satisfy service life requirements. Funding has been identified in the estimated amount of $97,700,000 to support this work in FY 2012, including the following:

- Continue work on core design concepts related to future submarine initiatives.
- Continue to develop new design and analysis tools to enable improved core performance.
- Continue with assembly design of the S8G Prototype test cell to support core replacement.
- Develop new technology test cell concept designs to support future fleet applications focused on improved performance and reduced cost.
- Develop OHIO-class Replacement submarine reactor core concepts and arrangements.
- Incorporate cost reduction as part of the OHIO-class Replacement submarine core studies for future submarine applications.
- Provide design support to perform core studies for OHIO-class Replacement submarine applications and develop independent models and use independent analysis techniques to calculate and validate the structural and thermal-hydraulic design of the new core.
- Develop and test a non-fueled mechanical test cell, identical in size and geometry to a fueled reactor cell, and other key reactor design features under prototypic operating conditions for A1B, OHIO-class Replacement submarine and future cores.
- Conduct prototypical component testing to simulate operating conditions to permit validation, qualification, and improvement.
- Research innovative and exploratory technology that improve upon the current pressurized water reactor, steam cycle, and electric/mechanical drive. Evaluate technology maturity and readiness for future applications. Integrate both design concepts and technology initiatives to support product development objectives for future ships and help align strategic technology development planning.

Advanced Thermal-Hydraulic Technology: This work focuses on developing and qualifying improved core and reactor component thermal and hydraulic designs. Funding has been identified in the estimated amount of $42,600,000 to support this work in FY 2012, including the following:

- Maintain existing thermal-hydraulic design procedures and support infrastructure.
- Develop thermal-hydraulic technologies and methods to support future advanced pressurized water reactor (PWR) and advanced concept designs.
- Continue procurement of test hardware to support S8G prototype test cell development.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Develop advanced 3-D calculation methods and software that use fewer approximations reducing uncertainties and associated costly conservatism in advanced reactor designs.
- Conduct prototypic component testing to simulate operating conditions to permit validation and qualification.
- Develop revised thermal-hydraulic design procedures and conduct the development tests.
- Develop qualified 3-D Computational Fluid Dynamics calculation methods to replace design development test programs for reactor hydraulic parameters and pump designs.
- Develop Core Flow procedures for OHIO-class Replacement submarine.

Advanced Fuel and Manufacturing Technology: This work focuses on evaluating and testing improved core manufacturing processes and inspection techniques to support reactors. Funding has been identified in the estimated amount of $63,900,000 to support this work in FY 2012, including the following:

- Develop new fuel and poison manufacturing technologies to enable future plant design concepts.
- Revise existing processes and develop new manufacturing processes that enable the manufacture of advanced cores with improved performance.
- Develop improved inspection equipment and procedures for existing core designs which reduce core costs.
- Continue to fabricate model elements and core structural components essential to qualify new reactor core materials, designs, and manufacturing and inspection technologies.
- Continue core manufacturing development and demonstration for refueling of the Technology Demonstration Prototype and qualify fleet production-scale manufacturing capability.
- Develop advanced technologies, equipment, procedures, and specifications required to meet the design objectives of advanced cores in a cost effective manner.

Control Drive Mechanism and Other Reactor Equipment Technology: This work focuses on designing and testing improved reactor equipment including advanced control drive mechanisms (CDM) which meet all design requirements, are more reliable than past designs, and are more affordable. Funding has been identified in the estimated amount of $25,500,000 to support this work in FY 2012, including the following:

- Continue develop of tooling and technical manuals for the A1B CDM.
- Continue other CDM support for the A1B lead ship.
- Continue design of CDM and heavy equipment for the S8G Prototype reactor plant.
- Develop, test, and manufacture advanced CDMs for the A1B, OHIO-class Replacement submarine, and future reactor designs which are simpler and more affordable.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Design reactor vessels, closure heads, closure studs, and core baskets for the OHIO-class Replacement submarine reactor design.
- Develop independent models and use independent analysis techniques to validate the CDM and reactor heavy equipment designs for the A1B, OHIO-class Replacement submarine reactor designs.
- Design the CDM and reactor heavy equipment for the OHIO-class Replacement submarine reactor for extended operational lifetimes.
- Design reactor and equipment for new applications with co-development between reactor designers, component manufacturers and shipbuilders to take advantage of the special capability and expertise of each in the early stages of design.

Reactor Physics: This work focuses on performing physics testing and analysis to confirm expected fuel system and core performance and develop improved analysis methods for predicting core performance that reduce design approximations, uncertainties, and associated conservatism. Funding has been identified in the estimated amount of $22,000,000 to support this work in FY 2012, including the following:

- Develop and qualify design procedures and computer programs for analyzing advanced Pressurized Water Reactor cores.
- Develop technologies and methods to support advanced PWR and advanced concept designs.
- Maintain integrated, state-of-the-art software systems for reactor core performance analysis.
- Continue analysis support for physics testing of the A1B core.
- Develop test predictions and related analysis for Next Generation Reactor new construction testing.
- Perform nuclear analysis required to develop more accurate power distribution to use to improve core thermal performance.
- Perform nuclear analysis required to develop advanced core designs and performance characteristics for future application.
- Identify and perform experimental programs required to improve neutron-cross section data.
- Develop and implement integrated and automated tools for developing model input for core geometry and materials, job execution and post processing.
- Qualify advanced nuclear design methods and software against experimental data from operating cores and critical mockups to confirm the accuracy of the calculations and establish appropriate uncertainties to apply to nuclear design.
- Improve computer code computational algorithms to be able to do three-dimensional core calculations.

Safety Analysis and Shielding: This work focuses on conducting reactor safety and shielding analysis for nuclear reactor plants to ensure containment of radiation and proper protection of

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

personnel. Funding has been identified in the estimated amount of $18,000,000 to support this work in FY 2012, including the following:

- Document reactor safety deliverables and support Nuclear Regulatory Commission and Advisory Committee on Reactor Safeguards reviews.
- Perform reactor safety analyses in support of new reactor plants.
- Provide shielding review of issues associated with advanced reactor plant designs.
- Prepare, review, and update Prototype Safety Assessment Reports (SARs) to ensure no undue threat to the environment and general public and to document the safety basis for the prototypes.
- Develop advanced safety analysis codes for evaluation of reactor plants.
- Develop radiation shield designs for each new plant design and radioactive material handling facilities and verify their effectiveness through shield surveys during initial operation.
- Develop new shield design requirements, methods, and shielding materials for advanced plant designs to improve their affordability.
- Provide casualty training with the use of Reactor Safety Training Manuals.

Radiological Controls, Environmental, Safety, and Quality Efforts: This work focuses on conducting radiological control, environmental, and safety operations necessary to protect laboratory employees, minimize release of hazardous effluents to the environment, and comply with all applicable regulations. Funding has been identified in the estimated amount of $69,500,000 to support this work in FY 2012, including the following:

- Continue to survey and document radiological conditions; train personnel for all phases of radiological work and environmental work.
- Continue to review radiological work procedures, conduct a radiological health program, and conduct emergency preparedness program.
- Continue to store, process, and ship radioactive material/waste in accordance with all applicable regulations.
- Continue to maintain strict accountability and handling methods for nuclear fuel.
- Continue to ensure compliance with all applicable safety and environmental regulations.
- Continue to ensure compliance with the laboratory quality assurance program through training, consulting, facilitating, lab self-assessment and process improvement, inspection, auditing, and vendor oversight.
- Minimize the production and safely dispose of waste in accordance with applicable regulations to ensure the protection of employees, the public and the environment.
- Provide quality engineering and inspection support to include training and qualification of inspection personnel.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Materials Development and Verification	**106,100**	**109,600**	**117,600**

To extend the lifetime of reactors, reduce costs, and achieve greater power capabilities, new materials must be developed and qualified for use in the harsh reactor environment. Existing or new materials selected for current or future advanced designs must also be economical to acquire and feasible to manufacture. Manufacturing processes must be developed to ensure the materials can be cost effectively produced to stringent specifications in appropriate quantities. Material test specimens are fabricated and rigorously tested for desired characteristics. Irradiation testing and quality control techniques are crucial to this qualification process. Materials exhibiting the desired characteristics warranting further evaluation are committed to long-term tests and verification in prototype cores and test reactors. Materials Development and Verification work is concentrated in the following areas: (1) Irradiation Testing and Evaluation, (2) Core and Reactor Materials Development, (3) Plant and Component Materials Development, and (4) Materials Evaluation, Testing and Verification.

Irradiation Testing and Evaluation: This work involves fabricating, testing and examining high integrity nuclear fuel, poison, cladding and structural materials for affordable advanced naval reactor cores. The generated data is used to develop materials capable of maintaining their structural and mechanical integrity over long periods of time in an operating reactor environment. Funding has been identified in the estimated amount of $32,700,000 to support this work in FY 2012, including the following:

- Design and procure hardware, and provide analytical models and predictions for the development of sound test plans to support irradiation test qualification of high integrity core and plant materials.
- Continue to analyze methods and hardware to irradiate and qualify new materials and manufacturing methods for Pressurized Water Reactor designs.
- Continue destructive and non-destructive testing and evaluation of irradiated fuel, poison, and cladding in support of development and improvement of core, plant and steam generator materials.
- Continue to examine Pressurized Water Reactor fuel and cladding performance incorporating results into predictive tools.
- Deliver test assemblies for irradiation testing at the Advanced Test Reactor.
- Support the Expended Core Facility in efforts to provide the technical work documents, engineering follow and skilled labor to handle tests and examine specimens.
- Design and develop specialized irradiated material testing equipment.
- Maintain the regulatory, compliance, and maintenance requirements of the Radioactive Materials Laboratory facility.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Perform examinations on core and plant components after ship service including preparation of technical work documents, development of hardware and instrumentation, engineering support and skilled technician labor.

Core and Reactor Materials Development: This work involves verifying acceptable performance for current cores through end of life, pursuing potential cost reductions, and improving materials and processes through long-term irradiation tests and evaluations. Funding has been identified in the estimated amount of $41,000,000 to support this work in FY 2012, including the following:

- Utilize test data and increased fundamental understanding to improve models and revise current design bases for more capable and cost efficient Pressurized Water Reactor designs.
- Continue to develop, test, and examine high performance fuel system constituent materials for advanced applications.
- Develop and deploy new high accuracy measurement techniques to cost-effectively measure the thermal conductivity of prototypic oxide films from expended cores with the goal of providing thermal performance margin to operating cores.
- Apply core material modeling capabilities to guide testing programs, improved understanding of manufacturing processes, and better predict in-core performance.
- Perform corrosion testing to support core design needs, model development and improved understanding of the corrosion process for particular metals and metal alloys.
- Examine expended cores from prototypes and ships to determine any unexpected effects of reactor operation and use the results to modify design methods and ensure safe operation of the fleet.
- Select and characterize candidate fuel, poison, cladding, moderator, reflector and structural materials, for a cost effective high performance reactor system.
- Evaluate additional expended core corrosion examination data. Develop revised corrosion design factors and design code re-correlations where appropriate.
- Develop new models and correlations for in-pile and out-of-pile material performance where there is a demonstrated need, or significant performance benefit that can be achieved.
- Improve current system fundamental understanding and perform in-reactor and autoclave tests to support qualification and implementation of advanced materials whose capabilities exceed those of current zirconium alloys. Perform irradiation tests of advanced fuel designs with improved capabilities.
- Evaluate currently available and advanced fuel systems for application in Virginia Forward Fit applications.
- Assess starting material, fuel and core manufacturing along with inspection processes to recommend changes for cost reduction while maintaining performance.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Plant and Component Materials Development: This work characterizes high strength structural, corrosion resistant, pressure vessel, steam generator, and valve materials to determine the cause for degraded performance and develop improved predictive techniques. Funding has been identified in the estimated amount of $15,700,000 to support this work in FY 2012, including the following:

- Provide manufacturing support for S9G Steam Generators and A1B reactor heavy equipment fabrication.
- Perform tests to characterize existing structural materials so their use can be expanded to other component applications in new designs and allow them to be backfit into existing fleet components.
- Conduct testing to determine the effects of variables, such as materials, environment, and operating conditions on Stress Corrosion Cracking initiation, growth, and low temperature facture.
- Develop models to provide accurate lifetime predictions for fleet components. Characterize water chemistry effects on corrosion performance.
- Develop an increased understanding of residual stress and techniques to minimize it.
- Perform testing to characterize the rate of embrittlement as a function of exposure to time and temperature.
- Develop welding methods to help enable the application of alternate cladding.
- Support the manufacturing community during the fabrication of components using existing processes.
- Develop new manufacturing processes to optimize manufacturing, reduce component life-cycle costs and improve in service performance. Perform surveillances of vendor manufacturing processes and procedures, qualify vendors to fabricate hardware, and update material and manufacturing specifications.

Materials Evaluation, Testing and Verification: The purpose of this work is to establish and maintain capability to perform materials testing representative of shipboard service applications. Funding has been identified in the estimated amount of $28,200,000 to support this work in FY 2012, including the following:

- Provide fundamental support by confirmatory or advanced testing to determine material and component properties and corrosion performance in prototypical, alternate and advanced operating environments.
- Provide analytical chemistry, physical chemistry, microscopy, materials properties testing and metallography support for all current, advanced, and emergent core, structural, and reactor plant materials technology programs.

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Develop and deploy NDT methods for pre-service, in-service, and materials testing inspections to reduce time and cost, ensure quality, and minimize radiation exposure to inspection personnel.
- Transfer equipment to the new Materials Research and Technology Complex at Bettis and the Materials Development Facility at KAPL to support materials processing, science autoclave testing and machine shop services, and initiate operations.

Evaluation and Servicing	**252,533**	**325,700**	**320,904**

Evaluation and Servicing promotes the Naval Reactors Program tradition of safety, reliability, and technical excellence through the operation, maintenance, and testing of land-based test facilities. A key focus of these facilities is to enhance fleet performance through testing and examination of materials, components, and new designs under actual operating conditions. This effort includes the design of fuel servicing and component disposal equipment, evaluating and resolving design issues, plus the planning and execution of defueling, lay-up, and disassembly work. Evaluation and Servicing work is concentrated in the following areas: (1) Routine Operations and Maintenance, (2) Routine Environmental Remediation, (3) Servicing, (4) Expended Core Processing and Examination, and (5) Prototype Inactivation.

Routine Operations and Maintenance: This work involves operating the Naval Reactors prototypes in a safe and reliable manner to support testing and evaluation of new components, systems, applications, and designs. The work also supports preventive maintenance, upgrades and modifications on the prototypes. Funding has been identified in the estimated amount of $63,200,000 to support this work in FY 2012, including the following:

- Operate the prototypes for testing and maintenance at a utilization factor of equal to or greater than 90 percent.
- Perform depletion and testing of the cores in Modifications and Additions to Reactor Facilities (MARF) and S8G prototypes.
- Conduct MARF maximum power tests at specified intervals.
- Conduct MARF and S8G materials stress tests.
- Complete periodic MARF and S8G routine maintenance shutdowns.
- Deplete the S8G reactor core consistent with approved testing and plant controlling maintenance.
- Install and test new components having future fleet application, including advanced electrical breakers and power converters.
- Perform life evaluations and inspections of primary plant components including in-situ investigations of primary and secondary systems.
- Prepare design upgrades and maintenance procedures that promote operating improvements.
- Execute necessary repairs and upgrades to the prototypes.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

Routine Environmental Remediation: This process involves decontaminating to minimize the environmental, health, and safety impact of contaminated facilities, with the benefit of making radiological facilities available for non-radiological use. Funding has been identified in the estimated amount of $26,300,000 to support this work in FY 2012, including the following:

- Conduct remediation of obsolete facilities to reduce potential environmental liabilities.
- Maintain inactive Naval Reactors Facility (NRF) prototype plants in a safe and environmentally benign condition.
- Continue scoping study for the F-Complex demolition.
- Conduct decontamination and disposition of existing Expended Core Facility environmental legacies.
- Continue efforts to prepare L-building for demolition.
- Enhance monitoring, training, and recycling programs to improve environmental controls.
- Enhance inventory controls, waste stream management and site inspection programs to better deal with environmental liabilities.
- Develop procedures and qualify workers to properly handle, remove, dispose of, and minimize the generation of hazardous wastes.
- Ensure decontamination work is performed in a manner that safeguards the workers and the environment consistent with applicable regulatory requirements.
- Ensure wastes generated from decontamination operations are properly disposed of.

Servicing: This work involves servicing prototypes to ensure continued safe and reliable operation. Servicing also provides refueling/defueling systems for both existing and new core designs. Funding has been identified in the estimated amount of $30,228,000 to support this work in FY 2012, including the following:

- Continue monitoring instrumentation and safeguards system cutting equipment design.
- Commence planning and design work to refuel and overhaul the land-based S8G Prototype.
- Design, fabricate, checkout and deliver equipment for safely servicing, defueling/refueling the S9G/Next Generation Reactor, DMC and AFR cores.
- Develop procedures for the safe defueling/refueling of the S9G, DMC and AFR cores.

Expended Core Processing & Examination: This work involves operating the Expended Core Facility (ECF) in Idaho including the Advanced Test Reactor (ATR) in a safe and reliable manner to support examination and disposal of spent naval fuel. Funding has been identified in the estimated amount of $140,600,000 to support this work in FY 2012, including the following:

- Perform specific core component examinations as requested by test sponsors.

(dollars in thousands)

FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Continue conceptual design and NEPA (i.e., Environmental Impact Statement) efforts in support of recapitalization of the Program's spent nuclear fuel infrastructure.
- Develop tools and facilities for inspecting and examining cores and irradiated specimens that provide prompt evaluation feedback to designers.
- Provide a safety program and oversight that assures fuel handling and accountability is performed properly.
- Perform, and examine the results of, irradiation tests of fuel, neutron poison and core structural materials.
- Maximize the use of the ATR for use in evaluating new material specimens to reduce uncertainties in existing designs and in the development of future design improvements.
- Develop fuel storage baskets, canisters, and transportation over packs that meet applicable regulatory requirements.
- Continue operation of the production facility for spent fuel dry storage which moves spent naval fuel from water pits to dry storage.
- Provide waste disposal services that classify, sample, package and process waste items.
- Provide support to ship all hazardous and radioactive material from the Naval Reactors Facility.
- Maintain and upgrade existing facilities and systems and design and build new facilities and systems, as required, to support the production needs of the Naval Reactors Facility.
- Identify a process flow and high level system integration, and facility layout in preparation for development of a conceptual design for the recapitalized facility to ensure the long term capability to transfer, prepare and package naval spent nuclear fuel.

Prototype Inactivation: This work involves the disassembly and disposition of the Program's testing prototypes and support facilities. Funding has been identified in the estimated amount of $6,776,000 to support this work in FY 2012, including the following:

- Disassemble and dispose of the D1G reactor compartment in concert with an Environmental Impact Statement to support dismantling the D1G prototype.
- Remediate asbestos and other hazardous materials as required to support dismantling the D1G prototypes.
- Design, fabricate, checkout, certify, and deliver disposal equipment to support D1G primary shield tank removal.
- Develop procedures for the safe removal and disposal of the D1G primary shield tank.

Spent Fuel Handling Infrastructure Recapitalization: This work involves the evaluation of the spent fuel handling and conceptual design of the new facility. Funding has been identified in the estimated amount of $53,800,000 to support this work in FY 2012, including the following:

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request

- Develop an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (NEPA).
- Evaluate and develop an optimized product flow for spent nuclear fuel management (i.e., receipt, inspection, preparation and packaging, and long-term storage).
- Determine the most efficient, safe, and cost effective location for the new facility.
- Develop conceptual specifications for equipment, facility layout, and spent fuel handling systems.
- Perform requisite project management, acquisition management, and work flow using an Engineering, Procurement, Construction Management (EPCM) contractor.
- Approve Critical Decision 1, "Approve Alternative Selection and Preliminary Baseline". This process involves decontaminating to minimize the environmental, health, and safety impact of contaminated facilities, with the benefit of making radiological

Advanced Test Reactor Operations and Test Support	**61,800**	**63,100**	**64,300**

Naval Reactors performs irradiation testing at the Advanced Test Reactor in support of advanced reactor design development. While ATR is a facility primarily funded by the Office of Nuclear Energy and operated by their contractor, NR funds a portion of the cost of base operations of the ATR, as well as NR specific testing.

Facility Operations	**48,200**	**44,186**	**51,558**

Facility Operations funding supports general plant projects (GPP) and capital equipment procurements.

Total, Naval Reactors Operations and Maintenance	**877,533**	**997,886**	**1,069,262**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Plant Technology	
• This increase reflects the ramp up of design and development activities for the OHIO-class replacement submarine reactor plant including development of I&C, plant arrangements and system designs to meet performance requirements.	**+21,500**
Reactor Technology and Analysis	
• This increase reflects continued design and development of the OHIO-class replacement submarine reactor plant core, as well as development, demonstration and manufacturing of core technologies in support of the S8G Prototype Refueling program. This activity supports the delivery of an extended life core design for initial fabrication of the OHIO-class replacement submarine propulsion plant as well as ongoing operation of the S8G Prototype and related R&D programs beyond 2018.	**+38,100**
Materials Development and Verification	
• This increase reflects the continued materials validation work in support of delivering a core and core technologies for the land-based S8G Prototype and the OHIO-class replacement submarine.	**+8,000**
Evaluation and Servicing	
• This decrease reflects a minor reduction of environmental remediation efforts.	**-4,424**
• This decrease reflects administrative savings to be achieved in advisory and assistance services.	**-372**
ATR Operations and Test Support	
• This increase reflects an inflationary increase to support continued operations of the Advanced Test Reactor.	**+1,200**
Facility Operations	
• This increase primarily reflects planned increases in capital equipment procurements offset by decreases in general plant projects.	**+7,372**
Total Funding Change, Operations and Maintenance	**+71,376**

Naval Reactors - Program Direction

Funding Profile by Category

	(dollars in thousands) (Whole FTEs)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Headquarters			
Salary and Benefits	13,900	14,800	16,300
Travel	1,200	1,400	1,610
Other Related Expenses	3,400	4,600	4,690
Total, Headquarters	**18,500**	**20,800**	**22,600**
Full-Time Equivalents	**94**	**96**	**101**
Naval Reactors Laboratory Field Office			
Salary and Benefits	15,200	15,700	18,000
Travel	600	800	1000
Other Related Expenses	2,500	2,700	2,900
Total, Naval Reactors Laboratory Field Office	**18,300**	**19,200**	**21,900**
Full-Time Equivalents	**121**	**121**	**124**
Total Naval Reactors Program Direction			
Salary and Benefits	29,100	30,500	34,300
Travel	1,800	2,200	2,610
Other Related Expenses	5,900	7,300	7,590
Total, Program Direction	**36,800**	**40,000**	**44,500**
Full-Time Equivalents	**215**	**217**	**225**

Outyear Funding Profile

	(dollars in thousands/whole FTEs)			
	FY 2013	FY 2014	FY 2015	FY 2016
Program Diretion	47,040	49,670	52,390	54,200
Total, Program Direction	**47,040**	**49,670**	**52,390**	**54,200**
Full-Time Equivalents	**244**	**249**	**254**	**254**

Description

Due to the critical nature of nuclear reactor work, Naval Reactors is a centrally managed organization. Federal employees oversee and set policies and procedures for developing new reactor plants, operating existing nuclear plants, facilities supporting these plants, contractors, and the Bettis and Knolls Atomic Power Laboratories. In addition, these employees interface with other DOE offices and local, state, and Federal regulatory agencies.

Detailed Justification

	(dollars in thousands)		
	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request
Salaries and Benefits	**29,100**	**30,500**	**34,300**

Naval Reactors' federal staff directs technical work and provides management/oversight in line with Naval Reactors' cradle-to-grave responsibility. This includes oversight of two DOE laboratories, land-based prototype reactor plants, spent fuel management infrastructure, as well as performance of design and development work for nuclear fleet operations and future applications. Implementation of new projects in FY 2012 (i.e., OHIO-class Replacement Submarine, refueling of S8G Prototype, and recapitalization of Spent Naval Fuel Handling Infrastructure) will demand increased federal oversight across the Future Years Nuclear Security Plan (FYNSP).

Travel	**1,800**	**2,200**	**2,610**

Includes funding for the travel related expenses for federal employees while in authorized travel status. FY 2012 funding supports travel required for the management and oversight of the Naval Reactors Program, in addition to allowable inflationary growth.

Other Related Expenses	**5,900**	**7,300**	**7,590**

Includes provision of funds for increases to the Working Capital Fund (WCF). Starting in FY 2011, the WCF includes full funding for the Defense Contract Auditing Agency audits. Funding also supports procurement of supplies, equipment, and services such as consumable office supplies, personnel training and professional development, IT equipment and maintenance, field office clearance investigations, and facilities-related requirement (e.g., utilities, maintenance, etc.).

Total, Program Direction	**36,800**	**40,000**	**44,500**

Explanation of Funding Changes

	FY 2012 vs. FY 2011 Request ($000)
Salaries and Benefits	
Increase is due to additional FTEs for oversight of new project initiatives and in accordance with allowable inflation.	**+ 3,800**
Travel	
Change is due to increased travel requirements for the management and oversight of the Naval Reactors Program, increased costs associated with travel, and adjustments in accordance with allowable inflation.	**+ 410**
Other Related Expenses	
The increase is offset by the funding for clearance investigations which is offset by the change due to completion of field office renovations.	**+290**
Total Funding Change, Program Direction	**+ 4,500**

Capital Operating Expenses and Construction Summary

Capital Operating Expenses

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
General Plant Projects (GPP)			
Bettis Atomic Power Laboratory	6,830	4,500	2,800
Kesselring Site	16,780	15,800	6,225
Knolls Atomic Power Laboratory	8,890	8,200	6,003
Naval Reactors Facility	4,100	5,800	1,930
Capital Equipment	11,600	9,886	34,600
Total, Capital Operating Expenses	48,200	44,186	51,558

Outyear Capital Operating Expenses

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
General Plant Projects (GPP)				
Bettis Atomic Power Laboratory	4,625	11,277	3,300	10,550
Kesselring Site	5,975	10,825	9,200	3,100
Knolls Atomic Power Laboratory	1,100	7,272	4,700	13,200
Naval Reactors Facility	2,900	3,025	9,200	2,250
Capital Equipment	35,300	47,000	42,600	44,100
Total, Capital Operating Expenses	49,900	79,399	69,000	73,200

Construction Projects

(dollars in thousands)

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior-Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Unappro-priated Balance	Completion Date
07-D-190, Materials Research andTechnology Complex, Bettis	71,690	29,810	15,410	11,700	2,700	0	0	4Q FY2012
08-D-190, ECF M-290 Receiving/Discharge Station, NRF	75,186	70,945	845	9,500	25,000	27,800	7,800	1Q FY2015
09-D-190, KAPL Infrastructure Upgrades, PED	2,000	2,000	1,000	1,000	0	0	0	4Q FY2011
09-D-902, NRF Production Support Complex, ID	19,945	18,700	8,300	6,400	4,000	0	0	1Q FY2013
10-D-903, Security Upgrades, KAPL	22,300	21,000	0	1,500	400	100	19,000	4Q FY2015
10-D-904, NRF Infrastructure Upgrades, ID	16,357	13,200	0	700	500	12,000	0	4Q FY2014
Total, Construction				30,800	32,600	39,900		

Outyear Construction Projects

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
16-D-XXX, Waste Shipping Facility, Bettis	0	0	0	1,000
15-D-XXX, Distribution and Storage Facility, KSO	0	0	8,500	0
15-D-XXX, NRF Warehouse	0	0	12,800	0
15-D-XXX, Materials Characterization Laboratory, KAPL	0	0	1,000	0
14-D-XXX, Plant Services Building, Bettis	0	1,000	700	19,200
14-D-XXX, Support Services Facility, KAPL	0	1,000	900	37,100
13-D-XXX, Spent Fuel Handling Recapitalization Project	51,800	53,900	148,400	212,400
13-D-XXX, Prototype Staff Building, KSO	14,000	0	0	0
13-D-XXX, ECF Water Pool Structural Reinforcements, NRF	1,100	800	9,300	0
13-D-XXX, Steam Distribution Infrastructure Upgrade, KAPL	600	0	5,200	0
10-D-903, Security Upgrades, KAPL	19,000	0	0	0
08-D-190, ECF M-290 Receiving/Discharge Station, NRF	5,700	1,700	400	0
Total, Construction	92,200	58,400	187,200	269,700

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

	Total Project Cost (TPC)	Total Estimated Cost (TEC)	Prior Year Appro-priations	FY 2010 Actual Approp	FY 2011 Request	FY 2012 Request	Completion Date
High Performance Computers (FY10 Buy)	3,250	3,000	0	3,000	0	0	FY 2010
High Performance Computers (FY11 Buy)	9,889	9,000	0	0	9,000	0	FY 2011
High Performance Computers (FY12 Buy)	11,694	11,000	0	0	0	11,000	FY 2012
KAPL Network Upgrade	4,450	4,200	600	1,200	1,200	1,200	FY 2012
Bettis Network Upgrade	3,250	3,000	0	1,000	1,000	1,000	FY 2012
Emergency Safety Fill System	14,400	12,400	8,800	0	0	0	FY 2013
Land-based Prototype Rod Control Equipment	11,500	10,500	0	0	0	1,300	FY 2019
Land-based Prototype Instrumentation & Control	17,900	16,400	0	400	1,100	1,300	FY 2019
Total, Major Items of Equipment				5,600	12,300	15,800	

Outyear Major Items of Equipment

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Emergency Safety Fill System	3,600	0	0	0
Land-based Prototype Rod Control Equipment	3,700	3,700	0	1,800
Land-based Prototype Instrumentation & Control	1,600	2,600	4,000	2,600
High Performance Computers (FY 13 Buy)	11,000	0	0	0
High Performance Computers (FY 14 Buy)	0	11,000	0	0
High Performance Computers (FY 15 Buy)	0	0	11,000	0
KAPL Network Upgrade	0	0	1,000	1,000
High Performance Computers (FY 16 Buy)	0	0	0	11,000
Total, Major Items of Equipment	19,900	17,300	16,000	16,400

10-D-904, Naval Reactors Facility (NRF) Infrastructure Upgrades, Idaho
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-1, Approve Alternative Selection & Cost Range that was approved on June 25, 2010, with a preliminary cost estimate of $16,357 and CD-4 of FY 2016.

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

This PDS is an update of the FY 2011 PDS. CD-2 was approved in November 4, 2010. There have been no significant changes to scope, cost, schedule, or risks associated with this project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	3QFY2009	1QFY2010	1QFY2011	TBD	TBD	TBD	TBD	TBD
FY 2011	04/07/2009	2QFY2010	1QFY2012	TBD	TBD	TBD	TBD	TBD
FY 2012	04/07/2009	06/25/2010	1QFY2012	11/04/2010	2QFY2012	4QFY2016	N/A	N/A

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	1,200	TBD	TBD	443	TBD	TBD	TBD
FY 2011	1,200	TBD	TBD	182	TBD	TBD	TBD
FY 2012	1,200	12,000	13,200	3,157	N/A	3,157	16,357

4. Project Description, Justification, and Scope

The Naval Reactors Facility Infrastructure Upgrades project primarily addresses the design, procurement, and installation of a modern, code compliant fire alarm system to ensure the continued protection of NRF personnel, equipment, and facilities. Furthermore, the project will address additional life safety improvements across the NRF that are being determined in conjunction with final design.

The project is being conducted in accordance with the NR Implementation Bulletin 413.3A-109 for DOE O 413.3B and the NR Program and Project Management Manual.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2010	700	700	615
FY 2011	500	500	585
Total, PED	1,200	1,200	1,200
Construction			
FY 2012	12,000	12,000	1,364
FY 2013	0	0	3,273
FY 2014	0	0	3,273
FY 2015	0	0	3,273
FY 2016	0	0	817
Total, Construction	12,000	12,000	12,000
TEC			
FY 2010	700	700	615
FY 2011	500	500	585
FY 2012	12,000	12,000	1,364
FY 2013	0	0	3,273
FY 2014	0	0	3,273
FY 2015	0	0	3,273
FY 2016	0	0	817
Total, TEC	13,200	13,200	13,200
Other Project Cost (OPC)			
OPC except D&D			
FY 2008	77	77	77
FY 2009	105	105	105
FY 2010	15	15	15
FY 2011	0	0	0
FY 2012	336	336	336
FY 2013	807	807	807
FY 2014	807	807	807
FY 2015	807	807	807
FY 2016	203	203	203
Total, OPC except D&D	3,157	3,157	3,157
D&D	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A

	Appropriations	Obligations	Costs
	(dollars in thousands)		
OPC			
FY 2008	77	77	77
FY 2009	105	105	105
FY 2010	15	15	15
FY 2011	0	0	0
FY 2012	336	336	336
FY 2013	807	807	807
FY 2014	807	807	807
FY 2015	807	807	807
FY 2016	203	203	203
Total, OPC	3,157	3,157	3,157
Total Project Cost (TPC)			
FY 2008	77	77	77
FY 2009	105	105	105
FY 2010	715	715	630
FY 2011	500	500	585
FY 2012	12,336	12,336	1,700
FY 2013	807	807	4,080
FY 2014	807	807	4,080
FY 2015	807	807	4,080
FY 2016	203	203	1,020
Total, TPC	16,357	16,357	16,357

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	1,200	1,200	N/A
Contingency	0	0	N/A
Total, PED	1,200	1,200	N/A
Construction			
Site Preparation	0	N/A	N/A
Equipment	0	N/A	N/A
Other Construction	9,250	N/A	N/A
Contingency	2,750	N/A	N/A
Total, Construction	12,000	N/A	N/A
Total, TEC	13,200	1,200	N/A
Contingency, TEC	2,750	0	N/A

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	25	25	N/A
Conceptual Design	172	157	N/A
Start-Up	2,960	0	N/A
Contingency	0	0	N/A
Total, OPC except D&D	3,157	182	N/A
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A 0
Total, OPC	3,157	182	N/A
Contingency, OPC	0	0	N/A
Total, TPC	16,357	1,382	N/A
Total, Contingency	2,750	0	N/A

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Outyears	Total
FY 2009 Performance Baseline	TEC	0	0	0	0	0	0	0	0	0
	OPC	0	0	0	0	0	0	0	0	0
	TPC	0	0	0	0	0	0	0	0	0
FY 2010	TEC	0	700	500	0	0	0	0	0	1,200
	OPC	443	0	0	0	0	0	0	0	443
	TPC	443	700	500	0	0	0	0	0	1,643
FY 2011	TEC	0	700	500	0	0	0	0	0	1,200
	OPC	182	0	0	0	0	0	0	0	182
	TPC	182	700	500	0	0	0	0	0	1,382
FY 2012	TEC	0	700	500	12,000	0	0	0	0	13,200
	OPC	182	15	0	336	807	807	807	203	3,157
	TPC	182	715	500	12,336	807	807	807	203	16,357

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY2016
Expected Useful Life (number of years)	25
Expected Future Start of D&D of this capital asset (fiscal quarter)	N/A

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	1	N/A	25	N/A
Maintenance	90	N/A	2,250	N/A
Total, Operations & Maintenance	91	N/A	2,275	N/A

9. Required D&D Information

Area	Square Feet
Area of new construction	0
Area of existing facility(s) being replaced	0
Area of additional D&D space to meet the “one-for-one” requirement	0

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

10. Acquisition Approach

The current Acquisition Strategy for this project will award separate contracts for the radiological and non-radiological facilities. For those buildings that have no radiological history or controls, a competitive, firm fixed priced contract will be awarded to an electrical subcontractor.

10-D-903, Security Upgrades, KAPL, Schenectady, NY
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range, which was approved on August 13, 2010, with a preliminary cost range of $19,000 to $23,000 and a CD-4 of FY 2016.

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

This PDS is a continuation of a PED PDS proceeding to construction in FY 2013. There have been no significant changes to scope, cost, schedule, or risks associated with this project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	4/22/2008	2QFY 2009	2QFY 2013	TBD	TBD	TBD	TBD	TBD
FY 2011	4/22/2008	4QFY 2009	4QFY 2012	TBD	TBD	TBD	TBD	TBD
FY 2012	4/22/2008	8/13/2010	4QFY 2012	TBD	TBD	TBD	TBD	TBD

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D[a]	OPC, D&D	OPC, Total	TPC
FY 2010	2,000	TBD	TBD	400	TBD	TBD	TBD
FY 2011	2,000	TBD	TBD	300	TBD	TBD	TBD
FY 2012	2,000	TBD	TBD	400	TBD	TBD	TBD

4. Project Description, Justification, and Scope

The Kesselring Site Operation (KSO) Security Upgrades project will replace and upgrade security related infrastructure at the Kesselring Site. The advanced age and degradation of the currently installed

[a] Includes conceptual planning and design.

security systems requires upgrading to continue meeting the basic security principles to deter, detect, assess and delay, as directed by the security vulnerability assessment. The site will upgrade the security perimeter, perimeter lighting system, alarm system, and the site entrance.

The project is being conducted in accordance with the NR Implementation Bulletin 413.3A-109 for DOE O 413.3B and the NR Program and Project Management Manual.

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5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2010	1,500	1,500	200
FY 2011	400	400	1,200
FY 2012	100	100	600
Total, PED	2,000	2,000	2,000
TEC			
FY 2010	1,500	1,500	200
FY 2011	400	400	1,200
FY 2012	100	100	600
Total, TEC	2,000	2,000	2,000
Other Project Cost (OPC)			
OPC except D&D			
FY 2008	300	300	300
FY 2009	0	0	0
FY 2010	100	100	100
Total, OPC except D&D	400	400	400
OPC			
FY 2008	300	300	300
FY 2009	0	0	0
FY 2010	100	100	100
Total, OPC	400	400	400

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	1,818	1,818	N/A
Contingency	182	182	N/A
Total, PED	2,000	2,000	N/A
Total, TEC	2,000	2,000	N/A
Contingency, TEC	182	182	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	N/A	N/A
Conceptual Design	400	300	N/A
Start-Up	0	N/A	N/A
Contingency	0	N/A	N/A
Total, OPC except D&D	400	300	N/A
Total, OPC	400	300	N/A

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2010	TEC	1,500	500	0	0	0	0	0	0	2,000
	OPC	400	0	0	0	0	0	0	0	400
	TPC	1,900	500	0	0	0	0	0	0	2,400
FY 2011	TEC	1,500	400	100	0	0	0	0	0	2,000
	OPC	300	0	0	0	0	0	0	0	300
	TPC	1,800	400	100	0	0	0	0	0	2,300
FY 2012	TEC	1,500	400	100	0	0	0	0	0	2,000
	OPC	400	0	0	0	0	0	0	0	400
	TPC	1,900	400	100	0	0	0	0	0	2,400

8. Related Operations and Maintenance Funding Requirements

Not applicable for PED.

9. Required D&D Information

Not applicable for PED.

10. Acquisition Approach

Not applicable for PED.

08-D-190, Expended Core Facility (ECF) M-290 Receiving/Discharge Station, Naval Reactors Facility, Idaho
Project Data Sheet (PDS) is for PED/Construction

1. Significant Changes

The most recent DOE O 413.3B approved Critical Decision (CD) is CD-2, Approve Performance Baseline, which was approved on November 30, 2009, with a Total Project Cost of $75,186 and a CD-4 of 1Q FY 2015.

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

This PDS is an update of the FY 2011 PDS. There have been no significant changes to scope, cost, schedule, or risks associated with this project.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2008	11/30/2006	4QFY2007	2QFY2010	TBD	TBD	TBD	N/A	N/A
FY 2009	11/30/2006	8/17/2007	2QFY2010	TBD	TBD	TBD	N/A	N/A
FY 2010	11/30/2006	8/17/2007	2QFY2010	3QFY2009	1QFY2010	2QFY2014	N/A	N/A
FY 2011	11/30/2006	8/17/2007	3QFY2010	1QFY2010	1QFY2011	3QFY2014	N/A	N/A
FY 2012	11/30/2006	8/17/2007	06/28/2010	11/30/2009	2QFY2011	1QFY2015	N/A	N/A

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

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2008	850	TBD	TBD	298	N/A	TBD	TBD
FY 2009	1,045	TBD	TBD	298	N/A	TBD	TBD
FY 2010	1,045	21,500	22,545	649	N/A	TBD	23,194
FY 2011	4,081	66,864	70,945	4,241	N/A	TBD	75,186
FY 2012	4,081	66,864	70,945	4,241	N/A	4,241	75,186

No construction funds, excluding for approved long lead procurement, will be used until the project performance baseline has been validated and CD-3 has been approved.

4. Project Description, Justification, and Scope

The M-290 shipping container system will allow direct loading of carrier spent nuclear fuel without temporary storage and disassembly work at the shipyard as currently required for existing smaller M-140 shipping containers. The direct loading method improves shipyard operations, supports aggressive refueling and inactivation (defueling) schedules and mitigates potential security risks associated with holding spent nuclear fuel at the shipyard. The full-length carrier spent nuclear fuel to be shipped in the M-290 is approximately twice as long as the fuel modules typically sent to ECF. As such, ECF currently does not have facilities capable of handling the larger, heavier, M-290 shipping container. The project will also provide the capability to ship spent nuclear fuel from ECF to a permanent repository or interim storage facility using the M-290 shipping container.

This project will accomplish the following: 1) construct a new facility to allow the receipt and handling of M-290 shipping containers, 2) incorporate an Overpack Storage Expansion Building to store spent nuclear fuel overpacks, and 3) construct related support facilities and associated infrastructure. One key aspect of this new facility will be the capability for concurrent receipt of fuel from INTEC and receipt and handling of M-290 shipping containers.

The project is being conducted in accordance with the NR Implementation Bulletin 413.3A-109 for DOE O 413.3B and the NR Program and Project Management Manual.

No construction funds other than for long lead equipment will be used until CD-3 has been approved.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2008	545	545	436
FY 2009	300	300	409
FY 2010	3,236	3,236	3,236
Total, PED	4,081	4,081	4,081
Construction			
FY 2010	6,264	6,264	1,871
FY 2011	25,000	25,000	13,852
FY 2012	27,800	27,800	25,607
FY 2013	5,700	5,700	17,135
FY 2014	1,700	1,700	7,819
FY 2015	400	400	580
Total Construction	66,864	66,864	66,864

	(dollars in thousands)		
	Appropriations	Obligations	Costs
TEC			
FY 2008	545	545	436
FY 2009	300	300	409
FY 2010	9,500	9,500	5,107
FY 2011	25,000	25,000	13,852
FY 2012	27,800	27,800	25,607
FY 2013	5,700	5,700	17,135
FY 2014	1,700	1,700	7,819
FY 2015	400	400	580
Total, TEC	70,945	70,945	70,945
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	144	144	144
FY 2008	418	418	418
FY 2009	1,999	1,999	1,999
FY 2010	107	107	107
FY 2011	580	580	580
FY 2012	118	118	118
FY 2013	115	115	115
FY 2014	260	260	260
FY 2015	500	500	500
Total, OPC except D&D	4,241	4,241	4,241
D&D[a]	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 2007	144	144	144
FY 2008	418	418	418
FY 2009	1,999	1,999	1,999
FY 2010	107	107	107
FY 2011	580	580	580
FY 2012	118	118	118
FY 2013	115	115	115
FY 2014	260	260	260
FY 2015	500	500	500
Total, OPC	4,241	4,241	4,241

[a] No offsetting D&D will be identified for this project. The Naval Reactors Facility square footage will expand to meet mission-critical work in support of spent fuel processing due to insufficient excess facilities to support planned construction.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 2007	144	144	144
FY 2008	963	963	854
FY 2009	2,299	2,299	2,408
FY 2010	9,607	9,607	5,214
FY 2011	25,580	25,580	14,432
FY 2012	27,918	27,918	25,725
FY 2013	5,815	5,815	17,250
FY 2014	1,960	1,960	8,079
FY 2015	900	900	1,080
Total, TPC	75,186	75,186	75,186

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	3,770	3,770	3,770
Contingency	311	311	311
Total, Design	4,081	4,081	4,081
Construction			
Site Preparation	0	0	0
Equipment	9,987	11,765	9,901
Other Construction	45,936	45,659	47,407
Contingency	10,941	9,440	9,556
Total, Construction	66,864	66,864	66,864
Total, TEC	70,945	70,945	70,945
Contingency, TEC	10,941	9,751	9,556
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	655	666	655
Conceptual Design	1,310	1,661	1,310
Start-Up	2,276	1,914	2,276
Contingency	0	0	0
Total, OPC except D&D	4,241	4,241	4,241

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	4,241	4,241	4,241
Contingency, OPC	0	0	0
Total, TPC	75,186	75,186	75,186
Total, Contingency	10,941	9,751	9,556

7. Schedule of Appropriation Requests

(dollars in thousands)

		Prior Years	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Outyears	Total
FY 2009	TEC	1,045	0	0	0	0	0	0	0	1,045
Performance	OPC	298	0	0	0	0	0	0	0	298
Baseline	TPC	1,343	0	0	0	0	0	0	0	1,343
FY 2010	TEC	10,345	5,400	0	6,800	0	0	0	0	22,545
Performance	OPC	421	16	16	16	180	0	0	0	649
Baseline	TPC	10,766	5,416	16	6,816	180	0	0	0	23,194
	TEC	10,345	25,000	27,800	5,700	1,700	400	0	0	70,945
FY 2011	OPC	2,668	580	118	115	260	500	0	0	4,241
	TPC	13,013	25,580	27,918	5,815	1,960	900	0	0	75,186
	TEC	10,345	25,000	27,800	5,700	1,700	400	0	0	70,945
FY 2012	OPC	2,668	580	118	115	260	500	0	0	4,241
	TPC	13,013	25,580	27,918	5,815	1,960	900	0	0	75,186

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY 2015
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter)	1QFY 2055

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	350	N/A	13,999	N/A
Maintenance	857	N/A	34,274	N/A
Total, Operations & Maintenance	1,207	N/A	48,273	N/A

9. Required D&D Information

Area	Square Feet
Area of new construction	62,556
Area of existing facility(s) being replaced	N/A
Area of additional D&D space to meet the "one-for-one" requirement	N/A

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

10. Acquisition Approach

The Program's A/E subcontractor will perform construction design to support development of a construction solicitation package. This contract will be designated as a fixed-price contract for procurement and construction and will be awarded on the basis of competitive bidding.

Site Funding Summary

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Chicago Operations Office			
Ames Laboratory	435	200	208
Argonne National Laboratory	53,224	65,398	68,393
Brookhaven National Laboratory	30,629	20,996	21,488
Chicago Operations Office	14,991	14,236	0
Lawrence Berkeley National Laboratory	6,535	3,176	3,289
New Brunswick Laboratory	3,769	1,209	1,225
Idaho Operations Office			
Idaho National Laboratory	188,052	237,746	258,608
Idaho Operations Office	1,299	1,364	1,400
Kansas City Site Office			
Kansas City Plant	433,194	535,358	548,059
Kansas City Site Office	5,972	6,614	6,677
Livermore Site Office			
Lawrence Livermore National Laboratory	1,081,186	1,134,657	1,176,280
Livermore Site Office	19,001	19,967	19,409
Los Alamos Site Office			
Los Alamos National Laboratory	1,524,613	1,867,794	1,827,194
Los Alamos Site Office	19,987	18,801	19,297
National Energy Technology Laboratory			
National Energy Technology Laboratory	8,325	0	3,930
NNSA Service Center			
General Atomics	22,455	22,500	21,000
Naval Research Laboratory	3,592	2,060	7,060
NNSA Service Center (all other sites)	608,305	674,736	638,609
University of Rochester/LLE	60,514	62,477	61,000
Nevada Site Office			
Nevada Site Office	103,415	97,247	96,482
Nevada National Security Site	264,037	252,160	287,061
Remote Sensing Laboratory	3,025	9,464	4,475

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Naval Reactors Laboratory Field Office	18,300	19,200	21,900
Oak Ridge Operations Office			
Oak Ridge Institute for Science and Education	15,833	15,075	15,826
Oak Ridge National Laboratory	180,337	291,143	219,581
Oak Ridge Operations Office	240	223	225
Office of Science and Technical Information	487	485	362
Pacific Northwest National Laboratory	328,657	279,401	284,443
Pantex Site Office			
Pantex Plant	555,707	538,949	649,355
Pantex Site Office	13,105	14,232	14,268
Pittsburgh Naval Reactors Office			
Bettis Atomic Power Laboratory	434,400	498,900	545,600
Richland Operations Office			
Richland Operations Office	1,385	1,418	1,469
Sandia Site Office			
Sandia National Laboratories	1,172,308	1,314,434	1,430,304
Sandia Site Office	14,493	15,269	14,880
Savannah River Operations Office			
Savannah River Operations Office	632,494	699,176	699,676
Savannah River Site	325,695	371,040	322,353
Savannah River Site Office	7,797	7,395	7,075
Schenectady Naval Reactors Office			
Knolls Atomic Power Laboratory	391,800	434,900	455,500
Washington DC Headquarters			
Headquarters	465,910	736,790	949,014
Y-12 Site Office			
Y-12 National Security Complex	944,769	911,853	1,058,265
Y-12 Site Office	15,518	21,412	21,690
Total, NNSA	**9,975,790**	**11,219,455**	**11,782,930**

BETTIS ATOMIC POWER LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Naval Reactors	434,400	498,900	545,600
Total, NNSA	**434,400**	**498,900**	**545,600**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Naval Reactors	609,600	653,530	777,010	842,050
Total, NNSA	**609,600**	**653,530**	**777,010**	**842,050**

Major Changes or Shifts: The FY 2012 request supports conceptual design, National Environmental Policy Act (NEPA) efforts, and construction of the Spent Nuclear Fuel Infrastructure Recapitalization program at the Naval Reactor Facility in Idaho. Manufacturing development and demonstration work, as well as development of new core technologies, of the reactor plant to be used in the land-based prototype refueling overhaul continue in FY 2012.

Site Description

INTRODUCTION:

The Bettis Atomic Power Laboratory is situated on nearly 202 acres of the former Bettis Airfield in West Mifflin, Pennsylvania, about 7.5 miles southeast of Pittsburgh, Pennsylvania.

This research and development laboratory is operated by Bechtel Marine Propulsion Corporation for the Naval Nuclear Propulsion Program (Naval Reactors), in a joint effort by the Department of the Navy and the Department of Energy (DOE). The Naval Reactors Laboratory Field Office oversees Bettis operations. Bettis is primarily involved with the design, development, and operational flow of nuclear propulsion plants for naval vessels. The Program ensures the safe operation of reactor plants in nuclear-powered submarines and aircraft carriers (constituting 40 percent of the Navy's combatants), and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements. Initial efforts of the Bettis Laboratory led to the development of the power plant for the USS NAUTILUS (SSN 571), the world's first nuclear-powered submarine.

ACTIVITIES:

Naval Reactors

The broad spectrum of Bettis' activities has included work on core and component technology and design, thermal and hydraulic systems, materials, and nuclear physics. Also, Bettis has lead responsibility for the overall training program for Navy personnel in nuclear plant operations, including training at the Naval Nuclear Power Training Command, Charleston, South Carolina; the Moored Training Ships; and Fleet training. Bettis also maintains engineering field offices at numerous shipyards and core contractor facilities, and operates the Expended Core Facility at the Naval Reactors Facility near Idaho Falls, Idaho.

In FY 2012, Bettis will continue manufacturing development and demonstration work, as well as development of new core technologies, of the reactor plant to be used in the land-based prototype refueling overhaul. In addition, conceptual design and NEPA efforts in support of the Spent Nuclear Fuel Infrastructure Recapitalization program at the Naval Reactors Facility in Idaho will continue.

KANSAS CITY PLANT

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	221,021	259,125	268,886
Engineering Campaign	4,426	3,550	2,868
Advanced Simulation and Computing Campaign	880	500	0
Readiness Campaign	16,614	18,765	52,660
Readiness in Technical Base and Facilities	123,843	190,889	162,189
Secure Transportation Asset	23,897	21,530	22,547
Nuclear Counterterrorism Incident Response	3,782	4,956	2,549
Facilities and Infrastructure Recapitalization Program	16,855	15,000	15,000
Site Stewardship	3,121	1,847	1,889
Defense Nuclear Security	11,060	11,200	11,300
Cyber Security	5,087	5,587	5,587
Subtotal, Weapons Activities	**430,586**	**532,949**	**545,475**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	25	0	27
Nonproliferation and International Security	2,583	2,409	2,557
Subtotal, Defense Nuclear Nonproliferation	**2,608**	**2,409**	**2,584**
Total, NNSA	**433,194**	**535,358**	**548,059**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	249,905	284,162	364,347	473,722
Engineering Campaign	4,176	3,818	3,769	3,845
Readiness Campaign	54,287	47,123	57,580	63,000
Readiness in Technical Base and Facilities	187,071	171,823	146,784	142,398
Secure Transportation Asset	22,505	22,956	23,415	23,883
Nuclear Counterterrorism Incident Response	2,668	5,238	5,265	5,325
Facilities and Infrastructure Recapitalization Program	15,000	0	0	0
Site Stewardship	2,218	4,269	4,193	4,237
Defense Nuclear Security	13,550	13,879	11,600	11,600
Cyber Security	5,587	5,587	5,587	5,587
Subtotal Weapons Activities	**556,967**	**558,855**	**622,540**	**733,597**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	27	28	28	29
Nonproliferation and International Security	2,518	2,595	2,657	2,703
Subtotal Defense Nuclear Nonproliferation	**2,545**	**2,623**	**2,685**	**2,732**
Total, NNSA	**559,512**	**561,478**	**625,225**	**736,329**

Congressional Items of Interest: Modernization implementation plans for downsizing, and support of W76 Life Extension Program (LEP).

Major Changes or Shifts: In FY 2012, the Nonnuclear Readiness subprogram will be substantially refocused and become more integrated with the Directed Stockpile Work (DSW) mission to address production readiness requirements and scope associated with down-select of technologies as a result of expected Nuclear Weapons Council Phase 6.3 approval and increased technology maturation efforts in support of B61-12. Readiness in Technical Base and Facilities (RTBF) funding has decreased due to a purchase of long-lead major equipment, which is to be funded in FY 2011. The decrease in Advanced Simulation and Computing Campaign (ASC) funding reflects the payments of three major procurements that will be made in FY 2011.

Site Description

INTRODUCTION:

The Kansas City Plant (KCP) is situated on approximately 122 acres of the 300-acre Bannister Federal Complex located within city limits, 12 miles south of downtown Kansas City, Missouri.

The KCP is the primary nonnuclear production plant responsible for development and maintenance of a broad technology base that delivers advanced, integrated, and secure solutions for the Department of Energy/National Nuclear Security Administration (DOE/NNSA).

The site is aligned with modernization activities for the nuclear security enterprise. The site has an approved critical decision to proceed with planning for a new facility under a General Services Administration (GSA) lease. Elements of this modernization include: (1) reducing the floor space required for non-nuclear production activities by nearly two-thirds through outsourcing and reducing capacity, (2) establishing a supply chain management center for reduced procurement costs across the nuclear security enterprise, (3) down-sizing the inventory of stored parts for legacy weapons, and (4) adopting a new oversight model for NNSA sites that increases the use of best industrial practices.

ACTIVITIES:

Directed Stockpile Work (DSW)
The KCP activities include production engineering, tooling, material procurement, and production labor associated with continuing production and Retrofit Evaluation System Test (REST) surveillance program of non-nuclear components with emphasis on the Life Extension Programs (LEP) for the W76-1. Production continues for the B61 Alt 356. Enduring Stockpile System production activities will include Joint Test Assembly (JTA) support, Firing Set, Environmental Sensing Devices, Mechanical Safe and Arm Detonators, and Lightning Arrestor Connector surveillance rebuilds in addition to laboratory and flight test sampling. Partnering with the Air Force, a major design change to the W87 JTA4 will continue. Major reservoir production continues for the B61, W76, W78, W80, B83, and W88 enduring Stockpile Systems. The KCP continues to produce materials/parts through NNSA's Supply Chain Management Center, which is responsible for implementing tools, processes, and accountability to support enterprise-wide NNSA strategic sourcing. Weapon component build-aheads and requalification activities continue to support the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS).

Engineering Campaign
The KCP supports the Engineering Campaign through the Enhanced Surveillance subprogram by evaluating non-nuclear components and materials for age-related characteristics, which are then used to assist in lifetime assessments and age-aware models at the laboratories. The KCP supports future system deployment including on-board/embedded components, materials and system sensors, as well as on-board telemetry and communication linkage. Also, KCP supports the Enhanced Surety subprogram of the Engineering Campaign through participation in specific component maturation efforts in support of Enhanced Collaboration work with the United Kingdom and to support the Los Alamos National Laboratory (LANL) Multi-Point Safety Research and Development (R&D) and Sandia National Laboratories (SNL) Sensor efforts.

Readiness Campaign
The KCP supports the Nonnuclear Readiness sub-program, which provides the electrical, electronic and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon, command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers.

Readiness in Technical Base and Facilities (RTBF)
The RTBF is the primary NNSA direct infrastructure funding source to enable DSW and Campaigns supporting responsiveness, sustaining Environment, Safety and Health, providing rearrangements for production efficiency, and delivering reliable facility, utility, and equipment uptime in support of Stockpile Stewardship production missions. The RTBF provides continual support of fundamental infrastructure services including facilities management and site planning, maintenance, utilities, capital equipment, general plant projects, expense funded projects; facility startup and project support; Environment, Safety and Health and Program Readiness. Specific efforts will be focused on completion of the Supply Chain Management Center and the KCRIMS transformation plan.

Secure Transportation Asset (STA)
The KCP is the engineering assembly agency and technical systems integrator for the STA program. The KCP staffs, equips, and operates a Vehicle Maintenance Facility and two Mobile-Electronics Maintenance Facilities which provide mechanical and electrical services to the STA fleet; performs preventive maintenance, repairs, and modifications on vehicles, trailers, and communications equipment; provides mission-ready vehicles and trailers to meet STA operational and training schedules; maintains the Electronic Systems Depot and serves as the engineering lead for all STA communication relay stations; manages the Missouri and New Mexico Relay Stations and preventive and corrective maintenance; provides training-realism support and training simulation systems that maintain Federal Agent readiness; develops prototypes and First Production Units, when required; staffs, equips, and operates modification/refurbishment facilities to meet the annual targets for Escort Vehicles, Armored Tractors, Safeguard Transporters, and other transport systems; and provides integrating business services (quality assurance, secure web, graphics, and document management).

Nuclear Counterterrorism Incident Response (NCTIR)
The NCTIR activities at KCP involve assistance in providing operations and capabilities to Federal, state and local government agencies for responding to radiological accidents and incidents. This effort includes special purpose equipment for the program including the Render Safe program.

Facilities and Infrastructure Recapitalization Program (FIRP)
The KCRIMS has allowed redirection of FIRP resources to other critical priorities. The Kansas City Site Office will continue to manage the NNSA's Roof Asset Management Program (RAMP), a best business practice employed throughout the nuclear security enterprise. Under the RAMP, KCP contracts for an integration manager to oversee an economical roof repair program for all eight nuclear weapons sites. In 2010, the RAMP was cited in the Secretary of Energy's directive on cool roofs as a model for effective roofing management practices for all of DOE.

Site Stewardship
In FY 2012, Site Stewardship efforts will be directed toward Environmental Project and Operations Long Term Stewardship (LTS) activities required for ensuring environmental regulatory compliance.

The LTS program at the Kansas City Plant consists of activities necessary to maintain compliance with the restoration of 43 release sites. The LTS activities include but are not limited to, administration of implemented cleanup actions at NNSA sites, operations and maintenance of treatment and monitoring systems required under KCP's Resource Conservation and Recovery Act (RCRA) Post Closure Permit

issued by the Missouri Department of Natural Resources, regulatory reporting, and program management. In late FY 2010, funds were provided to repair/replace the Outfall 002 pipeline in accordance with the RCRA Permit due to potential contamination and integrity issues associated with the pipeline in FY 2011.

Defense Nuclear Security

The Defense Nuclear Security program at KCP provides all aspects of physical security protection for the plant consistent with applicable DOE Orders and requirements documented in its approved facility Master Security Plan. In FY 2012, KCP will focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades to reduce the need for protective force posts and patrols. The KCRIMS is central to this goal.

Cyber Security

The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA Enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the Chief Information Officer.

The Cyber Security program at KCP will continue improvement efforts for the risk-based assessment model. The KCP will develop and deploy intrusion detection technology, which will provide timely notification of potential intrusions. Also, KCP will implement standards for maintaining a consistent site computing infrastructure.

Nonproliferation and International Security

The KCP provides Nuclear Safeguards and Security with reviews of export controlled equipment, materials, software, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, including weapons of mass destruction (WMD) training to the Department of Homeland Security and other enforcement agencies. Also, for the Nuclear Controls, KCP provides instructors, curriculum development and other support to export control outreach. In addition, KCP engages former WMD scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific and business communities.

KNOLLS ATOMIC POWER LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Naval Reactors	391,800	434,900	455,500
Total, NNSA	**391,800**	**434,900**	**455,500**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Naval Reactors	484,860	510,900	559,700	542,900
Total, NNSA	**484,860**	**510,900**	**559,700**	**542,900**

Congressional Items of Interest: None.

Major Changes or Shifts: DOE efforts continue for the reactor plant design and development work in support of the OHIO-class replacement ballistic missile submarine replacement. This program began in FY 2010 and continues to ensure sufficient maturity of detailed design to support initial fabrication and procurement of long-lead nuclear components in FY 2017 and ship construction in FY 2019.

Site Description

INTRODUCTION:

The Knolls Site in Niskayuna is situated on approximately 180 acres of land, while the Kesselring Site in West Milton, New York is situated on approximately 3,905 acres. The Knolls Atomic Power Laboratory (KAPL) field personnel also work at shipyards in New Hampshire, Connecticut, Virginia, Hawaii, Washington, and the Naval Reactors Facility Site in Idaho.

The KAPL is a research and development laboratory operated by Bechtel Marine Propulsion Corporation for the Naval Nuclear Propulsion Program (Naval Reactors), a joint effort by the Department of the Navy and the Department of Energy. The Naval Reactors Laboratory Field Office oversees KAPL operations. The KAPL's primary function is to support the U.S. Naval Nuclear Propulsion Program through the development of advanced reactor plant designs, while providing design agency support to the operating fleet and training nuclear propulsion plant operators. The Program ensures the safe operation of reactor plants in nuclear-powered submarines and aircraft carriers (which constitute 40 percent of the Navy's combatants), and fulfills the Navy's current and future national defense requirements for new nuclear propulsion plants.

ACTIVITIES:

Naval Reactors

The KAPL's efforts focus on designing the world's most technologically advanced nuclear reactor plants for U.S. Navy submarines. Fundamental research is conducted to develop improved materials, chemistry control systems, and components for naval nuclear propulsion technology. The KAPL uses its theoretical knowledge, sophisticated testing capabilities, and computational power to design new reactor and propulsion systems and components that will be used on existing and future Navy surface ships and submarines. In addition, KAPL operates two prototype plants located at the Kesselring Site in West Milton, New York. The modifications and additions to a reactor facility (MARF) and S8G prototypes are used primarily for naval nuclear propulsion training. These plants are also used to test reactors, reactor plant systems, and reactor steam and electric plant components. Also located at Kesselring, the S3G and D1G prototypes are undergoing inactivation. Upon completion of their missions in the 1990s, the S3G and D1G plants were shut down and inactivation was started as part of Naval Reactors' continuing commitment to ensure proper dismantlement and environmental remediation of formerly used facilities.

In FY 2012, KAPL will continue reactor plant design and development work for the OHIO-class ballistic missile submarine replacement to ensure sufficient maturity of detailed design to support initial fabrication and procurement of long-lead nuclear components in FY 2017 and ship construction in FY 2019.

LAWRENCE LIVERMORE NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	92,904	110,889	125,758
Science Campaign	92,225	107,552	106,252
Engineering Campaign	23,720	22,900	25,622
Inertial Confinement Fusion Ignition and High Yield Campaign	294,404	296,247	291,243
Advanced Simulation and Computing Campaign	199,661	213,140	246,963
Readiness Campaign	3,171	4,881	0
Readiness in Technical Base and Facilities	90,403	80,269	84,148
Nuclear Counterterrorism Incident Response	40,236	45,555	41,290
Facilities and Infrastructure Recapitalization Program	10,770	9,381	9,381
Site Stewardship	38,132	43,142	44,140
Defense Nuclear Security	95,477	94,000	90,530
Cyber Security	17,756	17,756	17,756
National Security Applications	0	7,925	7,925
Subtotal Weapons Activities	**998,859**	**1,053,637**	**1,091,008**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	36,055	23,817	29,320
Nonproliferation and International Security	28,653	24,700	24,848
International Nuclear Materials Protection and Cooperation	13,724	16,563	25,438
Global Threat Reduction Initiative	3,895	15,940	5,666
Subtotal Defense Nuclear Nonproliferation	**82,327**	**81,020**	**85,272**
Total, NNSA	**1,081,186**	**1,134,657**	**1,176,280**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	169,832	238,233	230,002	215,230
Science Campaign	100,751	101,608	103,061	104,895
Engineering Campaign	30,626	29,293	28,381	27,274
Inertial Confinement Fusion Ignition and High Yield Campaign	277,132	259,402	252,666	244,076
Advanced Simulation and Computing Campaign	177,554	182,046	187,676	193,704
Readiness Campaign	2,904	1,570	0	0
Readiness in Technical Base and Facilities	90,460	91,637	93,433	90,885
Nuclear Counterterrorism Incident Response	38,790	40,756	40,620	42,290
Facilities and Infrastructure Recapitalization Program	9,381	0	0	0
Site Stewardship	31,594	52,388	55,462	56,780
Defense Nuclear Security	73,400	74,400	75,300	74,999
Cyber Security	17,756	17,756	17,756	17,756
National Security Applications	7,925	7,925	7,925	7,925
Subtotal Weapons Activities	**1,028,105**	**1,097,014**	**1,092,282**	**1,075,814**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	25,401	26,146	26,219	27,709
Nonproliferation and International Security	25,820	26,612	27,246	27,721
International Nuclear Materials Protection and Cooperation	25,938	29,382	29,050	22,647
Global Threat Reduction Initiative	5,805	7,440	7,720	8,646
Subtotal Defense Nuclear Nonproliferation	**82,964**	**89,580**	**90,235**	**86,723**
Total, NNSA	**1,111,069**	**1,186,594**	**1,182,517**	**1,162,537**

Congressional Items of Interest: Defense Nuclear Nonproliferation programs at LLNL under the International Nuclear Materials Protection and Cooperation Program and Global Threat Reduction Initiative support the Administration efforts to secure all vulnerable nuclear material around the world within four years.

Major Changes or Shifts: In FY 2012, the increase to both Directed Stockpile Work (DSW) and the Advanced Simulation Computing (ASC) Campaign support the W78 Life Extension Study and maintaining the supercomputing user facility that enables reliable and responsive computer simulations throughout the laboratory complex. Funding decreased in the Readiness program to align with NNSA priorities to sustain the stockpile and provide funds for maintaining production in the Tritium Readiness subprogram.

Site Description

INTRODUCTION:

The Lawrence Livermore National Laboratory (LLNL) is located on a one-square-mile site in Livermore, California, with a larger (10-square mile) remote explosives testing site (Site 300) situated 18 miles east of the main Livermore site.

The LLNL has a primary role in the Department of Energy/National Nuclear Security Administration (DOE/NNSA) mission special capabilities, required for stockpile stewardship and nonproliferation activities as well as homeland security, to meet enduring national needs in conventional defense, energy, environment, biosciences, and basic science, as well as enhancing the competencies needed for the national security mission. The site is aligned with the nuclear security enterprise modernization activities, which includes eliminating quantities of special nuclear materials from the Laboratory, and establishing shared user facilities to more efficiently maintain experimental capabilities such as the National Ignition Facility (NIF).

ACTIVITIES:

Directed Stockpile Work (DSW)
The LLNL is responsible for three enduring weapons systems: the W80, B83, and W87; and any future Life Extension Programs (LEP), as well as weapon system assessments, certification, and stockpile support. Work under the LEP and Stockpile Systems subprograms directly supports weapons systems, while the work under Stockpile Services contains activities that support multiple weapons systems, including, plutonium experiments, technical basis for stockpile transformation planning, high energy density/above ground experiments (HED/AGEX), closure of high-priority Significant Finding Investigations (SFIs), Nuclear Safety Research & Development (R&D), surveillance management and subject matter experts, weapons program infrastructure, R&D studies, container design, assessment and certification, and weapons response support to the plants.

The LLNL is tasked with supporting continuing efforts to examine how the B61 Phase 6.2/6.2A study can address issues of safety, security and long-term reliability of the nation's nuclear deterrent. The study will provide options to address aging, reliability, surety improvements, and the consolidation of numerous modifications. In addition, LLNL will continue life extension studies for the W78, consistent with the principles of the Stockpile Management Program.

Science Campaign
The Science Campaign develops the tools and methodology to assess and certify the safety, reliability, and performance of the stockpile systems. These tools and methodology also support ongoing activities in LEPs, Significant Finding Investigations, and Laboratory-to-Laboratory Peer Reviews. The Science subprogram activities are:

- Advanced Certification: Advanced Certification will continue to review, and evaluate approaches to establish an accredited warhead certification plan, without nuclear testing, in an era where changes to nuclear components will occur due to aging or design concerns;

- Primary Assessment Technologies**:** As the Quantification of Margins and Uncertainty (QMU) tools and methodology are validated, they will be used in assessment work required to support DSW activities. Primary assessment also designs the experimental program that supports primary assessment and certification, and validates the ASC codes and the physics-based models that support QMU development and application. Using the QMU methodology, the laboratories will continue to identify and quantify technical areas with the largest uncertainties and impact to stockpile performance, and focus future efforts to reduce these uncertainties and quantify margins. Two major LLNL-specific products of these efforts are program plans for the LLNL Hydrotest Program and Plutonium Experiments program. These plans are coordinated with Los Alamos National Laboratory (LANL) in the National Hydrotest Plan and the National Primary Assessment Plan. Also, LLNL will continue efforts on the National Ignition Facility (NIF) experiments;

- Dynamic Materials Properties: The LLNL work in this subprogram extends key experimental capabilities, data analysis, and materials models (used by both the Primary Assessment Technologies and Secondary Assessment Technologies subprograms). The focus is the experimental activities required to support the development of accurate, predictive, physics-based models of materials properties and behavior under relevant conditions. The development of such models and subsequent code insertion is supported through the closely coordinated ASC Physics and Engineering Models subprogram. This activity supports experiments and data analysis at U1A and the Joint Actinide Shock Physics Experimental Research (JASPER) Facility, and uses a wide range of other experimental tools to create conditions of static and dynamic high pressure and temperature and enables investigations of the dynamic response of materials under ultra-high-pressure conditions of shock loading;

- Advanced Radiography: The scope of this subprogram activity is to improve the capability to experimentally infer the integral performance of the mock primaries. This supports evaluation of the margins and uncertainties for the continuing certification of reliability and safety of the stockpile. Radiographic hydrotest data are critical to weapon programs, including the current LEPs, and the development of modern baselines for all weapon systems. Additional diagnostic development explores transformational technologies that will replace or enhance optical and radiographic measurements for hydrotests.

- Secondary Assessment Technologies: The Secondary Assessment Technologies subprogram develops the tools and capabilities needed to understand the factors that control secondary yield and then applies these tools to reduce uncertainties in secondary performance. These activities support assessments of the safety, reliability, and performance of stockpile weapons, including ongoing activities in LEPs and SFIs. As these tools and methodology are validated, they, along with simulation and computing capabilities, will be delivered to the DSW Program for assessments required to support directed stockpile activities at LLNL. In FY 2012, LLNL will continue to develop high energy density physics platforms of ICF facilities in order to focus on increasing our understanding of secondary performance and developing a more complete understanding of stockpile weapons. Using QMU methodology, LLNL will continue to identify and quantify technical areas with the largest uncertainties and impact to stockpile performance, and focus future efforts on reducing uncertainties and quantifying margins.

Engineering Campaign
The Engineering Campaign activity provides the nuclear security enterprise with modern tools and capabilities in engineering sciences and technologies to ensure the safety, security, reliability, and performance of the current and future U.S. nuclear weapons stockpile, and a sustained basis for stockpile certification. The LLNL portion of the Engineering Campaign supports all four subprograms: Enhanced Surety, Weapon Systems Engineering Assessment Technology, Nuclear Survivability and Enhanced Surveillance.

- Enhanced Surety: The enhanced surety subprogram continues to provide R&D in Multi-Point Safety options specifically with regards to material compatibility, HE response, and other tests and evaluations. LLNL also supports the Enhanced Collaboration with the United Kingdom.

- Weapon Systems Engineering Assessment Technology: (WSEAT) will continue to characterize the as-built stress state of a high-fidelity high explosive (HE) system to support current LEPs and the development of modern baselines for all weapon systems.

- Nuclear Survivability: For the nuclear survivability subprogram, the primary focus will be the acceleration of the development and modernization of nuclear survivability assessment tools and technologies required to support upcoming LEPs, alterations, and modifications per the Production and Planning Directive. Modernization of survivability assessment tools will enable the laboratory to take full advantage of advances in materials science and other areas in order to improve reliability and performance at reduced costs while ensuring survivability in radiation environments. The research and development will also exercise the nuclear survivability assessment capabilities and help to develop the next generation of analysts.

- Enhanced Surveillance: The enhanced surveillance subprogram performs selected studies in support of the annual assessment process for the nuclear weapons designed by LLNL in the current active stockpile. In addition, LLNL conducts new materials evaluations and material aging studies for certain weapon systems in the active stockpile. There are additional efforts ongoing in support of the lifetime evaluation of selected nuclear explosive packages (NEPs) including specific components of interest to the weapons community.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
With the completion of National Ignition Facility (NIF) construction, successful demonstration of laser performance with over 1 megajoule (MJ) of laser energy in an ignition pulse shape, and the commencement of experimental activities for ignition and stockpile stewardship, the ICF activity at LLNL is focused on the technical challenge of achieving ignition and exploiting the facility for energy density physics experiments in support of the SSP. The LLNL is responsible for the operation of the NIF and for oversight of the National Ignition Campaign (NIC), the integrated national effort to demonstrate ignition at NIF. The LLNL coordinates the development and installation of additional diagnostic and experimental capabilities required for the NIF weapons mission and for use by the broader user community.

The experimental efforts to support ignition, other weapons science, and broader scientific goals will provide a means to investigate thermonuclear burn related issues central to assessment of the legacy and evolving nuclear stockpile. Ignition and other experiments in areas such as radiation flow,

hydrodynamics, and material properties support ongoing stockpile assessment via the quantification of margins and uncertainties methodology. Approximately 15 percent of NIF experiments will be made available to the basic science community and other users external to the NNSA. The LLNL effort also executes high energy density physics experiments in support of the SSP at the University of Rochester Laboratory for Laser Energetics (OMEGA), the Z Machine at Sandia National Laboratories and other facilities, and develops many of the advanced targets required to support these experiments.

Advanced Simulation and Computing (ASC) Campaign
In FY 2012, LLNL ASC activities will focus on three major areas:

- maintaining a world-class, national supercomputing user facility that enables reliable and responsive computer simulations throughout the laboratory complex;

- development and application of simulation tools for annual assessment, LEPs, SFIs and the mission priorities of the Stockpile Stewardship Program (SSP), and

- application of ASC capabilities to national nuclear security mission needs including the Nuclear Emergency Support Team (NEST), warhead dismantlement, nuclear attribution, effects and emerging threats.

In addition, LLNL will continue its leadership in the deployment of Common Computing Environment capabilities on all newly procured capacity clusters enabling a seamless ASC user environment for capacity computing. The ASC Campaign at LLNL will pursue forward looking investments in Sequoia, a computing platform that will perform the large number of demanding simulations needed for quantification of simulation uncertainties. The LLNL will continue to develop, implement, and apply a suite of physics-based models and high-fidelity databases to enable predictive simulation of the initial conditions for primary performance.

Readiness in Technical Base and Facilities (RTBF)
The Stockpile Stewardship Program at LLNL relies heavily on a wide variety of experimental, computational, fabrication, and special materials-handling facilities, and related support facilities and infrastructure to accomplish the objectives and milestones described in the Campaign and DSW program and implementation plans. Of these "Stockpile Stewardship Mission-Essential Facilities," the subset of direct, programmatic facilities and technical base (i.e., "capabilities"), that are in part or fully direct-funded through the RTBF program include the Nuclear Materials Technology Program (NMTP) facilities (Superblock), the light gas guns (B341), the High Explosive Applications Facility (HEAF), the open air firing sites and Contained Firing Facility (CFF) at Site 300, and the Engineering test facilities at Site 300.

Nuclear Counterterrorism Incident Response (NCTIR)
The NCTIR activities at LLNL include assisting in operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents. The LLNL deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. The LLNL is an active participant in the NNSA Nuclear Emergency Support Team, which can respond to any type of emergency involving radioactive

or nuclear materials in the U.S. or abroad. Moreover, LLNL supports the National Technical Nuclear Forensics (NTNF) and Render Safe programs, which will continue through the planning period. In addition, LLNL provides research and support to the Office of Emergency Operations with unique expertise in supporting the Nuclear Counterterrorism program as well as operation of the National Atmospheric Release Advisory Center (NARAC). This facility provides tools and services for atmospheric plume predictions to the federal government, that map the probable spread of hazardous material accidentally or intentionally released into the atmosphere.

Facilities and Infrastructure Recapitalization Program (FIRP)
In FY 2012, FIRP provides for the recapitalization of aging facilities and infrastructure at the LLNL to assure that the quality of the infrastructure keeps pace with the Laboratory's scientific mission requirements. The FIRP funds have stabilized LLNL's deferred maintenance to a level consistent with industry standards.

In FY 2012, the recapitalization component of FIRP will continue to fund high-priority projects that restore and rehabilitate mission critical facilities and infrastructure, through the reduction of deferred maintenance, which will support modernization of the nuclear security enterprise. Projects in FY 2012 will continue to rehabilitate or replace aged and deteriorated equipment and roofs. Specific focus will be on the replacement and upgrades of Heating, Ventilation and Air Conditioning (HVAC) systems, and low voltage electrical components. Mission critical buildings will be rehabilitated for adaptive reuse through the replacement of lighting, paint, carpet and tiles, in addition to the HVAC and electrical upgrades. High-voltage electrical distribution cables and components will be replaced and reconfigured to support changing demands in the East and Central portion of the laboratory. In addition to the execution of Recapitalization projects, the FY 2012 Budget Request includes planning for the FY 2013 Recapitalization projects and general replacement/upgrades such as motor control centers, transformers, sectionalizing switches, panel boards, heat pumps, fans and generators in mission critical facilities. The Laboratory will continue its participation in the nuclear security enterprise Roof Asset Management Program (RAMP).

Site Stewardship
In FY 2012, Site Stewardship efforts will be directed toward Environmental Projects and Operations Long Term Stewardship (LTS) activities required for ensuring environmental regulatory compliance; reducing and consolidating Special Nuclear Material (SNM) inventories; and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The LTS activities at LLNL are post-remediation activities to assure regulatory compliance and continued protection of public health and the environment. The LTS activities began at LLNL-Main Site in FY 2007 and in FY 2009 at LLNL-Site 300 after the completion of legacy environmental cleanup activities. In FY 2012, LTS activities include, but are not limited to program management, operation and maintenance of contaminated ground water treatment systems; inspection and maintenance of landfill caps (Site 300 only); soil vapor and groundwater monitoring, well field operations and maintenance and modeling; and access controls. Also, included are funds to complete the Resource Conservation and Recovery Act (RCRA) mandated closure of Building 419.

Nuclear Materials Integration (NMI) efforts will continue to remove all security category I/II materials from LLNL by the end of FY 2012. By the end of FY 2011, more than 90 percent of the material will have been processed, packaged and shipped off site.

The FY 2012 Energy Modernization and Investment Program (EMIP) will support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security program at LLNL provides laboratory protection measures consistent with the requirements documented in its Site Safeguards and Security Plan (SSSP). In FY 2012, the Program will continue to focus on movement of category I/II SNM from the SuperBlock to other NNSA/DOE sites. To meet the 2012 de-inventory goal set by Defense Programs, LLNL will also continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets as appropriate; (b) is predicated on Executive Orders; national standards; laws and regulations; and Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA Enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; and ensures alignment of the program with strategic plans and relevant plans of the Chief Information Officer (CIO).

The LLNL cyber security program will continue implementation of a comprehensive self-assessment program, effective risk management program and identify cyber security vulnerabilities and threats on the unclassified computing infrastructure. Additionally, the program will implement networking and system standards complex-wide.

Nonproliferation and Verification Research and Development
The Nonproliferation and Verification Research and Development program at LLNL develops technology to improve national capabilities for detecting nuclear proliferation and nuclear detonations. The program focuses on improvements to geographic models to locate and identify regional seismic events and nuclear forensics to support nuclear detonation detection assessments. In support of proliferation detection, LLNL develops remote sensing techniques for standoff detection and identification of nuclear activities, radiation sensor technology, and various other exploratory technologies. The program is the inter-laboratory coordinator on testing optical remote sensing techniques for WMD proliferation detection and characterization; and is a recognized national leader in developing hyperspectral instrumentation for standoff detection of gases and other materials over denied areas.

Nonproliferation and International Security (NIS)
The LLNL provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, Highly Enriched Uranium (HEU) Purchase Agreement Transparency Program policy implementation and development, Plutonium Production Reactor Agreement implementation, and the development of nuclear transparency measures. In

addition, LLNL assists technical analysis and technology development, and assists regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. The LLNL program provides reviews of export controlled equipment, materials and software, and foreign customers, and analytical tools and technical references for use in developing recommendations on U.S. export licensing applications, interdictions, international safeguards, physical protection, technology assessments, policy support and nonproliferation assessments, multilateral outreach through support efforts for policymaking and negotiations regarding various nonproliferation control regimes, and international cooperation, primarily in the Former Soviet Union but increasingly in transit states as well. The LLNL supports development of safeguards, tools and methodologies such as International Atomic Energy Agency (IAEA) environmental sampling and spent fuel monitoring techniques, as well as training to foreign nationals as needed. The program also provides technical support on nuclear safeguards, safety, and security to developing countries interested in nuclear power under the nuclear infrastructure development efforts. The program provides instructors, curriculum development and other support for export control outreach as well as analytical services in support of border security capacity building outreach efforts and technical assistance support for nuclear forensics engagement program. The LLNL further participates in projects that engage former weapons of mass destruction (WMD) scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific business communities.

International Nuclear Materials Protection and Cooperation (INMP&C)

The INMP&C program provides operational experience in civilian and defense nuclear material protection, control, and accounting (MPC&A) in combination with institutional expertise in nuclear energy, international and domestic safeguards, and the assessment of the proliferation impacts on U.S. national security of foreign nuclear energy programs. The LLNL provides security and engineering expertise in support of international MPC&A activities at several Russian Navy, Civilian, and Rosatom Weapons Complex sites. In FY 2012, MPC&A will continue to support sustainability and infrastructure projects for Ministry of Defense, Rosatom, Rostekhnadzor, Ministry of Transportation, and the Russian Shipbuilding Agency with efforts in regulatory development and implementation and a national accounting system.

Global Threat Reduction Initiative (GTRI)

The LLNL provides significant technical, scientific, and management expertise to two of the three key subprograms of GTRI–Remove and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

LOS ALAMOS NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	307,804	428,069	369,461
Science Campaign	114,908	125,050	128,019
Engineering Campaign	26,890	24,200	27,047
Inertial Confinement Fusion Ignition and High Yield Campaign	14,873	17,000	15,717
Advanced Simulation and Computing Campaign	202,564	184,639	163,326
Readiness Campaign	2,127	8,530	0
Readiness in Technical Base and Facilities	479,708	587,734	667,930
Nuclear Counterterrorism Incident Response	38,835	43,670	40,494
Facilities and Infrastructure Recapitalization Program	16,329	15,114	15,114
Site Stewardship	3,000	18,250	5,600
Defense Nuclear Security	108,343	157,000	136,753
Cyber Security	18,554	17,727	17,727
National Security Applications	0	6,675	6,675
Subtotal Weapons Activities	**1,333,935**	**1,633,658**	**1,593,863**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	78,932	65,833	68,383
Nonproliferation and International Security	33,068	26,331	28,343
International Nuclear Materials Protection and Cooperation	53,554	56,052	54,539
Fissile Materials Disposition	0	44,928	41,311
Global Threat Reduction Initiative	25,124	40,992	40,755
Subtotal Defense Nuclear Nonproliferation	**190,678**	**234,136**	**233,331**
Total, NNSA	**1,524,613**	**1,867,794**	**1,827,194**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	399,907	407,993	429,466	435,908
Science Campaign	122,270	123,121	124,531	127,361
Engineering Campaign	31,894	31,616	30,598	29,520
Inertial Confinement Fusion Ignition and High Yield Campaign	21,500	22,500	23,500	24,500
Advanced Simulation and Computing Campaign	166,846	170,978	176,147	181,688
Readiness Campaign	2,904	1,570	0	0
Readiness in Technical Base and Facilities	693,930	785,414	780,206	757,235
Nuclear Counterterrorism Incident Response	42,685	45,097	46,364	48,060
Facilities and Infrastructure Recapitalization Program	15,114	0	0	0
Site Stewardship	9,016	36,900	38,425	54,068
Defense Nuclear Security	105,200	105,300	105,400	105,500
Cyber Security	17,727	17,727	17,727	17,727
National Security Applications	6,675	6,675	6,675	6,675
Subtotal Weapons Activities	**1,635,668**	**1,754,891**	**1,779,039**	**1,788,242**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	70,631	72,701	72,904	77,047
Nonproliferation and International Security	27,525	28,370	29,045	29,551
International Nuclear Materials Protection and Cooperation	51,125	57,914	57,260	44,640
Fissile Materials Disposition	43,252	43,672	43,208	44,437
Global Threat Reduction Initiative	37,441	47,988	49,796	55,768
Subtotal Defense Nuclear Nonproliferation	**229,974**	**250,645**	**252,213**	**251,443**
Total, NNSA	**1,865,642**	**2,005,536**	**2,031,252**	**2,039,685**

Congressional Items of Interest: In FY 2012, pending NWC authorization, NNSA will establish the B61 Mod 12 Life Extension Program to extend the life of the B61 Mod 3, 4, and 7 nuclear bombs. The procurement and installation of equipment for the Radiological Laboratory/Utility/Office Building (RLUOB) continues at the Chemistry Metallurgy Research Replacement (CMRR) Project at the Los Alamos National Laboratory along with the design of the Nuclear Facility.

Major Changes or Shifts:
In FY 2012, funding for the B61 life extension activities moves from Stockpile Systems to the Life Extension Program in anticipation of Nuclear Weapons Council approval of B61 Phase 6.3 engineering development. At Los Alamos, there is a net decrease in funding for B61 life extension activities due to an increased focus on production preparation at other sites. Further, a decrease in Plutonium Sustainment reflects the completion of the W88 pit build. Efforts will be reduced related to preparation for future planned pit production missions and associated manufacturing facilities and process modernization activities. The close-out of the W88 pit build with initiation of the tooling and equipment modification to transition to the next legacy pit type process. CMRR has significantly increased between FY 2011 and FY 2012 as the project is in the final design phase for the Nuclear Facility. In FY 2012,

the Nonnuclear Readiness subprogram will be substantially refocused and become more integrated with the DSW mission to address production readiness requirements and scope associated with down-select of technologies as a result of expected Nuclear Weapons Council Phase 6.3 approval and increased technology maturation efforts in support of B61-12.

Site Description

INTRODUCTION:

Los Alamos National Laboratory (LANL) is located on approximately 25,000 acres, adjacent to the town of Los Alamos, New Mexico.

The LANL is a multi-program laboratory, supporting research and a limited production mission predominantly in national security. The laboratory also supports environmental restoration, waste management, general science programs, homeland security, and work for others.

The site is aligned with nuclear security enterprise modernization activities which include: (1) reducing facility square footage required for weapons activities; (2) establishing shared user facilities to more cost-effectively manage expensive experimental computational and production capabilities; (3) ensuring laboratory plutonium space efficiently supports interim pit manufacturing and enterprise-wide special nuclear materials consolidation, and (4) construction of the Chemistry and Metallurgy Research Replacement Nuclear Facility Project (CMRR-NF), and (5) demonstrating organizational leadership required to achieve a more integrated, interdependent nuclear security enterprise.

ACTIVITIES:

Directed Stockpile Work (DSW)
The LANL is responsible for four enduring weapons systems: the B61, W76, W78, and W88; Life Extension Programs (LEP), as well as weapon system assessments, and certification and stockpile support. Work under Stockpile Systems and LEPs directly supports specific weapon systems. In addition, LANL activities include the design, qualification, production support for hardware manufacturing, surveillance and assessment of safety, reliability and performance of the bombs and warheads, and the Production Agency for manufacturing mission assigned components for all weapon systems. A portion of the LANL activities support the W76-1 LEP. Also, LANL is tasked with supporting the B61 Phase 6.2/6.2A study with expected approval, completing the study, to proceed with Phase 6.3 Development Engineering, technical maturation for future LEP, and various experimental capabilities (including DARHT hydrotests). The LANL is also tasked with activities supporting multiple weapon systems, including the Annual Assessment Process, the Independent Nuclear Weapon Assessment Process, technical basis for stockpile transformation planning, Nuclear Safety Research and Development, R&D studies, and closure of high-priority Significant Finding Investigations.

Science Campaign
As a nuclear weapons design laboratory, Los Alamos continues to have a robust science effort supporting science-based stockpile stewardship. A large portion of that effort is reflected in the work supported by the Science Campaign. The Science Campaign subprogram activities are:

- Advanced Certification: Advanced Certification will continue to review and evaluate approaches to establish an accredited warhead certification plan, without nuclear testing, in an era where changes to nuclear components will occur due to aging or design concerns.

- Primary Assessment Technologies: Activities support the science (including theory, experiment, simulation, and analysis) necessary to develop and improve a validated capability for predicting and certifying primary performance, safety, and Quantification of Margins and Uncertainties (QMU) without additional nuclear tests. Approximately half of the effort for this subprogram is directed towards boost physics.

- Dynamic Materials Properties: Develops physics-based, experimentally validated data and models of all stockpile materials, at a level of accuracy required by the Primary and Secondary Assessment Technologies and Engineering Campaign. The Dynamic Materials Properties is focused on the behavior of high explosives, plutonium, uranium, and other metals. Work with DoD under the DoD-DOE joint munitions program is also conducted principally under Dynamic Materials Properties at LANL.

- Advanced Radiography: Supports development of technologies for three-dimensional imagery of imploding mock primaries, with sufficient time and space resolution to help resolve uncertainties in primary performance. With the completion of the Dual Axis Radiographic Hydrodynamic Test (DARHT) 2nd axis refurbishment, the focus has turned to optimization of radiographic tools and development of new technologies.

- Secondary Assessment Technologies: Develops the tools and capabilities required to understand the factors that control secondary yield and to use these tools to reduce uncertainties in secondary performance. These activities support assessments of the safety, reliability, and performance of the LANL stockpile weapons, including ongoing activities in LEPs, and Significant Findings Investigations (SFIs). Along with advanced simulation and computing capabilities, as these tools and methodology are validated, they will be delivered to the DSW program for usage in assessment work required to support directed stockpile activities at LANL. In FY 2012, LANL will develop high energy density physics platforms of Inertial Confinement Fusion (ICF) facilities to focus on increased understanding of stockpile weapons. Using Quantification in Margins and Uncertainties (QMU) methodology, LANL will identify and quantify technical areas with largest uncertainties and impact to stockpile performance and focus efforts to reduce uncertainties and quantify margins.

Engineering Campaign
As a design agency for the stockpile, LANL is focused on engineering-based development in support of the enduring stockpile. Also LANL provides the nuclear security enterprise with modern tools and capabilities in engineering sciences and technologies to ensure the safety, security, reliability, and performance of the current and future U.S. nuclear weapons stockpile and a sustained basis for stockpile certification. Moreover, LANL supports all four of the Engineering Campaign subprogram activities, and they are as follows:

- Enhanced Surety: The enhanced surety subprogram continues to provide R&D in Multi-Point Safety options specifically with regards to material compatibility, high explosive (HE) response, and other tests and evaluations. The LANL also supports the Enhanced Collaboration with the United Kingdom.

- Weapon Systems Engineering Assessment Technology (WSEAT): The WSEAT will continue to characterize the as-built stress state of a high-fidelity HE system to support current LEPs and the development of modern baselines for all weapon systems.

- Nuclear Survivability: For the nuclear survivability subprogram, the primary focus will be the acceleration of the development and modernization of nuclear survivability assessment tools and technologies required to support upcoming LEPs, alterations, and modifications per the Production and Planning Directive. Modernization of survivability assessment tools will enable the laboratory to take full advantage of advances in materials science and other areas in order to improve reliability and performance at reduced costs while ensuring survivability in radiation environments. The research and development will also exercise the nuclear survivability assessment capabilities and help to develop the next generation of analysts.

- Enhanced Surveillance: The enhanced surveillance subprogram performs selected studies in support of the annual assessment process for the nuclear weapons designed by LANL in the current active stockpile. In addition, LANL conducts new materials evaluations and material aging studies for certain weapon systems in the active stockpile. There are additional efforts ongoing in support of the lifetime evaluation of selected nuclear explosive packages (NEPs) including specific components of interest to the weapons community.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
The ICF Campaign provides quantitative experimental data (in the High Energy Density (HED) regime) and the physical underpinning needed for validation of advanced modeling required in nuclear weapons certification. It participates in the pursuit of laboratory ignition through utilizing unique Los Alamos scientific and technological capabilities. Also, LANL is a key contributor to the design, construction, and implementation of diagnostics for the NIF.

Los Alamos' major emphasis is to support the National Ignition Campaign developing theoretical target designs and advanced ignition diagnostics for the experiments at the NIF, Z and other HED facilities across the Weapons Enterprise.

Advanced Simulation and Computing (ASC) Campaign
In FY 2012, the national ASC Campaign at LANL will focus on three major areas:

- maintain computational science tools for annual assessments, LEPs and SFIs;
- protect the investment in science-based simulation capabilities; and
- maintain the Cielo-based national user facility that provides a reliable and responsive computing resource to the laboratory complex.

As part of operations at the Nicholas C. Metropolis Center for Modeling and Simulation, the ASC Campaign at LANL will continue maintenance of Roadrunner, operate computing scalable units in support of weapons certification and assessment, and deploy a new capability-class computing platform.

An area of development is integrated code development where LANL will continue to move computational science capabilities onto the Roadrunner platform. This process allows the weapons program to take advantage of the advanced hybrid architecture by applying this leading edge technology to issues of national security.

Readiness in Technical Base and Facilities (RTBF)
The RTBF program supports a broad base of activities and facilities that enable the laboratory to meet its mission obligations to the NNSA and the nation. At LANL, Defense Programs (DP) direct-funded facilities include facilities supporting weapons engineering, tritium, weapons physics (DARHT, etc.), accelerator work at Los Alamos Neutron Science Center (LANSCE), waste management, nuclear materials research and manufacturing (Plutonium Facility (PF-4) and Chemistry and Metallurgical Research (CMR)), beryllium technology, and machining and fabrication shops. Mission capable work scope includes facility management, infrastructure support, operation and maintenance of real property and special equipment, and compliance with security, environmental, safety and health requirements. In addition, RTBF supports solid waste risk reduction activities (including the processing of stored new generation transuranic (TRU) waste at Area G in support of a Consent Order issued by the New Mexico Environmental Department)

The RTBF activity also includes infrastructure support: specific project activities to support consolidation and footprint reduction and out-year risk and/or cost redirection strategies, Line Item Other Project Costs (OPCs), general plant projects construction, seismic studies, authorization basis, beryllium rule, and program management. Starting in FY 2012, other project costs (OPC) for the Chemistry and Metallurgy Research Replacement (CMRR) project show under the line item construction project. Funding is also included for the Payment-in-Lieu-of-Taxes for Los Alamos County in the Los Alamos Pueblo project.

The RTBF also funds activities associated with nuclear materials recycle and recovery program. The LANL support within this program activity is central to the material consolidation activities across the Enterprise.

RTBF Construction
There are a number of line item projects in RTBF at LANL, which are based on a key element of long-range planning, specifically, the Integrated Nuclear Planning (INP). The INP project is a high-level effort to plan the future nuclear facilities within TA-55. The INP presently includes the integration of

the CMRR project; infrastructure upgrades at TA-55, proposed safeguards and security upgrades; and two new waste management facilities for treatment of radiological liquid waste and processing of transuranic solid waste. These new and refurbished facilities provide a long-term, flexible infrastructure to support current and future plutonium missions.

Nuclear Counterterrorism Incident Response (NCTIR)
In FY 2012, NCTIR activities at LANL will continue to assist in operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents. The LANL deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. The LANL is an active participant in the NNSA Nuclear Emergency Support Team (NEST), which can respond to any type of emergency involving radioactive or nuclear materials in the U.S. or abroad.
Support for the National Technical Nuclear Forensics (NTNF) and Render Safe programs will continue through the planning period. In addition, LANL will continue to provide research and support to the Office of Emergency Operations with unique expertise in supporting the Nuclear Counterterrorism program.

Facilities and Infrastructure Recapitalization Program (FIRP)
Recapitalization projects provide improvements to mission facilities and infrastructure that support modernization of the Enterprise. These improvements are accomplished by reducing legacy deferred maintenance resulting in both improved worker safety and facility reliability. Mission facilities and infrastructure improvements directly support DP activities and priorities within Directed Stockpile Work and Stockpile Stewardship Campaigns.

In FY 2012, LANL plans upgrades to system reliability through correction of CMR, TA-53 and TA-55 electrical fire alarm and mechanical system deficiencies and Rad Liquid Waste Collection Vault repairs. Further, LANL will also continue to participate in the nuclear security enterprise Roof Asset Management Program (RAMP), achieving both improved operating cost efficiencies and life extension of LANL's roofing assets.

Site Stewardship
In FY 2012, Site Stewardship efforts will be directed toward reducing/consolidating Special Nuclear Material (SNM) inventories and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The FY 2012 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidance/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security program at LANL provides laboratory protection measures consistent with requirements documented in its Site Safeguards and Security Plan (SSSP). During FY 2012, the laboratory will continue the Nuclear Materials Safeguards and Security Upgrade Project (NMSSUP) Phase II to upgrade access control systems begun in FY 2005. Furthermore, LANL will continue to

focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives, and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA Enterprise architecture; a programmatic framework and methodology based on current policies and procedures; and a management approach that integrates all of the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.
The LANL will continue to evaluate the unique risk management process for authorizing foreign national access to unclassified computers and networks, and any sensitive information. LANL will also continue to manage wireless computer technology site-wide. Also, LANL will focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Nonproliferation and Verification Research and Development
The Nonproliferation and Verification Research and Development (R&D) program at LANL develops technology to improve national capabilities for detecting nuclear proliferation and nuclear detonations. The program designs, builds, tests, and conducts full-lifecycle performance assessment of a suite of satellite payloads for nuclear detonation detection. Under this program, LANL conducts R&D to improve analytic tools and sensors to discriminate earthquakes and industrial activities from nuclear detonations. The LANL also supports the nuclear forensics mission. The program develops new and innovative remote sensing technologies, radiation detection technologies, and other detection and analysis capabilities supporting nuclear fuel cycle monitoring missions and other proliferation detection technology. The program is a recognized national leader in developing hyperspectral analytical models for standoff detection of gases and other materials over denied areas.

Nonproliferation and International Security (NIS)
The NIS program provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program and development of nuclear transparency measures. The NIS supports operation of the Blend Down Monitoring System in the highly-enriched uranium (HEU) Transparency Program. The NIS supports USG efforts to prepare for denuclearization and verification efforts in North Korea and other proliferating countries, as well as safeguards technology development activities through the Next Generation Safeguards Initiative and the U.S. Support Program to IAEA Safeguards. The Program supports export control work with operation of the Proliferation Information Network System (PINS), reviews of export controlled equipment, materials and software, and analytical tools and technical references to use in developing recommendations on U.S. export license applications, policy support in the development of nuclear transparency measures, fuel cycle analysis and international safeguards technology assessments, and policy support and nonproliferation assessments in the areas of international regimes and regional security. The NIS program provides instructors curriculum development and other support for export control outreach and supports international safeguards efforts, especially development of safeguards technologies and methodologies for advanced fuel cycle facilities such as those in Japan, the Republic of Korea, Brazil

and France. In addition, the NIS program helps create business opportunities for displaced weapons workers and engages former WMD scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific and business communities.

International Nuclear Materials Protection and Cooperation (INMP&C)
The Materials Protection Cooperation and Accounting (MPC&A) program within INMP&C provides a wealth of expertise through material accounting methodologies, specialized material verification techniques, project and construction management for storage facilities, and language specialization. This program has designed and developed computerized accounting systems that are currently operating at several Russian Enterprises. The NNSA is working with LANL in the use of material controls, particularly with the active-nonviolent insider threats when completing MPC&A upgrades at all Russian Enterprises. Furthermore, program laboratory experts provide technical solutions to Second Line of Defense (SLD) Core and Megaports programs including scientific analysis and testing of radiation detection systems. In addition, the program supports installation of radiation detection equipment at border crossings and airports/seaports within both Russia and the Former Soviet Union States under the SLD Core Program and at major container shipping terminals within the global maritime cargo transportation system under the SLD's Megaports Initiative.

Fissile Materials Disposition
The LANL is the lead for the development of U.S. weapons pit disassembly and conversion technology. The Advanced Recovery and Integrated Extraction System (ARIES) located at LANL serves as the prototype demonstration project for the production-scale pit disassembly and conversion capability. Furthermore, ARIES will be used to convert 2 metric tons of pit plutonium metal to oxide for use in the initial phase of operations of the Mixed Oxide Fuel Fabrication Facility.

Global Threat Reduction Initiative (GTRI)
In FY 2012, LANL will continue to provide significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

NEVADA NATIONAL SECURITY SITE

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	51,245	37,901	20,801
Science Campaign	23,743	28,547	32,000
Inertial Confinement Fusion Ignition and High Yield Campaign	2,990	0	0
Advanced Simulation and Computing Campaign	75	0	0
Readiness Campaign	500	0	0
Readiness in Technical Base and Facilities	109,050	102,892	119,610
Secure Transportation Asset	4,278	5,917	200
Nuclear Counterterrorism Incident Response	45,208	46,195	46,395
Facilities and Infrastructure Recapitalization Program	8,007	6,582	6,582
Site Stewardship	0	350	2,621
National Security Applications	0	100	100
Subtotal Weapons Activities	**245,096**	**228,484**	**228,309**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	18,941	23,676	58,752
Global Threat Reduction Initiative	3,025	9,464	4,475
Subtotal Defense Nuclear Nonproliferation	**21,966**	**33,140**	**63,227**
Total, NNSA	**267,062**	**261,624**	**291,536**

NOTE: Funding for Defense Nuclear Security and Cyber Security is provided through the Nevada Site Office. NNSS provides DNN funding for the Remote Sensing Laboratory.

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	31,425	31,600	33,326	39,907
Science Campaign	32,000	32,000	32,000	32,000
Readiness in Technical Base and Facilities	132,031	140,585	152,531	189,474
Secure Transportation Asset	204	208	212	216
Nuclear Counterterrorism Incident Response	45,914	46,246	46,850	48,200
Facilities and Infrastructure Recapitalization Program	6,582	0	0	0
Site Stewardship	2,007	3,360	4,570	4,827
National Security Applications	100	100	100	100
Subtotal Weapons Activities	**250,263**	**254,099**	**269,589**	**314,724**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	55,936	56,234	56,541	56,857
Global Threat Reduction Initiative	4,508	5,778	5,996	6,715
Subtotal Defense Nuclear Nonproliferation	**60,444**	**62,012**	**62,537**	**63,572**
Total, NNSA	**310,707**	**316,111**	**332,126**	**378,296**

Congressional Items of Interest: None.

Major Changes or Shifts: DSW Stockpile Services decreases by 39 percent between FY 2011 and FY 2012 due to decreased demand for subcritical nuclear tests. Secure Transportation Operations and Maintenance will decline by $5.7 million between FY 2011 and FY 2012. The program has decided not to use Nevada as a secondary training venue for Joint Testing Exercises (JTX).

Site Description

INTRODUCTION:

The Nevada National Security Site (NNSS) is located 65 miles northwest of Las Vegas and is approximately 1,375 square miles. The NNSS is surrounded by the Department of Defense (DoD) Nevada Test and Training Ranges and unpopulated land controlled by the U.S. Bureau of Land Management. In addition to the NNSS, the National Nuclear Security Administration (NNSA) Nevada Site Office assets include facilities in North Las Vegas; Nellis Air Force Base (AFB), NV; Andrews AFB, MD; Livermore, CA; Los Alamos, NM; and Santa Barbara, CA.

The NNSS is aligned with complex modernization activities for the nuclear security enterprise. The NNSS supports the consolidation of Category I/II quantities of special nuclear materials from other sites and long-term consolidation of hydrodynamic testing and other high-hazard experiments. The current Environmental Impact Statement and the associated Record of Decision allow for the execution of a variety of complex and unique projects and experiments, while ensuring the protection of workers, the public and the environment. The existing assets of the NNSS represent a unique and indispensable extension of the National Weapons Laboratories experimental capabilities, and are essential to the

NNSA Office of Defense Programs and the nation's ability to return to underground nuclear testing, should the President direct it.

ACTIVITIES:

Directed Stockpile Work (DSW)

The NNSS scope falls within the DSW Stockpile Services activities, which support multiple weapons systems, studies, and other Research and Development (R&D) activities to support future stockpile requirements. The NNSS primarily supports DSW by developing and executing Equation of State (EOS) experiments and other highly diagnosed dynamic experiments. The work scope includes support for dynamic plutonium experiments (DPEs) and high explosive pulse power experiments, test bed construction development and design, and procurement and operation of diagnostics systems. Also included are diagnostic development activities required to support future experiments, including research and development, control systems, data acquisition, and data analysis.

The NNSS supports LANL in fielding the large bore powder gun experiments at U1A, LLNL in operating the JASPER and BEEF facilities, and all three labs in conducting subcritical experiments at U1a and with diagnostic development for these and other series of dynamic plutonium experiments. The NNSS will provide the Sandia National Laboratories (SNL) technical input, analysis and interpretation of time-resolved experiments fielded at NNSS as part of the National Hydrotest Plan.

Science Campaign

The NNSS participates in the following Science Campaign activities:

- Primary Assessment Technologies: The NNSS conducts scientific experiments, which support the experimental study and improvement of material models with emphasis on plutonium. The NNSS will continue to assist LLNL in defining and executing a series of High Explosive Pulse Power (HEPP) experiments as part of the Phoenix project. The NNSS also provides support in the area of testbed engineering and construction, diagnostics fielding, controls, and data reduction for the DPEs. In FY 2012, NNSS will continue to support both LLNL and LANL reanalysis of underground test (UGT) data using modern statistical analysis.

- Dynamic Materials Properties: The NNSS supports the laboratory subprograms by developing diagnostics and fielding experiments. The NNSS will support dynamic materials experiments data collection at the Special Technologies Laboratory (STL) Boombox. Special Nuclear Material (SNM) experiment series and diagnostic advancements at the Joint Actinide Shock Physics Experimental Research (JASPER) Facility are planned and executed with LLNL. Also, NNSS will support dynamic experiments and diagnostic development leveraging gas guns at LANL and large bore powder gun capabilities at U1A.

- Advanced Radiography: The NNSS supports the LANL Dual Axis Radiographic Hydrodynamics Test (DARHT) and the proton radiography (pRad) experiments at the Los Alamos Neutron Science Center (LANSCE). The NNSS will continue to provide accelerator diagnostics for DARHT II activities, focusing on LANL experiments. The pRad group will support experiments at LANSCE by providing diagnostics equipment, machined hardware, and personnel.

- Secondary Assessment Technology: The NNSS provides diagnostic development, calibration, fielding, and experiment data collection related to radiation flow studies performed by all three labs, including advances in optical, x-ray, and neutron detector development. In addition, NNSS provides National Institute of Standards and Technology-traceable calibration facilities for radiation-flow diagnostics needed for High Energy Density (HED) physics experiments.

Readiness in Technical Base and Facilities (RTBF)
The NNSS RTBF program provides the Stockpile Stewardship Program with the essential physical and operational infrastructure required to conduct the engineering, scientific, and technical activities of the Stockpile Stewardship Program. The objective of the NNSS RTBF program is to ensure the correct program-related facilities and activities are maintained in a mission capable state to allow experimental operations to occur in a safe, secure, reliable, and cost effective manner. At the NNSS, facilities and activities that are direct-funded are contained in two subprogram elements: Operations of Facilities and Program Readiness. The Operation of Facilities element includes the operation and maintenance of the following NNSA-owned programmatic facilities: Device Assembly Facility (DAF), U1A Complex, JASPER, Control Point Complex, High Explosive Facility, and the North Las Vegas Complex. The Atlas Pulse Power Facility will continue to be maintained in a cold-standby condition. Activities supported under Program Readiness include logistical support to the National Laboratories; support to Other Federal Agencies; Environmental Compliance and Restoration with respect to Defense legacy issues, which includes the Borehole Management Program; and Equipment Revitalization. In FY 2012, Program Readiness also supports the Test Readiness scope of work.

Secure Transportation Asset
The NNSS provides management, quality assurance, personnel training, and preventative and corrective maintenance services in support of the Maryland Relay Station. This facility is a vital part of the communications system dedicated to the tracking and safeguarding of STA shipments.

Nuclear Counterterrorism Incident Response
The NCTIR activities at NNSS include assisting in the operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents as well as support assistance for any DOE or National emergency. Also, NNSS deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. Support for the National Technical Nuclear Forensics (NTNF) and Operations Support programs will continue through the planning period.

Facilities and Infrastructure Recapitalization Program (FIRP)
In FY 2012, FIRP activities will emphasize mission facility and infrastructure projects to meet federal and state requirements. Specific to this year's program are upgrading power distribution systems in Area 23 from 4.16kV to 12.47kV. These improvements will provide more reliable power to mission critical facilities. The Nevada Site Office will also continue to participate in the nuclear security enterprise Roof Asset Management Program (RAMP), achieving improved cost efficiencies and life extension of NNSS's roofing assets.

Site Stewardship
In FY 2012, Site Stewardship efforts will focus on the Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The 2012 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security program at NNSS provides site security consistent with requirements documented in its Site Safeguards and Security Plan. In FY 2012, NNSS will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades. Funding at NNSS is provided through the Nevada Site Office.

Cyber Security
The Cyber Security program at the NNSS is administered through the Nevada Site Office. The Cyber Security program will focus on implementation of the Department of Energy's revitalization plan, which will enable NNSA to respond to its highest priorities and to address current and future risks; unclassified system certification and accreditation for proper documentation of risks and justification of associated operations for systems at all sites; and education and awareness that provides training for federal and contractor personnel to meet expanding skill requirements of cyber security and information environments.

The NNSS will continue to maintain effective feedback and improvement mechanisms to identify cyber security vulnerabilities, eradicate them from site networks, and prevent recurrence. The NNSS will also focus on improving the efficiency of the program to provide feedback and result-driven risk-based methodologies site-wide. The NNSS will implement processes, procedures and technologies to enhance the security infrastructure complex-wide.

Nonproliferation and Verification Research and Development
The NNSS supports the Nonproliferation and Verification R&D program with: nonproliferation test and evaluation support (NPTech); particle integration studies for U-235 production detection; testing and analysis of remote sensing capabilities; test and evaluation of treaty verification technologies and transparency measures.

PANTEX PLANT

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	180,032	188,981	220,148
Engineering Campaign	3,292	3,300	2,175
Advanced Simulation and Computing Campaign	165	0	0
Readiness Campaign	4,150	2,994	0
Readiness in Technical Base and Facilities	197,420	167,601	248,837
Secure Transportation Asset	5,747	5,502	6,486
Nuclear Counterterrorism Incident Response	982	1,031	1,083
Facilities and Infrastructure Recapitalization Program	12,551	10,482	10,482
Site Stewardship	8,028	12,695	14,630
Defense Nuclear Security	136,031	133,000	134,129
Cyber Security	7,081	7,081	7,081
Subtotal Weapons Activities	**555,479**	**532,667**	**645,051**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	25	0	0
Nonproliferation and International Security	203	189	197
Fissile Materials Disposition	0	6,093	4,107
Subtotal Defense Nuclear Nonproliferation	**228**	**6,282**	**4,304**
Total, NNSA	**555,707**	**538,949**	**649,355**

* Funding included in Site Stewardship began in FY 2010.

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	237,615	241,834	259,889	280,314
Engineering Campaign	3,510	3,129	3,082	3,154
Readiness Campaign	2,905	1,570	0	0
Readiness in Technical Base and Facilities	214,617	228,818	212,354	197,054
Secure Transportation Asset	6,615	6,748	6,882	7,020
Nuclear Counterterrorism Incident Response	1,137	1,150	1,152	1,092
Facilities and Infrastructure Recapitalization Program	10,482	0	0	0
Site Stewardship	15,781	21,245	23,905	24,627
Defense Nuclear Security	135,100	136,500	137,600	137,800
Cyber Security	7,081	7,081	7,081	7,081
Subtotal Weapons Activities	**634,843**	**648,075**	**651,945**	**658,142**
Defense Nuclear Nonproliferation				
Nonproliferation and International Security	198	204	209	212
Fissile Materials Disposition	4,572	4,718	4,870	5,027
Subtotal Defense Nuclear Nonproliferation	**4,770**	**4,922**	**5,079**	**5,239**
Total, NNSA	**639,613**	**652,997**	**657,024**	**663,381**

Congressional Items of Interest: Continuing to support dismantlement goals and W76 Life Extension Program (LEP) Full-Production Rates.

Major Changes or Shifts: The RTBF funding increases significantly in support of the High Explosive Pressing Facility construction activities ramping up in FY 2012, as well as increased workloads associated with weapon program activity, including increased LEP's and surveillance while beginning a path towards finalizing the recovery effort of the FY 2010 flood. In addition, the RTBF program is providing additional funding for Pantex Operations of Facilities to meet required minimum-operational levels, due to the increasing investments in corrective maintenance to address degrading and aging infrastructure.

Site Description

INTRODUCTION:

The Pantex Plant (Pantex) is situated on 18,000 acres in the Texas Panhandle, approximately 17 miles northeast of Amarillo. Pantex has five primary operational missions: (1) Weapons Assembly, (2) Weapons Disassembly, (3) Weapons Evaluation, (4) High Explosive Research and Development, and (5) Interim Plutonium Pit Storage. The site is also aligned with Modernization activities, which include actions to improve throughput capacity, accelerate dismantlements, and support consolidation of special nuclear materials.

ACTIVITIES:

Directed Stockpile Work (DSW)

The Pantex Plant is charged with maintaining the safety, security, and reliability of the nation's nuclear weapons stockpile. Beyond being the principle site for all nuclear explosive assembly/disassembly operations, Pantex evaluates, retrofits, and repairs weapons in support of both the Life Extension Programs (LEP) and surveillance programs for the certification of weapons safety and reliability. As the Enterprise's High Explosive (HE) Center of Excellence, Pantex manufactures new HE and also performs HE surveillance activities for on-going surveillance programs. In support of the non-proliferation core mission, Pantex dismantles weapons that are surplus to the strategic stockpile, provides interim storage, surveillance and monitoring activities for plutonium pits, and conducts demilitarization and sanitation operations on components from dismantled weapons. Interim storage of plutonium pits supports the nation's material strategic reserve and feeds the Advanced Recovery and Integrated Extraction System (ARIES), which is part of the LANL Pit Disassembly and Conversion (PDC) capability for mixed-oxide fuel fabrication.

Engineering Campaign

Pantex supports the Engineering Campaign through the Enhanced Surveillance subprogram by performing aging studies on explosives and non-nuclear materials and components. These results are then provided to the Design Agencies for incorporation into the aging models. Work is also performed with the Design Agencies to develop and deploy new diagnostics tools for implementation into DSW.

Readiness in Technical Base and Facilities (RTBF)

The RTBF Program provides the physical infrastructure and operational capabilities required to conduct the DSW and Campaign activities. This includes ensuring that facilities are operational, safe, secure, and compliant, and that a defined level of readiness is sustained to perform the current and future Pantex mission. The RTBF provides funding directly in the Operations of Facilities program, as well as the Storage, Program Readiness and Container subprograms in order for the site to meet its operational commitments. In addition to these RTBF program elements, construction works cooperatively with the Facilities and Infrastructure Recapitalization Program to provide the required plant infrastructure and facility availability. These funds are crucial to maintaining critical safety systems in support of Nuclear Weapons activities such as linear accelerator maintenance, Radiation Alarm Systems, Fire Suppression Systems, and high explosive (HE) machining capabilities.

Secure Transportation Asset (STA)

Pantex directly supports the safety, security, and timeliness of STA's convoy missions by ensuring the readiness and reliability of the vehicle and trailer fleet and by supporting a base of operations for the Federal Agents who execute the convoys. Pantex staffs, equips, and operates a Vehicle Maintenance Facility and a Mobile-Electronics Maintenance Facility, which provide mechanical and electrical services to Escort Vehicles, Armored Tractors, and Safeguard Transporters.

Facilities and Infrastructure Recapitalization Program (FIRP)

Pantex will prioritize projects for execution that align with the NNSA initiative to enhance reliability of mission essential infrastructure. The FIRP at Pantex will continue to execute deferred maintenance reduction projects in mission critical and mission dependent facilities. This strategy will improve facility system reliability, minimize the risk of unscheduled facility outages and improve safety. Over

the past three years, this strategy has contributed to the increased throughput on NNSA mission objectives for Stockpile Stewardship, Life Extension Program and Retired Weapons Systems.

In FY 2012, planned projects include high pressure fire loop tank replacements, chiller replacements, refurbishment of mission critical facilities housing a gas laboratory, and steam pipe refurbishments. Also, the FY 2012 Budget Request includes planning for FY 2013 recapitalization projects, and continued support of roof repairs executed through the nuclear security enterprise Roof Asset Management Program (RAMP), achieving improved cost efficiencies and life extension of Pantex's roofing assets.

Site Stewardship
In FY 2012, Site Stewardship efforts will be directed toward Environmental Projects and Operations Long Term Stewardship (LTS) activities required for ensuring environmental regulatory compliance; and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The environmental restoration project was completed by the Office of Environmental Management at the end of FY 2008; and in FY 2009 LTS became the responsibility of the NNSA. The NNSA LTS activities include long-term surveillance and maintenance, monitoring, and reporting and will continue to assure protection of public health and the environment.

The 2012 Energy Modernization and Investment Program activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security program at Pantex provides plant protection measures consistent with requirements documented in the Site Safeguards and Security Plan (SSSP). During FY 2012, the site will sustain the 2008 Graded Security Protection Policy upgrades. The program will also focus strongly on life cycle replacement of aging intrusion detection and assessment systems and other protection systems with emphasis on utilization of new technologies.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA Enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all the components of a comprehensive cyber security program; ensures alignment of the program with NNSA and Departmental strategic plans and relevant plans of the Office of the CIO.

Pantex will maintain the cyber security training program for personnel who have system administrator responsibilities. Pantex will also establish an effective program to manage the implementation of wireless computer technologies site-wide. Also, the site will implement cyber security life-cycle management processes, to include upgrading cyber security components.

Fissile Materials Disposition

The Pantex Plant stores surplus pits pending shipment to the Los Alamos National Laboratory in support of the Pit Disassembly and Conversion (PDC) technology demonstration. The Pantex Plant also stores and repackages surplus pits for future shipment to the Savannah River Site for conversion in the PDC prior to fabrication into mixed-oxide fuel.

SANDIA NATIONAL LABORATORIES

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	409,523	545,262	624,590
Science Campaign	35,438	43,296	43,000
Engineering Campaign	82,543	76,700	78,516
Inertial Confinement Fusion Ignition and High Yield Campaign	51,545	48,000	45,000
Advanced Simulation and Computing Campaign	129,621	127,685	129,556
Readiness Campaign	8,451	8,431	11,190
Readiness in Technical Base and Facilities	127,584	136,390	166,705
Secure Transportation Asset	15,851	15,436	11,400
Nuclear Counterterrorism Incident Response	28,629	32,093	28,972
Facilities and Infrastructure Recapitalization Program	11,013	8,747	8,747
Site Stewardship	4,027	8,605	8,764
Defense Nuclear Security	66,700	70,700	69,609
Cyber Security	17,858	17,725	17,725
National Security Applications	0	5,300	5,300
Subtotal Weapons Activities	**988,783**	**1,144,370**	**1,249,074**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	75,635	66,395	74,055
Nonproliferation and International Security	18,211	16,983	18,360
International Nuclear Materials Protection and Cooperation	72,641	71,412	68,431
Global Threat Reduction Initiative	17,038	15,274	27,384
Subtotal Defense Nuclear Nonproliferation	**183,525**	**170,064**	**188,230**
Total, NNSA	**1,172,308**	**1,314,434**	**1,437,304**

* Funding included in Site Stewardship began in FY 2010.

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	724,506	803,324	867,250	820,779
Science Campaign	43,000	43,000	43,000	43,000
Engineering Campaign	92,777	92,271	89,420	90,587
Inertial Confinement Fusion Ignition and High Yield Campaign	45,000	45,000	45,000	45,000
Advanced Simulation and Computing Campaign	127,527	130,899	135,120	139,641
Readiness Campaign	0	10,167	4,420	0
Readiness in Technical Base and Facilities	191,693	173,920	203,380	219,280
Secure Transportation Asset	13,042	16,349	16,519	16,691
Nuclear Counterterrorism Incident Response	29,175	33,258	34,607	35,356
Facilities and Infrastructure Recapitalization Program	8,747	0	0	0
Site Stewardship	10,787	10,439	12,867	13,489
Defense Nuclear Security	70,800	70,900	71,000	71,000
Cyber Security	17,725	17,725	17,725	17,725
National Security Applications	5,300	5,300	5,300	5,300
Subtotal Weapons Activities	**1,380,079**	**1,452,552**	**1,545,608**	**1,517,848**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	71,234	73,321	73,526	77,705
Nonproliferation and International Security	17,752	18,295	18,732	19,061
International Nuclear Materials Protection and Cooperation	68,750	77,880	77,000	60,029
Global Threat Reduction Initiative	25,391	32,543	33,769	37,820
Subtotal Defense Nuclear Nonproliferation	**183,127**	**202,039**	**203,027**	**194,615**
Total, NNSA	**1,563,206**	**1,654,591**	**1,748,635**	**1,712,463**

Congressional Items of Interest: None.

Major Changes or Shifts: The RTBF funding supports the full scope of construction activities for the Test Capabilities Revitalization Phase II project. The majority of the DSW decrease results from moving the B61 life extension activities to the Life Extension Program in anticipation of Nuclear Weapons Council (NWC) approval of B61 Phase 6.3 engineering development. The expected approval would complete the Study and enable a transfer of requirements to the B61 Life Extension Program funding line.

Site Description

INTRODUCTION:

Sandia National Laboratories/New Mexico (SNL/NM) is located on 75,520-acre Kirtland Air Force Base in Albuquerque, New Mexico. It occupies nearly 9,000 acres of the Kirtland reservation and has additional facilities in Livermore, California (400 acres); Kauai, Hawaii (120 acres); and Tonopah, Nevada (600 square miles). SNL is aligned with the nuclear security enterprise modernization activities.

Sandia also conducts operations at California and the Tonopah Test Range (TTR). The NNSA operations at TTR will reduce footprint, upgrade equipment with mobile capability, and conduct NNSA flight tests in a campaign mode. No Category I/II SNM will be used in future flight tests. The SNL's Science, Technology, and Engineering program conducts a large variety of research and development programs that support five key areas: (1) Nuclear Weapons, (2) Nonproliferation and Assessments, (3) Military Technologies and Applications, (4) Energy and Infrastructure Assurance, and (5) Homeland Security.

ACTIVITIES:

Directed Stockpile Work (DSW)
The Sandia National Laboratories (SNL) activities ensure the reliability, safety, and security of the current and future nuclear weapons stockpile. The SNL supports the W76-1 Life Extension Program (LEP) design, qualification, production, and surveillance activities, as well as Retired Systems activities, including required characterization of stockpile weapon components. Other SNL activities include: weapons assessment and certification, surety assessments, the Annual Assessment Process, the Independent Nuclear Weapon Assessment Process, technical basis for stockpile transformation planning, R&D studies, the semi-annual weapon reliability reports, support to the Nuclear Explosive Safety Studies (NESS), laboratory and flight surveillance, neutron generator design and development, gas transfer system design and development for LLNL systems, closure of high-priority Significant Finding Investigations (SFIs), aircraft compatibility, and military liaison with the Department of Defense (DoD). Sandia has design and production mission assignments for neutron generators; arming, fusing and firing components; and a dozen other technologies that require extensive engineering oversight to produce.

Also, SNL supports continuing efforts to examine how the B61 Phase 6.2/6.2A study will move to Phase 6.3 Development Engineering addressing subsystem component development to address issues of safety, security and long-term reliability of the nation's nuclear deterrent.

Science Campaign
The SNL will continue to leverage its unique capabilities and tools in the pulsed power sciences and the materials and process sciences to support the mission of the Science Campaign for stockpile stewardship. The Science Campaign subprogram activities are as follows:

- Advanced Certification: The SNL will continue efforts to establish an accredited warhead certification plan, without nuclear testing, in an era in which changes to nuclear components will occur due to aging or design concerns. Sandia will obtain actinide, gas, and other material equation of state data.

- Dynamic Materials Properties: The Z pulsed-power facility has a unique capability to isentropically (i.e., shocklessly) compress materials and to accelerate flyer plates to shock compress materials to high pressures, thus providing equation-of-state and constitutive property data to the SNL, LANL, and LLNL material communities for inclusion in models and for the quantification of margins and uncertainty (QMU) process. In particular, SNL will continue to conduct experiments to obtain fundamental and integrated data on special nuclear materials (i.e., plutonium) to quantify initial conditions for boost processes and to develop new techniques for measuring dynamic strength on Z. In addition, SNL provides the science basis for developing new non-nuclear

materials, improving fabrication processes, and characterizing the performance of materials based on composition, processing, and microstructure to advance the state of the art.

- Advanced Radiography: In pulsed power at SNL, the advanced radiography capabilities include the design, development, and deployment of state-of-the-art, compact, reliable, and high-intensity flash x-ray radiographic sources for experiments conducted at the Nevada National Security Site (NNSS) and for above ground dynamic experiments for LANL and the Atomic Weapons Establishment (AWE) in support of improved physics models.

- Secondary Assessment Technologies: At the Z pulsed power facility, SNL also develops intense energetic radiation sources, sophisticated x-ray diagnostics, and an enhanced radiographic capability for the Z Beamlet laser and supports the utilization of these sources and diagnostics by LANL for applications to Secondary Assessment Technologies in radiation transport, hydrodynamics, and integrated implosions. In addition, SNL develops plasma radiation source for impulse testing and technical safety requirements (TSR) to support radiation effects studies.

Engineering Campaign

The SNL Engineering Campaign activities develop the modern engineering tools, capabilities, and technologies needed to ensure the safety, security, survivability, reliability, and performance of the existing and future stockpile, and to provide a sustained engineering science basis, through the use of quantified margins and uncertainties, for stockpile assessment and certification. The SNL portion of the Engineering Campaign supports all four subprograms:

- Enhanced Surety: The enhanced surety subprogram continues to provide advanced surety in support of power management systems, sensors, safety-stronglinks, and other related safety components. Also, SNL is developing an external surety architecture that provides substantial improvements in safety and security that will have minimal impact on weapon components.

- Weapons Systems Engineering Assessment Technology: The WSEAT will continue to characterize material properties for abnormal thermal environments and validation of engineering models to support current LEPs and the development of modern baselines for all weapon systems.

- Nuclear Survivability: For the nuclear survivability subprogram, the primary focus continues to be the development and assessment of tools and technologies required to implement the QASPR methodology for upcoming LEPs, alterations, and modifications. Similarly, major R&D efforts are required for system generated electromagnetic pulse phenomena design and qualification tools; technology development for hardening materials; as well as development of qualification tools for those materials in areas of thermomechanical shock, thermostructural response, and impulse generation; and circuit response predictive capabilities.

- Enhanced Surveillance: The enhanced surveillance subprogram performs substantial component and material evaluation (CME) work on several of the major components of nuclear weapons and selected studies in support of the annual assessment process for the nuclear weapons in the current active stockpile. In addition new materials evaluations and material aging studies are performed in support of the W76 LEP, the B61 LEP, and the W88 Alt.

Inertial Confinement Fusion Ignition and High Yield (ICF) Campaign
The SNL ICF activities support the High Energy Density Physics (HEDP) program primarily through experiments at the SNL Z pulsed power facility. The Z will conduct stockpile stewardship experiments in (Dynamic Materials Properties, Secondary Assessment Technologies, and Nuclear Survivability subprograms and Directed Stockpile Work), pulsed-power-ICF and x-ray-source-development experiments, as its primary mission. A small part of the Z agenda will also be devoted to a combination of basic science, z-pinch physics, power flow, and inertial fusion energy experiments.

This ICF Campaign develops, maintains, and operates the entire x-ray particle and laser-based diagnostics required for a full experimental capability at Z. Diagnostic activity also includes development, maintenance, and operation of diagnostics associated with the Z-Beamlet back lighter facility (that is coupled to the Z pulsed-power facility). The SNL ICF program also develops, maintains, and operates multi-dimensional simulation codes and supports the staff that design, perform, and analyze the experiments (including load and target hardware). Research on Z and Z-Beamlet is performed in cooperation and collaboration with other national laboratories including the Defense Threat Reduction Agency laboratories, universities, and the Atomic Weapons Establishment.

Advanced Simulation and Computing (ASC) Campaign
In FY 2012, SNL ASC activities will focus on the following:

- simulation tools that support annual assessments, LEPs, and Significant Finding Investigations (SFIs),

- mission priorities of the Stockpile Stewardship Program (SSP), including the continuing improvement of productivity and certification methodologies (e.g., Quantification of Margins and Uncertainties, or QMU), and

- opportunities to leverage ASC technology in support of other national nuclear security mission needs including secure transportation and emerging threats.

Foundational elements of the SNL ASC program include development of the toolset needed to quantify the uncertainty in the predictions of the NNSA weapons codes – including the effective use of supercomputing and forward looking cost-effective architectures, and application of new methodologies for demonstrating credibility of simulation results.

Readiness Campaign
SNL supports the following Readiness Campaign subprograms.

- Nonnuclear Readiness: Provides the electrical, electronic, and mechanical capabilities required to weaponize a nuclear explosive. This activity deploys the product development and production capabilities required to support nonnuclear product requirements. Nonnuclear functions range from weapon command and control to examining performance during deployment simulations, including weapon structural features, neutron generators, tritium reservoirs, detonators and component testers.

- Tritium Readiness: Continues to model the design of the Tritium Producing Burnable Absorber Rods (TPBARs) for comparison against experimental data gathered during the initial irradiation cycles in order to understand the permeation performance of the TPBARs.

Readiness in Technical Base and Facilities (RTBF)
The RTBF Program supports a broad base of activities that enable the laboratory to meet its mission and obligations to the NNSA and the nation. The activities are derived from the staffing and operation of a number of critical Nuclear Weapons Program capabilities and facilities, operation of test capabilities and test ranges, supporting development work and studies in weapons materials, waste management, education, and high energy density physics readiness. The SNL RTBF projects range from the staffing and operation of complex experimental capabilities (e.g., Tech Area V reactors, Tonopah Test Range, and Environmental Test Facilities) to production and support capabilities (e.g. Microelectronics Development Laboratory, Neutron Generator equipment maintenance, and the Primary Standards Laboratory). Sandia provides the primary standards capabilities for the nuclear security enterprise. Also critical within the RTBF program are efforts to develop programs to maintain key nuclear weapons critical skills and develop the critical capabilities for the next generation of program needs.

Secure Transportation Asset (STA)
The SNL provides design, research, and engineering expertise on transportation safeguards systems. SNL supports the safety and security of STA's transport missions by providing expertise on the research, design, engineering, testing, and analysis of the vehicle and trailer fleet, transportation information systems, all nuclear weapon and material cargo tie-down systems, and the technology and methods employed for the safety and security of nuclear cargo. The SNL conducts safety and security studies and analyzes the risks involving nuclear weapons transportation, along with maintaining the STA safety and security authorization basis. The SNL also staffs, equips, and operates a Vehicle Maintenance Facility which provides mechanical and electrical services to Escort Vehicles, Armored Tractors, and Safeguard Transporters.

Nuclear Counterterrorism Incident Response
The SNL assists NCTIR in operating, exercising, and maintaining DOE's capability to provide assistance to federal, state and local government agencies for responding to radiological accidents and incidents. The SNL deploys trained, qualified technical and professional personnel and specialized equipment and provides research and development, training, exercises, operations, maintenance and required coordination with other federal agencies and foreign governments to effectively address current and projected threats. The SNL is an active participant in the NNSA Nuclear Emergency Support Team (NEST), which can respond to any type of emergency involving radioactive or nuclear materials in the U.S. or abroad. The SNL also supports the National Technical Nuclear Forensics (NTNF) and Stabilization Operations programs, which will continue through the planning period. Other SNL activities include the conduct of operations and technical integration in support of the Joint Technical Operations Team (JTOT), Accident Response Group (ARG), and Home Team (HT) in the form of technical support, research and development, intelligence support, field operations, and training and exercises. In addition, SNL provides research and support to the Office of Emergency Operations with unique expertise in matters of nuclear counterterrorism.

Site Stewardship
Long Term Stewardship (LTS) activities at SNL continue to support remedial actions completed at 263 of 265 release sites. In FY 2012, NNSA LTS activities include program management, maintenance of remedies at a number of environmental restoration sites at SNL/New Mexico, and groundwater monitoring at SNL /California. Energy Modernization and Investment Program activities are aimed at achieving Departmental energy efficiency goals. The 2012 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Facilities and Infrastructure Recapitalization Program (FIRP)
The SNL uses FIRP funding for projects that support refurbishment of building systems and utilities for mission-critical Defense Programs facilities and infrastructure. Recapitalization projects planned for FY 2012 include chiller replacements supporting Sandia's scientific and classified computing resources, exhaust fan and air handling unit replacements in facilities involved with critical R&D, production, and machining activities, and additional road repairs. The SNL will also increase its participation in the complex-wide Roof Asset Management Program (RAMP) by adding the SNL Albuquerque roofs to the RAMP inventory, along with the SNL Livermore site's roofing assets that were added in FY 2010.

Defense Nuclear Security
The Defense Nuclear Security program at SNL provides laboratory protection measures consistent with requirements documented in its Site Security Plan (SSP). In FY 2012, SNL will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets as appropriate; (b) is predicated on Executive Orders; national standards; laws and regulations; and Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA Enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates the components of a comprehensive cyber security program; ensures alignment of the program with NNSA and Departmental strategic plans and relevant plans of the CIO.

The SNL will continue improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades. The SNL will also establish a comprehensive self-assessment program for cyber security. The SNL will lead the effort to deploy a virtual collaboration computing incident response capability complex-wide.

Nonproliferation and Verification Research and Development
The SNL Nonproliferation and Verification R&D program develops new and innovative remote sensing technologies; radiation detection technologies, and other detection and analysis capabilities supporting nuclear fuel cycle monitoring missions; nuclear forensics missions; develops, demonstrates, and validates improvements to data processing and analysis tools in support of ground-based nuclear

detonation detection; designs, develops, and produces new optical detectors for the next generation of U.S. satellite-based monitoring nuclear/radiation detection nuclear detonation detection program.

Nonproliferation and International Security (NIS)
The NIS program at SNL conducts technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, develops nuclear transparency measures, including through technical analysis and technology development, and supports policymaking and negotiations regarding various arms control and nonproliferation regimes. The program also supports the implementation and development of the HEU Transparency Program. The program provides support for licensing and interdiction operations through reviews of export controlled items, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, policy support, multilateral outreach through support efforts for policymaking and negotiations regarding various nonproliferation control regimes, and international cooperation. The program supports regional security efforts and export control activities and NNSA regional security objectives, particularly with the Cooperative Monitoring Center. In addition, the program supports international physical protection cooperation and holds trainings, including on a revised INFCIRC/225 document; support to IAEA and USG meetings abroad to strengthen physical protection measures globally; support of IAEA's efforts to conduct a review of its training program; support for the development of a Security-by-Design program; and development of the IAEA's nuclear security documents. The SNL also provides support for the IAEA Advisory Group on Nuclear Security (AdSec) and it's Task Force. The Program also supports U.S. assessment visits to other countries of U.S.-obligated nuclear materials. The program helps create business opportunities for displaced Iraqi weapons workers and engages former weapons of mass destruction scientists and engineers in civilian activity. The SNL also examines existing or evolving proliferation problems through technical studies and provides a broad range of support to efforts within multilateral nuclear export control organizations, such as the Nuclear Suppliers Group and the Zangger Committee.

International Nuclear Materials Protection and Cooperation (INMP&C)
The INMP&C program at SNL provides experience with the design and installation of physical protection systems and has specific technical expertise in access delay systems; intrusion detection and assessment systems and associated display systems; access control systems; and vulnerability analysis procedures, processes and associated computer codes. The program at SNL also provides technical expertise to advise Russian Institutes, Enterprises, and Government Agencies as they develop and implement physical protection systems, regulations, and sustainability and training programs and to support the Second Line of Defense program. Additionally, the program at SNL supports installation of radiation detection equipment at border crossings and airports/seaports within both Russia and the Former Soviet Union States under the Second Line of Defense Core Program and at major container shipping terminals within the global maritime cargo transportation system under the Second Line of Defense Program's Megaports Initiative.

Global Threat Reduction Initiative (GTRI)
In FY 2012, the SNL provides significant technical, scientific, and management expertise to two of the three key subprograms of GTRI–Remove and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram

supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

SAVANNAH RIVER SITE

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	40,920	43,164	46,393
Engineering Campaign	2,460	1,886	2,142
Advanced Simulation and Computing Campaign	75	0	0
Readiness Campaign	31,388	30,753	32,300
Readiness in Technical Base and Facilities	125,931	99,496	103,576
Nuclear Counterterrorism Incident Response	2,449	2,571	2,700
Site Stewardship	0	1,051	1,500
Defense Nuclear Security	12,668	8,500	8,600
Cyber Security	5,335	5,335	5,335
Subtotal Weapons Activities	**221,226**	**192,756**	**202,546**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	13,369	7,791	9,367
Nonproliferation and International Security	5,123	4,778	4,806
International Nuclear Materials Protection and Cooperation	1,021	695	1,250
Fissile Materials Disposition	664,634	821,832	789,466
Global Threat Reduction Initiative	9,375	42,364	14,594
Subtotal Defense Nuclear Nonproliferation	**693,522**	**877,460**	**819,483**
Total, NNSA	**914,748**	**1,070,216**	**1,022,029**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	47,924	48,339	51,449	53,482
Engineering Campaign	1,776	1,964	1,941	1,978
Readiness Campaign	37,589	46,080	42,501	40,949
Readiness in Technical Base and Facilities	128,407	134,792	136,414	140,031
Nuclear Counterterrorism Incident Response	2,835	2,800	2,876	2,970
Site Stewardship	1,502	1,390	1,693	1,757
Defense Nuclear Security	8,700	8,800	23,900	64,899
Cyber Security	5,335	5,335	5,335	5,335
Subtotal Weapons Activities	**234,068**	**249,500**	**266,109**	**311,401**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	8,359	8,604	8,628	9,118
Nonproliferation and International Security	4,994	5,148	5,270	5,362
International Nuclear Materials Protection and Cooperation	1,250	1,416	1,400	1,092
Fissile Materials Disposition	980,412	829,815	853,299	962,581
Global Threat Reduction Initiative	13,971	17,907	18,581	20,810
Subtotal Defense Nuclear Nonproliferation	**1,008,986**	**862,890**	**887,178**	**998,963**
Total, NNSA	**1,243,054**	**1,112,390**	**1,153,287**	**1,310,364**

Congressional Items of Interest: Construction of the Mixed-Oxide Fuel Fabrication Facility and the related facilities in support of U.S. plutonium disposition activities.

Major Changes and Shifts: The request for Readiness Campaign funding increases to support the increase of tritium production from 240 TPBARs per cycle to 544 TPBARs per cycle; capital projects at the Tritium Extraction Facility (TEF) for repairs and improvements; and for initial procurement and installation preparations for the large water management tank at TVA's Watts Bar reactor.

Site Description

INTRODUCTION:

The Savannah River Site (SRS) spans approximately 310 square miles bordering the Savannah River in western South Carolina. The Department of Energy Office of Environmental Management is the site landlord. The Savannah River Site is designated as a National Environmental Research Park and covers a small portion of Aiken, Barnwell, and Allendale counties.

The SRS Tritium Facilities, which occupy a portion of the total site, are supporting the National Nuclear Security Administration (NNSA) Stockpile Stewardship and Stockpile Evaluation programs, and are executing a plan to meet the challenges of the future through the following core missions:

- Provide tritium and non-tritium loaded reservoirs to meet Nuclear Weapons Stockpile Plan requirements;

- Conduct the Stockpile Evaluation Program; and

- Extract tritium produced at TVA reactors.

The SRS Tritium Facilities are aligned with nuclear security enterprise modernization activities. The SRS will remain the site for tritium supply management and provide R&D support to production operations and gas transfer system development. In addition, the plans are reducing its facility square footage by greater than 25 percent.

ACTIVITIES:

Directed Stockpile Work (DSW)
The SRS activities include processing tritium and inert reservoirs and associated components in support of the Life Extension Program (LEP) and enduring weapon systems. The LEP activities include production Retrofit Evaluation System Test (REST) surveillance, and production sampling evaluation associated with the refurbishment of the W76-1. Stockpile Systems categories include Limited Life Component Exchange (LLCE), Gas Transfer System (GTS) Surveillance, Stockpile Laboratory Tests (SLTs), and Life Storage Program (LSP) activities. Reservoirs and associated parts will be processed as necessary to support LLCE schedules per production directive requirements for the enduring stockpile. Retired Systems include reservoirs returned from retired weapons that will be unloaded, welded closed for disposal, or managed per NNSA requirements.

Engineering Campaign
The SRS supports the Enhanced Surveillance subprogram of the Engineering Campaign by developing the tools, techniques, and procedures to advance the capabilities of the nuclear security enterprise to measure, analyze, calculate, and predict the effects of aging on certain weapons materials, components, and systems to determine if and/or when these effects will impact weapon reliability, safety, or performance. Specifically, the SRS role in this campaign is to develop methods for surveillance of tritium reservoirs and other Gas Transfer System components as well as provide power management technology support. Also, SRS supports the Enhanced Surety subprogram of the Engineering Campaign through power management system R&D and tritium-related material aging experiments.

Readiness Campaign
The SRS supports the Tritium Readiness sub-program, which manages the TEF extraction operations to extract tritium safely, efficiently, and economically from commercially irradiated TPBARs, provide related technical liaison with the TPBAR development, irradiation and transportation activities, and provide technical and program support to the Tritium Readiness manager in accordance with annual or specific tasking guidance. The SRS primarily supports the TEF operations. DOE Chicago transferred administration of the NAC International transportation contract to SRS in late FY 2010.

Readiness in Technical Base and Facilities (RTBF)
The RTBF program at SRS maintains the facilities and infrastructure in a readiness state in support of the DSW missions, including LEPs, Stockpile Services, and Production Support. Operations of

Facilities include facilities management and support activities for mission operations. Preventive, predictive, and corrective maintenance of process and infrastructure equipment/facilities are performed. Environmental, safety, and health activities are conducted to ensure the well being of SRS workers, the public, and the environment, as well as developing and providing updates to the Authorization Bases. Contracted costs of providing utilities to the SRS Tritium Facilities are included. Capital equipment and general plant projects that meet base maintenance and infrastructure needs are planned and executed to maintain the safety, utility, and capability of the process facilities. Material Recycle and Recovery involves recovery and purification of tritium, deuterium, and helium-3 gases from reservoir recycle gas, hydride storage vessels, and facility effluent-cleanup systems. The SRS performs physical maintenance of various shipping containers, and provides operational, regulatory, and technical support of Pressure Vessels. The SRS also designs and tests replacement shipping containers for use within the DOE Enterprise.

The SRS will implement an effective risk management program for cyber security to ensure protection of NNSA information and information assets. In FY 2012, SRS will implement effective mechanisms to identify cyber security vulnerabilities and threats to the computing infrastructure.

Secure Transportation Asset (STA)
The SRS provides management, quality assurance, personnel training, and preventative and corrective maintenance services in support of the South Carolina Relay Station. This facility is a vital part of the communications system dedicated to the tracking and safeguarding of STA shipments.

Facilities and Infrastructure Recapitalization Program (FIRP)
The FIRP has allowed the SRS to achieve a reduction of the baseline deferred maintenance to facilities and infrastructure, including roof replacements, renovations to end-of-life electrical distribution systems and fire protection systems, and replacement of HVAC systems. In FY 2012, FIRP funds will continue to support high-priority projects that restore and rehabilitate mission critical facilities and infrastructure. Specific projects planned include replacement of deteriorated fire protection systems. The SRS roof assets will also be added to the inventory of the complex-wide Roof Asset Management Program (RAMP) and become eligible for RAMP funded roof repairs/replacements.

Site Stewardship
In FY 2012, Site Stewardship efforts will be directed toward Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The 2012 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost avoidances/savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution. Nuclear Materials Integration efforts will continue to include analytical studies and project management support for consolidation and disposition of plutonium, uranium and other nuclear materials.

Defense Nuclear Security
The Defense Nuclear Security program at SRS provides security for the Tritium Facility consistent with requirements documented in its approved facility Master Security Plan. In FY 2012, the security program will also focus on defining NNSA's role in MOX security in the outyears.

Cyber Security
The NNSA Cyber Security program implements a flexible, comprehensive, and risk-based cyber security program that (a) protects the NNSA information and information assets; (b) is predicated on Executive Orders; national standards; laws and regulations; Departmental and NNSA orders, manuals, directives and guidance; and (c) results in a policy-driven cyber security architecture; aligned with the NNSA Enterprise architecture; a programmatic framework and methodology that is based on current policies and procedures; and a management approach that integrates all the components of a comprehensive cyber security program; ensures alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.

Nonproliferation and Verification Research and Development
The SRS supports the Nonproliferation and Verification R&D program with: nuclear materials analysis efforts (advance mass spectrometry developments, ultra-sensitive separation, and detection techniques); characterization of nuclear materials; state-of-the-art scientific research to define improved effluent collection systems; develops new and innovative proliferation detection technologies and analysis capabilities supporting nuclear fuel cycle monitoring missions, nuclear forensics missions, and other proliferation detection technology thrusts.

Nonproliferation and International Security (NIS)
The SRS provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, Plutonium Production Reactor Agreement implementation, and the development of nuclear transparency measures. In addition, SRS assists technical analysis and technology development, and assists regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. The SRS program provides reviews of export controlled equipment, materials and software, and foreign customers, and analytical tools and technical references for use in developing recommendations on U.S. export licensing applications, interdictions, international safeguards, physical protection, technology assessments, policy support and nonproliferation assessments, multilateral outreach through support efforts for policymaking and negotiations regarding various nonproliferation control regimes, and international cooperation, primarily in the Former Soviet Union but increasingly in transit states as well. The SRS supports development of safeguards, tools and methodologies such as International Atomic Energy Agency (IAEA) environmental sampling and spent fuel monitoring techniques, as well as training to foreign nationals as needed. The program also provides technical support on nuclear safeguards, safety, and security to developing countries interested in nuclear power under the nuclear infrastructure development efforts. The program provides instructors, curriculum development and other support for export control outreach as well as analytical services in support of border security capacity building outreach efforts and technical assistance support for nuclear forensics engagement program. The SRS further participates in projects that engage former weapons of mass destruction (WMD) scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific business communities.

International Nuclear Materials Protection and Cooperation
The Materials Protection Cooperation and Accounting (MPC&A) program within INMP&C provides a wealth of expertise through material accounting methodologies, specialized material verification techniques, project and construction management for storage facilities, and language specialization. This program has designed and developed computerized accounting systems that are currently operating

at several Russian Enterprises. The NNSA is working with SRS in the use of material controls, particularly with the active-nonviolent insider threats when completing MPC&A upgrades at all Russian Enterprises. Furthermore, program laboratory experts provide technical solutions to Second Line of Defense (SLD) Core and Megaports programs including scientific analysis and testing of radiation detection systems. In addition, the program supports installation of radiation detection equipment at border crossings and airports/seaports within both Russia and the Former Soviet Union States under the SLD Core Program and at major container shipping terminals within the global maritime cargo transportation system under the SLD's Megaports Initiative.

Fissile Materials Disposition (FMD)

The FMD program at SRS supports disposition of U.S. plutonium and has the overall lead for the Mixed-Oxide (MOX) Fuel Fabrication Facility (MFFF), the Waste Solidification Building (WSB) and the Pit Disassembly and Conversion (PDC) Project. The SRS will provide project and contract management support for the U.S. plutonium disposition program, which includes MFFF, PDC and the WSB. A DOE prime contractor, Shaw AREVA MOX Services, is responsible for the design and construction of the MOX FFF, and the site M&O is responsible for construction and operation of the WSB. In addition, during the construction phase, the site M&O contractor is responsible for the site infrastructure, electric power, water and sewer, roads, communications, waste management, fire protection, security and related services for the MFFF project, and integration, design authority, and operation of the PDC Project. The URS Corporation is the design authority for the PDC project, leading an integrated design team with SRNS and LANL as key members. Finally, the FMD program provides support for qualification, irradiation, transportation, and procurement and characterization of feed materials for MOX fuel.

Global Threat Reduction Initiative (GTRI)

In FY 2012, the Savannah River Site provides significant technical, scientific, and management expertise to one of the three key subprograms of GTRI–Remove–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide.

Y-12 NATIONAL SECURITY COMPLEX

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	228,215	223,298	255,012
Engineering Campaign	5,234	3,500	3,208
Advanced Simulation and Computing Campaign	724	500	0
Readiness Campaign	5,072	11,781	0
Readiness in Technical Base and Facilities	403,798	403,988	532,782
Secure Transportation Asset	5,495	3,278	6,296
Nuclear Counterterrorism Incident Response	1,278	1,342	1,480
Facilities and Infrastructure Recapitalization Program	17,033	21,069	23,449
Site Stewardship	7,000	8,350	9,165
Defense Nuclear Security	211,000	148,000	150,355
Cyber Security	6,920	6,700	7,457
Subtotal Weapons Activities	**891,769**	**831,806**	**989,204**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	1,631	2,467	2,852
Nonproliferation and International Security	1,491	1,391	1,559
International Nuclear Materials Protection and Cooperation	2,572	2,138	6,121
Fissile Materials Disposition	34,451	35,345	36,284
Global Threat Reduction Initiative	12,855	38,706	22,245
Subtotal Defense Nuclear Nonproliferation	**53,000**	**80,047**	**69,061**
Total, NNSA	**944,769**	**911,853**	**1,058,265**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Directed Stockpile Work	221,407	242,394	262,489	276,927
Engineering Campaign	2,159	2,307	2,258	2,335
Readiness Campaign	560	0	586	600
Readiness in Technical Base and Facilities	554,575	703,073	710,020	717,088
Secure Transportation Asset	6,422	6,551	6,682	6,815
Nuclear Counterterrorism Incident Response	1,479	1,496	1,511	1,550
Facilities and Infrastructure Recapitalization Program	21,069	0	0	0
Site Stewardship	13,003	24,025	41,894	27,376
Defense Nuclear Security	151,200	152,800	154,100	154,200
Cyber Security	6,700	6,700	6,700	6,700
Subtotal Weapons Activities	**978,574**	**1,139,346**	**1,186,240**	**1,193,591**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	2,647	2,724	2,732	2,887
Nonproliferation and International Security	1,454	1,499	1,534	1,561
International Nuclear Materials Protection and Cooperation	5,500	6,230	6,160	4,802
Fissile Materials Disposition	25,760	26,367	26,480	26,480
Global Threat Reduction Initiative	19,157	24,554	25,479	28,535
Subtotal Defense Nuclear Nonproliferation	**54,518**	**61,374**	**62,385**	**64,265**
Total, NNSA	**1,033,092**	**1,200,720**	**1,248,625**	**1,257,856**

Congressional Items of Interest: Completed construction of the Highly Enriched Uranium Materials Facility and continue support for the Uranium Processing Facility.

Major Changes or Shifts: Decreases in DSW Production Support funding are associated with a corresponding decrease in support to dismantlement activity and moving the B61 life extension activities from Stockpile Systems to the Life Extension Program in anticipation of NWC approval B61 Phase 6.3 engineering development. The UPF has increased funding for final design of long-lead procurements. Stockpile Readiness funding at Y-12 has been zeroed out to support the integration of the Nonnuclear Readiness subprogram with the Directed Stockpile Work (DSW) mission and to provide funds for maintaining production in the Tritium Readiness subprogram at other NNSA sites.

Site Description

INTRODUCTION:

The Y-12 National Security Complex is located in the Bear Creek Valley of East Tennessee, adjacent to Oak Ridge, and approximately 15 miles from Knoxville, Tennessee. The facility is located on 811 acres, spanning 2.5 miles, with some 500 buildings that house some 7 million square feet of laboratory, machining, dismantlement, and research and development areas.

The Y-12 role includes the following activities:

- Manufacturing and assessing nuclear-weapon secondaries, cases, and other weapons components;
- Dismantling weapons secondaries returned from the stockpile;
- Providing safe and secure storage and management of special nuclear material;
- Supplying special nuclear material for use in naval reactors;
- Promoting international nuclear safety and nonproliferation;
- Reducing global dangers from weapons of mass destruction, and
- Supporting U.S. leadership in science and technology.

The modernization activities for Y-12 reflects consolidation of storage and manufacturing operations of special nuclear material (SNM), footprint reduction, infrastructure revitalization, completion of the Highly Enriched Uranium Materials Facility (HEUMF) and construction of a new Uranium Processing Facility (UPF). In addition, the Protected Area Reduction Project (PARP) will complete the high security area perimeter and a future proposal, the Consolidated Manufacturing Complex (CMC) will consolidate all non-enriched uranium manufacturing operations. The completion of both near-term and long-term actions will enable:

- Reducing the site "footprint" by nearly 90 percent, thereby reducing the cost of security for special nuclear materials;
- Consolidating manufacturing and processing operations to reduce the number of facilities square footage required, improve workflow efficiencies, and facilitate reduction of high-security perimeter;
- Consolidating material storage operations to reduce the number of buildings, square footage, and long-term maintenance operating cost;
- Consolidating administrative and technical operations into permanent and new facilities based on functional, security, and workflow requirements, and
- Consolidating plant support operations into permanent new facilities to improve workflow efficiency and reduce long-term maintenance, operation and security costs.

ACTIVITIES:

Directed Stockpile Work (DSW)

The DSW Y-12 activities include weapon secondary manufacturing, quality evaluation, disposition, and case manufacturing. Y-12 supports increased emphasis on conducting surveillance of the existing stockpile, predicting its life, performing refurbishments for the Life Extension Program (LEP), dismantling weapons, and providing safe, secure management, and storage of the nation's inventory of

highly enriched uranium (HEU) and other weapons materials. Significant tasks include the steady-state rate production of the W76-1 LEP. Stockpile Systems quality evaluations will also continue, as will dismantlement of selected retired weapon systems components.

Engineering Campaign
The Y-12 National Security Complex supports the Engineering Campaign through the Enhanced Surveillance subprogram by providing improved surveillance tools, diagnostics and methods, including non-destructive techniques for canned sub-assemblies, cases, and nonnuclear components. These results are then provided to the design laboratories for incorporation into the DSW program for transforming surveillance to be more predictive in finding defects in weapons. Lifetime-prediction efforts include work to improve knowledge of weapon materials, materials interactions, and aging phenomena.

Readiness in Technical Base and Facilities (RTBF)
The RTBF program ensures the readiness of the facilities, infrastructure, materials, and personnel to support Defense Programs mission objectives at Y-12.

The elements of the Y-12 RTBF Program include the following:

- Maintaining base operations support for the entire site infrastructure of approximately 350 Y-12 buildings, as well as base operations including maintenance, utilities, and compliance;
- Providing construction line item management, including all pre-conceptual planning and other project costs (OPCs) for all RTBF-funded line items;
- Developing and updating the master site plan and Ten Year Site Plans (TYSP);
- Providing inter- and intra-site containers for the transportation of SNM and waste;
- Providing for the management and storage of HEU and other SNM;
- Managing legacy material disposition to promote footprint reduction and compliance with environmental and security requirements;
- Providing for the recycle and recovery of HEU and Lithium;
- Managing responsibilities associated with the Chronic Beryllium Disease Prevention Program (CBDPP), and
- Consolidating excess uranium and other nuclear materials from the NNSA Enterprise.

Construction of the Highly Enriched Uranium Materials Facility has been completed, and the Uranium Processing Facility design is underway. These facilities will provide modern, consolidated enriched uranium storage and production and enable a 90 percent reduction of the high security area.

Secure Transportation Asset (STA)
The Y-12 National Security Complex directly supports the safety, security, and timeliness of STA's convoy missions by ensuring the readiness and reliability of the vehicle and trailer fleet and by supporting a base of operations for the Federal Agents who execute the convoys. The Y-12 staffs, equips, and operates a Vehicle Maintenance Facility and a Mobile-Electronics Maintenance Facility, which provide mechanical and electrical services to Escort Vehicles, Armored Tractors, and Safeguard Transporters.

Facilities and Infrastructure Recapitalization Program (FIRP)
The facility conditions of Y-12 are noticeably improved due in large measure to the aggressive execution of the Facilities and Infrastructure Recapitalization Program. The FIRP at Y-12 has established a deferred maintenance reduction program focused on mission facilities and infrastructure projects that directly support DSW, Campaigns, and modernization of the enterprise. In FY 2012, recapitalization projects will address deficiencies in electrical, HVAC, utility, and specialty systems across the site. The FIRP at Y-12 will also continue to participate in the nuclear security enterprise Roof Asset Management Program (RAMP) to correct priority deficiencies and extend the life of the site's roofing assets.

Site Stewardship
In FY 2012, Site Stewardship efforts will be directed toward reducing/consolidating SNM inventories and Energy Modernization and Investment Program activities aimed at achieving Departmental energy efficiency goals. The 2012 EMIP activities support priority energy conservation projects that will reduce energy consumption, enhance energy independence and security and provide life-cycle cost effective benefits. Projects that provide the most significant contribution towards achievement of NNSA's energy goals and result in cost savings and social benefits will be selected from the EMIP Integrated Prioritized Project List (IPPL) for execution.

Defense Nuclear Security
The Defense Nuclear Security program at Y-12 National Security Complex provides site protection measures consistent with protection requirements documented in the facility Site Safeguards and Security Plan (SSSP). In FY 2012, activities will focus on execution of the 2008 Graded Security Protection (GSP) policy implementation plan, including consolidation of SNM, adding protective force posts and redeploying protective force personnel, implement new vehicle delay measures, and other interim barrier features. The Y-12 Defense Nuclear Security Program will continue to focus on improving the efficiency of the security program, including modernization of the security infrastructure and implementation of technology upgrades.

Cyber Security
The Cyber Security program at the Y-12 National Security Complex is administered by the Y-12 Site Office. The Cyber Security program implements a flexible, comprehensive, and risk-based program that (a) protects the NNSA information and information assets; (b) is predicated on Executive Orders, national standards, laws and regulations, Departmental and NNSA orders, manuals, directives, and guidance; and (c) results in a policy-driven cyber security architecture aligned with the NNSA enterprise architecture, a programmatic framework and methodology that is based on current policies and procedures, a management approach that integrates all of the components of a comprehensive cyber

security program, and an alignment of the program with the NNSA and Departmental strategic plans and relevant plans of the CIO.

The Y-12 cyber security program will ensure preventive maintenance measures for cyber security within the Y-12 computing infrastructure. Also, Y-12 will establish a risk program to address the implementation of wireless technologies site-wide. The Y-12 National Security Complex will implement cyber protection measures consistent with national protection requirements.

Nonproliferation and Verification Research and Development
The Y-12 program supports the Nonproliferation R&D Simulation, Algorithm, and Modeling team effort with assessment support. Additionally, the Y-12 program supports advanced materials analysis and enrichment studies.

Fissile Materials Disposition (FMD)
The Y-12 FMD program supports disposition activities through the HEU Disposition Program Office. The program also provides form conversions and packaging of surplus HEU for shipment to down-blending contractors. The FMD program provides for planning and implementation of HEU disposition activities, which include blending and transfer of off-specification materials to the Tennessee Valley Authority, transfer of materials to Nuclear Fuel Services for down-blending associated with the Reliable Fuel Supply initiative, MOX LEU Backup Inventory Project and the Research Reactor Sales Project, tracking and evaluation of surplus HEU inventories, and planning for disposition of unallocated surplus HEU material. The FMD program supports planning and implementing the disposition program in areas of strategic and tactical planning, oversight, technical analyses, regulatory coordination, business development and marketing, and coordination of interfaces among key participants and stakeholders. The program also manages the design, certification, and procurement of shipping containers for surplus HEU and plutonium.

Global Threat Reduction Initiative (GTRI)
In FY 2012, the Y-12 National Security Complex will provide significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

ARGONNE NATIONAL LABORATORY

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Advanced Simulation and Computing Campaign	1,000	0	0
Readiness in Technical Base and Facilities	380	0	0
Nuclear Counterterrorism Incident Response	2,297	2,412	2,480
Subtotal Weapons Activities	**3,677**	**2,412**	**2,480**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification Research & Development	2,523	1,025	1,065
Nonproliferation and International Security	6,662	6,213	6,250
International Nuclear Materials Protection and Cooperation	2,237	1,619	3,125
Global Threat Reduction Initiative	38,125	54,129	55,473
Subtotal Defense Nuclear Nonproliferation	**49,547**	**62,986**	**65,913**
Total, NNSA	**53,224**	**65,398**	**68,393**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	2,280	2,305	2,200	2,248
Subtotal Weapons Activities	**2,280**	**2,305**	**2,200**	**2,248**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	1,100	1,132	1,135	1,200
Nonproliferation and International Security	6,495	6,694	6,854	6,973
International Nuclear Materials Protection and Cooperation	3,125	3,540	3,500	2,729
Global Threat Reduction Initiative	56,816	72,820	75,564	84,627
Subtotal Defense Nuclear Nonproliferation	**67,536**	**84,186**	**87,053**	**95,529**
Total, NNSA	**69,816**	**86,491**	**89,253**	**97,777**

Congressional Items of Interest: The Global Threat Reduction Initiative funding supports the mission to Convert, Remove, and Protect vulnerable nuclear and radiological material worldwide within four years.

Major Changes or Shifts: None.

Site Description

INTRODUCTION:

The Argonne National Laboratory (ANL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Nuclear Counterterrorism Incident Response
The Nuclear Counterterrorism Incident Response Radiological Assistance Program (RAP) at Argonne is the second largest Regional Response Coordinator. In FY 2012, the program will continue to provide emergency response training assistance to federal, state, tribal and local governments through the WMD First Responder Training program and technical integration.

Nonproliferation and Verification Research and Development
The Argonne program supports the Nonproliferation R&D Simulation, Algorithm, and Modeling team effort with assessment support. Additionally, the program looks at advanced methods in modeling validation.

Nonproliferation and International Security (NIS)
In FY 2012, the ANL-NIS program will continue to provide safeguards support, specifically in the area of vulnerability assessment support for foreign sites of interest, training to foreign nationals as needed, Additional Protocol outreach and training, and safeguards agreement implementation The ANL-NIS program supports implementing the HEU Transparency Program and establishing and maintaining readiness for denuclearization efforts in North Korea and other proliferating countries. The ANL-NIS program supports export control operations through reviews of: 1) export controlled equipment, materials and software; 2) analytical tools and technical references for use in developing recommendations on U.S. export license applications and interdictions; 3) managing and providing WMD training to foreign export control officials and U.S. Enforcement agencies; and 4) technical reach back on enforcement investigations. The NIS program supports safeguards internships at ANL to advance NGSI's human capital development goals. The ANL also examines existing or evolving proliferation problems through technical studies and provides a broad range of support to efforts within multilateral nuclear export control organizations, such as the Nuclear Suppliers Group. The NGSI efforts at ANL emphasize development of process monitoring tools and coordination with domestic fuel cycle safeguards R&D. In addition, the ANL-NIS program engages former WMD scientists and engineers in peaceful civilian purposes.

Global Threat Reduction Initiative (GTRI)
In FY 2012, the Argonne National Laboratory (ANL) will provide significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and

international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

BROOKHAVEN NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Readiness in Technical Base and Facilities	150	0	0
Nuclear Counterterrorism Incident Response	1,787	1,876	1,970
Subtotal Weapons Activities	**1,937**	**1,876**	**1,970**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	4,195	2,155	2,239
Nonproliferation and International Security	5,868	4,074	4,098
International Nuclear Materials Protection and Cooperation	18,169	12,348	12,500
Global Threat Reduction Initiative	460	543	681
Subtotal Defense Nuclear Nonproliferation	**28,692**	**19,120**	**19,518**
Total, NNSA	**30,629**	**20,996**	**21,488**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	2,019	2,042	2,060	2,100
Subtotal Weapons Activities	**2,019**	**2,042**	**2,060**	**2,100**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	2,312	2,380	2,386	2,522
Nonproliferation and International Security	4,259	4,389	4,494	4,572
International Nuclear Materials Protection and Cooperation	12,500	14,160	14,000	10,914
Global Threat Reduction Initiative	686	879	912	1,021
Subtotal Defense Nuclear Nonproliferation	**19,757**	**21,808**	**21,792**	**19,029**
Total, NNSA	**21,776**	**23,850**	**23,852**	**21,129**

Congressional Items of Interest: None.

Major Changes or Shifts: None.

Site Description

INTRODUCTION:

The Brookhaven National Laboratory (BNL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Nuclear Counterterrorism Incident Response
The Nuclear Counterterrorism Incident Response Radiological Assistance Program (RAP) at Brookhaven is the largest Regional Response Coordinator for first response radiological assistance to protect the health and safety of the public and the environment. In FY 2012, the RAP will focus on emergency response training, joint participation drills, exercises and support.

Nonproliferation and Verification Research and Development
The BNL Nonproliferation and Verification R&D program develops radiation detection, scientific foundations, and instrumentation to improve the technical foundations of radiation detection through demonstrations of advanced concepts and systems to detect and track fissile materials.

Nonproliferation and International Security (NIS)
The BNL-NIS program supports international safeguards technology assessment, policy support and nonproliferation assessment. In addition, the NIS program helps create business opportunities for displaced weapons workers and engages former WMD scientists and engineers in civilian activity, redirecting their expertise to peaceful purposes and integrating them into the larger international scientific and business communities. Additionally, the BNL-NIS program provides support for the U.S. Support Program to IAEA Safeguards, the development of nuclear transparency measures, and USG efforts to prepare for denuclearization and verification efforts in North Korea and other proliferating countries. The BNL-NIS also provides administrative support to NGSI human capital development efforts.

International Nuclear Materials Protection and Cooperation (MPC&A)
The INMP&C program at BNL provides experience in the design and implementation of MPC&A upgrades on Russian facilities by virtue of their actual work at such facilities and by their involvement with developing MPC&A approaches for such facilities. The BNL provides experience in contracting with various Russian vendors, including government-run institutes, and contracts all of the down blending activities for material conversion and consolidation. Also, the BNL provides support in the development and delivery of MPC&A training courses, as well as support for the Material Control and Accountability Measurements Project. The BNL is the lead laboratory that provides support for the MPC&A Operations Monitoring Project, the Technical Survey Team Project, the Insider Threat Review Project, and for the Project Planning and Effectiveness Project.

CHICAGO OPERATIONS OFFICE

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Inertial Confinement FusionIgnition and High Yield Campaign	8	0	0
Advanced Simulation and Computing Campaign	5,311	4,800	0
Readiness Campaign	9,672	9,436	0
Subtotal Weapons Activities	**14,991**	**14,236**	**0**
Total, NNSA	**14,991**	**14,236**	**0**

OUT-YEAR FUNDING:

There is no out-year funding for Chicago Operations Office.

Congressional Items of Interest: None.

Major Changes or Shifts: None.

Site Description

INTRODUCTION:

DOE Chicago transferred administration of the NAC International transportation contract to Savannah River Site in late FY 2010.

ACTIVITIES:

Readiness Campaign
The Readiness Campaign Chicago Operations (CHO) program supports the Tritium Readiness activity that re-established and operates the tritium production capability to sustain the nuclear weapons stockpile. The activity is being implemented at the Tennessee Valley Authority's Watts Bar reactor.

IDAHO NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	180	0	0
Readiness Campaign	2,595	3,419	3,845
Readiness in Technical Base and Facilities	5,045	0	0
Nuclear Counterterrorism Incident Response	615	646	678
Site Stewardship	0	5,214	4,300
Subtotal Weapons Activities	**8,435**	**9,279**	**8,823**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	3,745	2,943	3,204
Nonproliferation and International Security	8,098	7,552	7,966
International Nuclear Materials Protection and Cooperation	2,525	1,730	2,424
Global Threat Reduction Initiative	86,049	122,842	131,191
Subtotal Defense Nuclear Nonproliferation	**100,417**	**135,067**	**144,785**
Naval Reactors	**79,200**	**93,400**	**105,000**
Total, NNSA	**188,052**	**237,746**	**258,608**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Readiness Campaign	1,591	0	0	0
Nuclear Counterterrorism Incident Response	712	720	727	747
Site Stewardship	5,600	4,200	5,250	5,250
Subtotal Weapons Activities	**7,903**	**4,920**	**5,977**	**5,997**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	3,157	3,250	3,259	3,445
Nonproliferation and International Security	7,895	8,137	8,330	8,476
International Nuclear Materials Protection and Cooperation	2,313	2,620	2,590	2,019
Global Threat Reduction Initiative	128,235	164,357	170,550	191,005
Subtotal Defense Nuclear Nonproliferation	**141,600**	**178,364**	**184,729**	**204,945**
Naval Reactors	**87,300**	**72,300**	**81,400**	**126,800**
Total, NNSA	**236,803**	**255,584**	**272,106**	**337,742**

Congressional Items of Interest: The Global Threat Reduction Initiative funding supports the mission to Convert, Remove, and Protect vulnerable nuclear and radiological material worldwide within four years.

Major Changes or Shifts: None.

Site Description

INTRODUCTION:

The Idaho National Laboratory (INL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Nuclear Energy is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Readiness Campaign

The Readiness Campaign INL program supports the Tritium Readiness sub-program that re-established and operates the tritium production capability to sustain the nuclear weapons stockpile.

Site Stewardship

The Site Stewardship program will continue to treat and dispose of certain NNSA materials currently stored at the INL.

Nonproliferation and Verification Research and Development

Idaho National Laboratory supports the Nonproliferation and Verification R&D program with: modeling of sensor optimization and data integration; experimentation for the identification of proliferation signatures; enhanced SNM movement detection with bremsstrahlung NRF and active neutron interrogation.

Nonproliferation and International Security (NIS)

The INL NIS program provides support for conducting technical exchanges and development of nuclear transparency measures under the Warhead and Fissile Material Transparency program. The NIS program at INL also includes efforts in support of the Next Generation Safeguards Initiative, particularly in the areas of Safeguards by Design (SBD) and NGSI Human Capital Development. Activities for SBD include preparation of SBD Guidance documents and Industry engagement. Engagement with industry provides an opportunity to further develop SBD concepts and share Guidance documents. The NIS program at INL supports the post-doctoral fellowship program. The VTC safeguards lectures, and summer safeguards internships, in support of NGSI's human capital development goals. In addition, the program supports international safeguards cooperation and implementation, including with domestic safeguards R&D for new fuel cycle technology. The INL-NIS program also provides support for the development of a Security-by-Design project.

Global Threat Reduction Initiative (GTRI)

The Idaho National Laboratory provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect–supporting the comprehensive GTRI

approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

Naval Reactors (NR)

The NR Advance Test Reactor (ATR) is designed to evaluate the effects of intense radiation on material samples, especially nuclear fuels. The principal customer for the ATR over most of its lifetime has been the NR program. The ATR produces very high neutron flux, which allows the effects of many years of operation in other reactor environments to be simulated in as short as one-tenth the time. Subsequent evaluations of test specimens in the NR Expended Core Facility and the Knolls Atomic Power Laboratory Radioactive Materials Laboratory facilities are the main source of data on the performance of reactor fuel, poison, and structural materials under irradiated conditions. Naval Reactors continues to develop enhanced systems for high temperature irradiation testing with precise temperature control and environmental monitoring in the ATR.

OAK RIDGE NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Directed Stockpile Work	15	0	0
Advanced Simulation and Computing Campaign	383	552	0
Readiness in Technical Base and Facilities	3,174	0	0
Nuclear Counterterrorism Incident Response	1,259	1,322	1,388
Site Stewardship	0	1,925	3,000
Subtotal Weapons Activities	**4,831**	**3,799**	**4,388**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	18,450	12,248	13,196
Nonproliferation and International Security	25,324	21,285	22,265
International Nuclear Materials Protection and Cooperation	120,387	129,494	157,339
Fissile Materials Disposition	0	106,700	4,897
Global Threat Reduction Initiative	11,345	17,617	17,496
Subtotal Defense Nuclear Nonproliferation	**175,506**	**287,344**	**215,193**
Total, NNSA	**180,337**	**291,143**	**219,581**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Nuclear Counterterrorism Incident Response	1,457	1,474	1,489	1,508
Site Stewardship	4,800	4,800	6,780	2,695
Subtotal Weapons Activities	**6,257**	**6,274**	**8,269**	**4,203**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research & Development	13,114	13,498	13,536	14,305
Nonproliferation and International Security	22,251	22,933	23,479	23,889
International Nuclear Materials Protection and Cooperation	115,375	130,540	171,500	136,159
Fissile Materials Disposition	44,850	44,700	49,250	22,600
Global Threat Reduction Initiative	16,907	21,669	22,486	25,183
Subtotal Defense Nuclear Nonproliferation	**212,497**	**233,340**	**280,251**	**222,136**
Total, NNSA	**218,754**	**239,614**	**288,520**	**226,339**

Congressional Items of Interest: Defense Nuclear Nonproliferation programs at ORNL under the International Nuclear Materials Protection and Cooperation Program and Global Threat Reduction Initiative support the Administration efforts to secure all vulnerable nuclear material around the world within four years.

Major Changes or Shifts: Oak Ridge National Laboratory **(**ORNL) is the lead for the contracts with Russia for the purposes of Russian plutonium disposition. In FY2011, the Fissile Materials Disposition program requested $100 million for the Russian Surplus Plutonium Disposition Program, as the first installment towards a pledge of $400 million that the U.S. Government agreed to for this program in Russia. Further significant funding requests are subject to the establishment of implementation milestones for the amended Plutonium Management and Disposition Agreement objectives. The program anticipates balances from the FY 2011 funds to be available in FY 2012.

Site Description

INTRODUCTION:

The Oak Ridge National Laboratory (ORNL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Site Stewardship
In the Site Stewardship program, Nuclear Materials Integration activities consist of the development of project plans for disposition of irradiated Mk-42 targets located at ORNL, performing analytical studies, and providing technical support for life-cycle management of nuclear materials, such as americium, californium and curium.

Nonproliferation Verification Research and Development
Oak Ridge supports the Nonproliferation and Verification R&D program with: research to address the threat from nuclear weapons and radiological dispersal devices; providing leading-edge research into candidate materials, which could replace existing nuclear detectors used for gamma spectroscopy and neutron detection; nuclear material analysis efforts; research efforts to better understand and detect uranium enrichment operations and to understand associated effluents associated with those processes.

Nonproliferation and International Security (NIS)
In FY 2012, the NIS program at ORNL will continue to support safeguards technology and concept development; license and export request review activities, and export control cooperation with international partners. The ORNL supports the development of nuclear transparency measures. The facility also provides expertise on various arms control and nonproliferation agreements and treaties. The ORNL supports USG efforts to prepare for denuclearization and verification efforts in North Korea and other proliferating countries. Also, ORNL provides technical support to the NGSI related to safeguards and verification measures and uranium enrichment processing facilities. In addition, ORNL supports licensing and interdiction operations through reviews of export controlled items, and analytical tools and technical references for use in developing recommendations on U.S. export license

applications, and tracks global machine tool supply trends. The ORNL supports the NGSI and the IAEA with technology development and assessment and environmental monitoring development as well as operation of the Blend-Down Monitoring System (BDMS) within the HEU Transparency Program including equipment maintenance, personnel training, and provision of personnel for transparency monitoring visits in Russia. Other ORNL support includes efforts to strengthen international safeguards at all levels of international nuclear development through NGSI activities. Further, ORNL provides analytical and technological systems services in support of international border security capacity building outreach, as well as export control outreach efforts. The ORNL supports the human capital development goals of NGSI through partnerships with regional universities, safeguards internships, nondestructive assay (NDA) courses, and participation in the post-doctoral fellowship program. The ORNL conducts the greatest number of technical studies for the Nuclear Supplier Policy Program and also provides a broad range of support to efforts within multilateral nuclear export control organizations, such as the Nuclear Suppliers Group and the Zangger Committee. The NIS program at ORNL will also support the International Nuclear Security Program.

International Nuclear Materials Protection and Cooperation (INMP&C)

The INMP&C program at ORNL is where subject matter experts have unique working experience in the development of vulnerability assessments; personnel reliability program development for insider protection; the design and application of physical security and material control and accounting systems; performance assurance; sustainability; and life cycle management; transportation security and packaging; storage; and response force training for Ministry of Defense, Rosatom, and civilian Russian sites. The INMP&C ORNL program's experience in defense conversion, and the handling, processing and safeguard of extremely large and varied inventories of enriched uranium and related materials, provides unique experience to the Material Conversion and Consolidation efforts. In addition, ORNL provides expertise in the areas of transportation security, acceptance testing, performance assurance, maintenance, and procedures to the national programs. The ORNL has critical expertise necessary to test and evaluate the radiation detection equipment; and analyze the data retrieved from radiation portal monitors deployed by the Second Line of Defense (SLD) program. The ORNL maintains the repository for all of the data retrieved by systems installed by the SLD program. The ORNL has an integral role in the development of training and implementation of sustainability with the SLD program. The ORNL serves as the lead laboratory in developing independent cost estimates that support the SLD Program's acquisition planning strategy and cost-effective implementation of its Core and Megaports projects. The ORNL also serves as the laboratory intermediary for complementary DOE and Defense Threat Reduction Agency project areas related to sustainability.

Global Threat Reduction Initiative (GTRI)

In FY 2012, ORNL provides significant technical, scientific, and management expertise to two of the three key subprograms of GTRI–Remove and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

Fissile Materials Disposition

The ORNL conducts R&D associated with the qualification and irradiation of mixed-oxide (MOX) fuel in domestic and commercial reactors, including post irradiation examination of MOX fuel, advice on reactor licensing, and fuel qualification R&D. The ORNL also provides technical assistance in the conversion of depleted uranium hexafluoride to uranium dioxide for use as MOX fuel blendstock and in nuclear materials transportation issues. In support of the Russian program, ORNL will provide technical assistance and expertise associated with NNSA management of the U.S. $400 million contribution to the Russian plutonium disposition program. Specifically, ORNL will assist NNSA in drafting and negotiating a DOE/Rosatom Implementing Agreement under the Plutonium Management and Disposition Agreement (PMDA), developing appropriate milestones and verifying the completion of those milestones.

PACIFIC NORTHWEST NATIONAL LABORATORY

TABLES

FUNDING BY PROGRAM:

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
NNSA			
Weapons Activities			
Readiness Campaign	16,227	8,695	10,686
Nuclear Counterterrorism Incident Response	2,990	3,139	3,106
Subtotal Weapons Activities	**19,217**	**11,834**	**13,792**
Defense Nuclear Nonproliferation			
Nonproliferation and Verification R&D	34,351	27,171	28,718
Nonproliferation and International Security	25,919	18,110	18,540
International Nuclear Materials Protection and Cooperation	197,446	126,403	144,398
Fissile Materials Disposition	0	1,000	1,017
Global Threat Reduction Initiative	51,724	94,883	77,978
Subtotal Defense Nuclear Nonproliferation	**309,440**	**267,567**	**270,651**
Total, NNSA	**328,657**	**279,401**	**284,443**

OUT-YEAR FUNDING:

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
NNSA				
Weapons Activities				
Readiness Campaign	6,609	4,549	6,315	5,746
Nuclear Counterterrorism Incident Response	3,085	3,200	3,400	3,150
Subtotal Weapons Activities	**9,694**	**7,749**	**9,715**	**8,896**
Defense Nuclear Nonproliferation				
Nonproliferation and Verification R&D	29,151	30,005	30,089	31,799
Nonproliferation and International Security	18,931	19,512	19,976	20,324
International Nuclear Materials Protection and Cooperation	124,250	160,672	156,800	124,699
Fissile Materials Disposition	1,000	1,000	1,000	1,000
Global Threat Reduction Initiative	77,082	98,795	102,517	114,813
Subtotal Defense Nuclear Nonproliferation	**250,414**	**309,984**	**310,382**	**292,635**
Total, NNSA	**260,108**	**317,733**	**320,097**	**301,531**

Congressional Items of Interest: Defense Nuclear Nonproliferation programs at PNNL under the International Nuclear Materials Protection and Cooperation Program and Global Threat Reduction Initiative support the Administration efforts to secure all vulnerable nuclear material around the world within four years.

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Major Changes or Shifts: None.

Site Description

INTRODUCTION:

The Pacific Northwest National Laboratory (PNNL) is not a National Nuclear Security Administration (NNSA) managed site. The Office of Science is the site landlord for the Department of Energy. However, significant NNSA work is conducted at the site.

ACTIVITIES:

Readiness Campaign

The Readiness Campaign PNNL program supports the Tritium Readiness activity that re-established and operates the tritium production capability to sustain the nuclear weapons stockpile.

Nonproliferation and Verification Research and Development

Pacific Northwest National Laboratory supports the Nonproliferation and Verification R&D program across the full spectrum of the portfolio. The PNNL program plays a key role in the identification of detection signatures and observables, nonproliferation data exploitation, leading edge research, and in the development of a "spectral signatures library" to aid in proliferation signatures detection; radiation detection R&D for HEU detection, long-range SNM detection, and new room-temperature, high-resolution materials; significant research in the development of methods and tools for enhanced detection of uranium enrichment and plutonium reprocessing facilities using both ground-based effluent collectors and remote sensing systems; tools for radionuclide detection and statistical expertise (seismic discrimination) in ground-based nuclear detonation detection. The PNNL program provides tools for nuclear forensics sample collection efforts in post-detonation environments.

Nonproliferation and International Security (NIS)

The NIS program at PNNL provides support for conducting technical exchanges and technology development under the Warhead and Fissile Material Transparency Program, Plutonium Production Reactor Agreement implementation, development of nuclear transparency measures, technical analysis, planning for denuclearization and verification efforts in North Korea and other countries of proliferation concern, and technology development, and regional security efforts in policymaking and negotiations regarding various nonproliferation and arms control regimes. The PNNL provides support for licensing and interdiction operations through reviews of export controlled items, and analytical tools and technical references for use in developing recommendations on U.S. export license applications, and physical protection technology assessments, policy support, and international cooperation. The NIS program supports the development of safeguards tools and methodologies, under the NGSI as well as training to foreign nationals as needed. The PNNL Next Generation Safeguards Initiative (NGSI) program also provides technical support on nuclear safeguards, safety and security to developing countries interested in nuclear power for nuclear infrastructure development efforts. The NIS PNNL program supports biosecurity engagement in the Middle East for SNL, and regional security engagement in the Middle East. The NIS program at PNNL engages former WMD scientists and engineers in peaceful civilian purposes. The NIS supports university engagement, safeguards internships, a summer safeguards course, and post-doctoral safeguards fellowships at PNNL, to advance the NGSI human capital

development mission. The PNNL also examines existing or evolving proliferation problems through technical studies and provides a broad range of support to efforts within multilateral nuclear export control organizations, such as the Nuclear Suppliers Group and the Zangger Committee. The PNNL will also support the International Nuclear Security Program.

International Nuclear Materials Protection and Cooperation (INMP&C)
The NNSA's INMP&C program at PNNL provides technical, contracting, and management expertise. In particular, this includes the efforts of experts in physical security, material control and accounting, and protective forces, as well as experienced project managers. The PNNL also manages several projects related to materials protection cooperation and accounting (MPC&A) infrastructure in Russia, including physical protection, material, control and accounting, and protective forces training, regulatory development, and inspections/oversight. In addition, PNNL management and technical experts provide project management support, sustainability assistance and training expertise to the Second Line of Defense program.

Global Threat Reduction Initiative (GTRI)
In FY 2012, the PNNL provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect–supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. The Highly Enriched Uranium (HEU) Reactor Conversion subprogram supports the conversion or verified shutdown of domestic and international civilian research reactors and isotope production facilities from HEU to Low Enriched Uranium. The Nuclear and Radiological Material Removal subprogram supports the removal and disposal of excess, vulnerable nuclear and radiological materials from civilian sites worldwide. The Nuclear and Radiological Material Protection subprogram supports the securing of international and domestic buildings containing high priority nuclear and radiological materials worldwide from theft and sabotage.

GENERAL PROVISIONS

SEC. 301. The unexpended balances of prior appropriations provided for activities in this Act may be available to the same appropriation accounts for such activities established pursuant to this title. Available balances may be merged with funds in the applicable established accounts and thereafter may be accounted for as one fund for the same time period as originally enacted.

SEC. 302. None of the funds in this or any other Act for the Administrator of the Bonneville Power Administration may be used to enter into any agreement to perform energy efficiency services outside the legally defined Bonneville service territory, with the exception of services provided internationally, including services provided on a reimbursable basis, unless the Administrator certifies in advance that such services are not available from private sector businesses.

SEC. 303. When the Department of Energy makes a user facility available to universities or other potential users, or seeks input from universities or other potential users regarding significant characteristics or equipment in a user facility or a proposed user facility, the Department shall ensure broad public notice of such availability or such need for input to universities and other potential users. When the Department of Energy considers the participation of a university or other potential user as a formal partner in the establishment or operation of a user facility, the Department shall employ full and open competition in selecting such a partner. For purposes of this section, the term "user facility" includes, but is not limited to: (1) a user facility as described in section 2203(a)(2) of the Energy Policy Act of 1992 (42 U.S.C. 13503(a)(2)); (2) a National Nuclear Security Administration Defense Programs Technology Deployment Center/User Facility; and (3) any other Departmental facility designated by the Department as a user facility.

SEC. 304. Funds appropriated by this or any other Act, or made available by the transfer of funds in this Act, for intelligence activities are deemed to be specifically authorized by the Congress for purposes of section 504 of the National Security Act of 1947 (50 U.S.C. 414) during fiscal year 2012 until the enactment of the Intelligence Authorization Act for fiscal year 2012.

SEC. 305. Not to exceed 5 per centum, or $100,000,000, of any appropriation, whichever is less, made available for Department of Energy activities funded in this Act or subsequent Energy and Water Development and Related Agencies Appropriation Acts may hereafter be transferred between such appropriations, but no appropriation, except as otherwise provided, shall be increased or decreased by more that 5 per centum by any such transfers, and any such proposed transfers shall be submitted to the Committee on Appropriations of the House and Senate.

SEC. 501. None of the funds appropriated by this Act may be used in any way, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. 1913.

SEC. 502. To the extent practicable funds made available in this Act should be used to purchase light bulbs that are "Energy Star" qualified or have the "Federal Energy Management Program" designation.

Note.—A full-year 2011 appropriation for this account was not enacted at the time the budget was prepared; therefore, this account is operating under a continuing resolution (P.L. 111–242, as amended). The amounts included for 2011 reflect the annualized level provided by the continuing resolution.