

Readiness in Technical Base and Facilities

Program Mission

The **Readiness in Technical Base and Facilities (RTBF)** mission is to ensure that the right facilities and infrastructure are in place to manufacture and certify the 21st century nuclear weapons stockpile; and that all sites within the weapons complex are implementing the technologies and methods necessary to make construction, operation, and maintenance of DP facilities safe, secure, reliable and cost effective. The RTBF program provides the physical and operational infrastructure at the national laboratories, the Nevada Test Site, production sites and other DP sites required to conduct the scientific, technical, and manufacturing activities of the Stockpile Stewardship program. Readiness in Technical Base and Facilities is broken into the following eight subcategories (or budget elements): Operations of Facilities, Program Readiness, Special Projects, Material Recycle and Recovery, Containers, Storage, Nuclear Weapons Incident Response, and Construction.

Program Goal

The RTBF program goal is to ensure that the right facilities, infrastructure, technologies, and competent skilled and trained workforce are in place at the right time to support development, design, manufacture, and certification of the 21st century nuclear weapons stockpile. The RTBF program will maintain facilities and technologies in an appropriate condition such that they are not limiting factors in the accomplishment of the National Nuclear Security Administration (NNSA) and Defense Programs missions.

Program Objectives

In order to attain the RTBF program goals, Defense Programs will endeavor to provide cost effective investments in the infrastructure, workforce, facilities and technologies that will enable effective program management of activities which support the RTBF program; continue to deliver and maintain world class facilities that provide the means to perform and deliver the requisite levels of science and technology associated with maintaining the safety and reliability of the nuclear weapons stockpile; and continue to provide the balance of the physical and intellectual infrastructure underpinnings necessary to support the goals and mission of Defense Programs.

Performance Measures

Ensuring Enterprise Vitality and Readiness (NS3-1)

Significant Accomplishments and Program Shifts

Defense Programs continues to support various technology partnerships within campaigns as a means to reach the goals and objectives of the Stockpile Stewardship Program; however, there is no longer a specific Technology Partnership decision unit in the budget. Ongoing Technology Partnership activities are budgeted for in the campaign which they support.

Funding Profile

(dollars in thousands)

Readiness in Technical Base & Facilities	FY 2000 Comparable Appropriation	FY 2001 Original Appropriation	FY 2001 Adjustments ^a	FY 2001 Comparable Appropriation	FY 2002 Request
Operations of Facilities	922,754	1,252,232	(415,130)	837,102	830,427
Program Readiness	60,246	74,500	75,653	150,153	188,126
Special Projects	88,506	48,297	28,089	76,386	64,493
Material Recycle & Recovery	32,500	30,018	37,858	67,876	101,311
Containers	5,833	11,876	2,487	14,363	8,199
Storage	19,627	9,075	11,766	20,841	10,643
Nuclear Weapons Incident Response	83,988	56,289	29,509	85,798	89,125
Construction	99,298	160,085	1,173	161,258	154,664
Total, Readiness in Technical Base and Facilities	1,312,752	1,642,372	(228,595)	1,413,777	1,446,988

Public Law Authorization:

Public Law 106-398, "Floyd D. Spence National Defense Authorization Act for FY 2001"
 Public Law 106-377, "Energy and Water Development Appropriations Act for FY 2001"

^a See Table DSW-1 for detailed explanation of FY 2001 Adjustments.

TABLE RTBF-1

**Readiness in Technical Base and Facilities
FY 2001 Adjustment and Comparabilities**

Part A: Appropriation Adjustments

(dollars in thousands)

	FY 2001 Appropriation Adjustment					Subtotal, Appropriation Adjustments
	FY 2001 Appropriation	General Reduction	Safeguards & Security Amendment	Accounting/ Definitional Adjustments	FY 2001 Omnibus Rescission	
Readiness in Technical Base & Facilities						
<i>Operations & Maintenance:</i>						
Operations of Facilities	1,252,232	-3,494	-203,978	-158,214	-1,922	-367,608
Program Readiness	74,500	-185	-3,426	75,586	-322	71,653
Special Projects	48,297	-123	-1,142	-9,085	-83	-10,433
Material Recycle & Recovery	30,018			38,008	-150	37,858
Containers	11,876			2,519	-32	2,487
Storage	9,075			11,812	-46	11,766
Nuclear Weapons Incident Response	56,289	-144	-985		-121	-1,250
<i>Subtotal, O&M</i>	1,482,287	-3,946	-209,531	-39,374	-2,676	-255,527
<i>Construction:</i>						
01-D-103, Project Engineering and Design, VL	35,500				-78	-78
01-D-124, HEU Storage Facility, Y-12	17,800		-51		-39	-90
01-D-126, Weapons Evaluation Test Laboratory, PX	3,000				-7	-7
01-D-800, LLNL SCIF, LLNL						0
99-D-103, Isotope Sciences Facilities, LLNL	5,000		-25		-11	-36

Part A: Appropriation Adjustments

(dollars in thousands)

	FY 2001 Appropriation Adjustment					
	FY 2001 Appropriation	General Reduction	Safeguards & Security Amendment	Accounting/ Definitional Adjustments	FY 2001 Omnibus Rescission	Subtotal, Appropriation Adjustments
Readiness in Technical Base & Facilities						
99-D-104, Protection of Real Property (Roof Reconstruction - PH II), LLNL	2,800		-14		-6	-20
99-D-106, Model Validation & System Certification Test Center, SNL	5,200				-11	-11
99-D-108, Renovate Existing Roadways, NV	2,000		-126		-4	-130
99-D-125, Replace Boilers & Controls, KC	13,000				-29	-29
99-D-127, SMRI-Kansas City Plant II, KC	23,765		-199		-52	-251
99-D-128, SMRI-Pantex Consolidation, PX	4,998				-11	-11
98-D-123, SMRI-Tritium Facility Modern. & Consolid., SR	30,767				-68	-68
97-D-123, Structural Upgrades, KC	2,918		-54		-6	-60
95-D-102, CMR Upgrades Project, LANL	13,337				-29	-29
Prior Year						0
<i>Subtotal, Construction</i>	160,085	0	-469	0	-351	-820
Total, Readiness in Technical Base and Facilities	1,642,372	-3,946	-210,000	-39,374	-3,027	-256,347

(dollars in thousands)

Part B: Total Adjustments

Readiness in Technical Base & Facilities

	FY 2001 Appropriation	Subtotal, Appropriation Adjustments	FY 2002 Structure Internal Comparabilities			FY 2002 Structure External Comparabilities		Subtotal, Adjustments	FY 2001 Comparable Appropriation
			Pulsed Power Science	Special Projects	Microsystem Infrastructure Readiness	LLNL SCIF from Intelligence	Emergency Response & Management		
<i>Operations & Maintenance:</i>									
Operations of Facilities	1,252,232	-367,608	-4,000	-38,522	-5,000			-415,130	837,102
Program Readiness	74,500	71,653	4,000					75,653	150,153
Special Projects	48,297	-10,433		38,522				28,089	76,386
Material Recycle & Recovery . .	30,018	37,858						37,858	67,876
Containers	11,876	2,487						2,487	14,363
Storage	9,075	11,766						11,766	20,841
Nuc Wpns Incident Response . .	56,289	-1,250					30,759	29,509	85,798
Subtotal, O&M	1,482,287	-255,527	0	0	-5,000	0	30,759	-229,768	1,252,519
<i>Construction:</i>									
01-D-103, PE&D, VL	35,500	-78						-78	35,422
01-D-124, HEU Storage Fac, Y-12	17,800	-90						-90	17,710
01-D-126, WETL, PX	3,000	-7						-7	2,993
01-D-800, LLNL SCIF, LLNL	0	0				1,993		1,993	1,993

(dollars in thousands)

Part B: Total Adjustments

	FY 2001 Appropriation	Subtotal, Appropriation Adjustments	FY 2002 Structure Internal Comparabilities			FY 2002 Structure External Comparabilities		Subtotal, Adjustments	FY 2001 Comparable Appropriation
			Pulsed Power Science	Special Projects	Microsystem Infrastructure Readiness	LLNL SCIF from Intelligence	Emergency Response & Management		
99-D-103, Isotope Sci. Fac., LLNL	5,000	-36						-36	4,964
99-D-104, Protection of Real Property, LLNL	2,800	-20						-20	2,780
99-D-106, MV&SCTC, SNL	5,200	-11						-11	5,189
99-D-108, Renovate Existing Roadways, NV	2,000	-130						-130	1,870
99-D-125, Boilers & Controls, KC	13,000	-29						-29	12,971
99-D-127, SMRI-KCP	23,765	-251						-251	23,514
99-D-128, SMRI-Pantex Plant	4,998	-11						-11	4,987
98-D-123, SMRI-Tritium Facility Modern. & Consolid., SR	30,767	-68						-68	30,699
97-D-123, Structural Upgds, KC	2,918	-60						-60	2,858
95-D-102, CMR Upgrades, LANL	13,337	-29						-29	13,308
Prior Year	0	0						0	0
<i>Subtotal, Construction</i>	160,085	-820	0	0	0	1,993	0	1,173	161,258
Total, RTBF	1,642,372	-256,347	0	0	-5,000	1,993	30,759	-228,595	1,413,777

Funding by Site

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Albuquerque Operations Office					
Albuquerque	26,955	25,715	30,056	4,341	16.9%
Kansas City	159,223	135,206	119,186	-16,020	-11.8%
Los Alamos National Laboratory	237,318	288,525	325,881	37,356	12.9%
Pantex	108,153	86,605	88,265	1,660	1.9%
Sandia National Laboratories	224,689	220,650	217,907	-2,743	-1.2%
Total, Albuquerque Operations Office	756,338	756,701	781,295	24,594	3.3%
Chicago Operations Office					
Argonne National Laboratory	15	60	0	-60	-100.0%
Idaho Operations Office	1,500	1,600	1,600	0	0.0%
Nevada Operations Office	86,720	93,456	104,641	11,185	12.0%
Oak Ridge Operations Office					
Y-12 Plant	161,478	265,933	286,705	20,772	7.8%
Oak Ridge	7,317	3,000	3,000	0	0.0%
Oak Ridge National Laboratory	0	13,452	13,739	287	2.1%
Total, Oak Ridge Operations Office	168,795	282,385	303,444	21,059	7.5%
Oakland Operations Office					
Lawrence Livermore National Laboratory	42,383	45,768	73,965	28,197	61.6%
Savannah Operations Office					
Savannah River	746	676	2,031	1,355	200.4%
Savannah River Site	79,996	108,970	89,384	-19,586	-18.0%
Total, Savannah River Operations Office	80,742	109,646	91,415	-18,231	-16.6%
Headquarters	176,259	124,161	90,628	-33,533	-27.0%
Total, Readiness in Technical Base and Facilities	1,312,752	1,413,777	1,446,988	33,211	2.3%

Operations of Facilities

Mission Supporting Goals and Objectives

Operations of Facilities includes DP's share of the cost to operate and maintain "DP-owned" programmatic facilities in a state of readiness, at which each facility is operationally ready to execute programmatic tasks identified in Campaigns and Directed Stockpile Work (DSW). This category includes DP's share of all costs necessary to operate the physical infrastructure and facilities in a safe, secure, reliable, and "ready for operations" manner, and that a defined state of readiness is sustained at all needed facilities. These facility-specific activities include, but are not limited to, maintenance; utilities; environment, safety and health; efforts to address some of the Defense Nuclear Facilities Safety Board (DNFSB) concerns, and implementation of rules (such as the new Safety Bases Rule 10CFR830, Nuclear Safety Management).

Infrastructure support is also included under Operations of Facilities. These include: facility-related costs which are not associated with the ongoing operations of facilities such as conceptual design reports, National Environmental Policy Act (NEPA) activities, institutional capital equipment and general plant projects; Stockpile Management Restructuring Initiative which includes operating support costs related to production facility downsizing such as component rebuilds, process transfer/downsizing, qualification and process prove-in, and facility shutdown; and facility startup/standby/Decommissioning & Decontamination (D&D) which includes costs associated with maintaining facilities in a standby status for possible further use, or decontaminating and decommissioning.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Lawrence Livermore National Laboratory	36,757	34,294	40,246	5,952	17.4%
Los Alamos National Laboratory	218,465	263,449	296,546	33,097	12.6%
Sandia National Laboratories	172,491	163,101	131,364	-31,737	-19.5%
Nevada Test Site	45,081	45,005	43,611	-1,394	-3.1%
Y-12 Plant	132,128	75,956	72,179	-3,777	-5.0%
Savannah River Site	52,046	72,899	70,104	-2,795	-3.8%
Kansas City Plant	138,006	93,519	84,969	-8,550	-9.1%
Pantex Plant	92,854	71,039	77,989	6,950	9.8%
All Other Sites	34,926	17,840	13,419	-4,421	-24.8%
Subtotal, Operations of Facilities	922,754	837,102	830,427	-6,675	-0.8%

Performance Measures

Performance will be demonstrated by:

- # Maintaining the capability to resume underground nuclear testing in accordance with the Presidential Decision Directive 15 through a combined experimental and test readiness program.
- # Completing capacity expansion for reservoir assemblies at Kansas City Plant (KCP), neutron generator production at (Sandia National Laboratory), and neutron tube target production at Los Alamos National Laboratory (LANL) consistent with scope identified in project 99-D-122 Rapid Reactivation, to support DSW.
- # Continuing development of the conceptual design for Chemistry and Metallurgy Research Facility (CMR) Replacement and a new High Enriched Uranium (HEU) Manufacturing Facility.
- # Completing safety improvements to Corral Hollow Road adjacent to Site 300 at Lawrence Livermore National Laboratory (LLNL).
- # Completing quarterly laboratory self-assessments of maintenance, and environmental safety and health in accordance with laboratory contracts.
- # Maintaining the Superblock complex readiness.
- # Finishing construction and commencing operations in the Strategic Computing Complex by 3rd quarter FY 2002; fully operating the Beryllium Technology Facility to support DSW; completing the fire water loop upgrade at TA-55, maintaining LANSCE linear accelerator operational (beams available) 80 percent of time when beam is scheduled for delivery; and operating the LANL plutonium handling facilities (TA-55 and CMR) to support the Pit Manufacturing and Certification Campaign.
- # Supporting the Integrated Project Team for the Microsystems and Engineering Sciences Applications Complex (MESA) at SNL; providing necessary process exploration, development and migration leading to new microsystem capabilities; supporting prototype fabrication processes and parts; and, providing for microsystems infrastructure readiness to respond to weapon requirements and options, particularly as it supports delivery of custom radiation-hardened integrated circuit technologies and quality control level 1 parts for the W76 Life Extension Program.
- # Completing construction and commencing operations of the JASPER gas gun facility in support of stockpile experiments at Nevada Test Site (NTS); and maintaining the U1a complex and Device Assembly Facility to support scheduled subcritical experiments.
- # Timely completion of 2002 milestones in Pantex Plant Safety Authorization Basis Upgrade to support implementation of 10 CFR 830.120, Nuclear Safety Management, by April 2003.

Detailed Program Justification

FY 2001 Items of Congressional Interest: The FY 2001 appropriations act added \$36 million for critical infrastructure and upgrades at the following locations: Kansas City Plant \$12 million; Pantex Plant \$12 million, Y-12 Plant \$10 million; and Savannah River Site Tritium Facility \$2 million. These funds will be used to support facility modifications and upgrades, fire protection projects, repairs and replacement of utility systems, roof repairs and replacement of capital equipment.

The FY 2001 appropriations act also added approximately \$40 million to Operations of Facilities. For Sandia National Laboratories, \$10 million was added for the operation of the pulsed power facilities which will ensure a full single shift of operations of the Z machine and will continue pulsed power technology development activities, and \$20 million was added for microsystems and microelectronics activities. At Pantex, the \$3.1 million added for contractor transition at Pantex will be used to cover BWXT activities such as labor hours, travel, office space, and other transition costs. At LANL, \$7 million was added for planning for the replacement of the CMR facility.

(dollars in thousands)

FY 2000	FY 2001	FY 2002
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Lawrence Livermore National Laboratory	36,757	34,294	40,246
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Includes DP's share of the operations of high explosives and physical data research experimental facilities, engineering test facilities, Superblock, and other direct-funded facilities.

Within this budget element, \$325,000 will be made available for a GPP project for safety improvements to Corral Hollow Road adjacent to Site 300 of the Lawrence Livermore National Laboratory (LLNL). Site 300 is the laboratory's remote explosives test facility, and the DOE has become increasingly concerned for the safety and well-being of its employees, contractors, and the public using Corral Hollow Road, which provides the only access to Site 300. Corral Hollow Road is a rural two-lane roadway owned and maintained by San Joaquin County. Due to housing and population growth in Tracy and the Central Valley and the traffic that it generates, there has been an increasing number of vehicular near misses at Site 300's entrance gate. The proposed solution to this traffic safety problem is to widen Corral Hollow Road by 12 feet and extend the paved area of Corral Hollow Road for a 1400 foot distance along the County's existing right-of-way adjoining Site 300. This expansion will reconfigure the existing roadway into a three-lane country road for that distance. The addition of the third lane would be used as a turn lane into the Site 300 main entrance (coming from the west) and as a partial acceleration lane leaving Site 300 (heading east). This turn lane addition at the entrance would allow the safe ingress and egress that Site 300 needs in order to reduce the potential for accidents.

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Los Alamos National Laboratory	218,465	263,449	296,546

Includes DP's share of the operations of both programmatic and institutional/infrastructure facilities:

- *Engineering and Tritium Facilities* include engineering testing facilities, engineering high explosives facilities, engineering assembly and storage, engineering machine shops, and tritium facilities.
- *Dynamic Experiments Facilities* include dynamic experiments facilities such as the Dual-Axis Radiographic Hydro Test facility (DARHT), firing sites, the high explosives detonator facility, and the high explosive science facility.
- *Los Alamos Neutron Science Center (LANSCE)* includes the LANSCE accelerator readiness, the Weapons Neutron Research facility (WNR), and the Lujan Center.
- *Nuclear Facilities* includes nuclear materials technology facilities including TA-55, the Chemistry Metallurgy Research facility (CMR), and TA-18. In FY 2002, \$58.9 million is requested for TA-55 and \$23.0 million for CMR. These facilities are essential to the Pit Manufacturing and Certification campaign.
- *Other Direct Funded Facilities include* other project costs; general plant projects; engineering studies; waste processing activities including transuranic waste characterization, pollution prevention/waste minimization, and waste disposition; excess facility surveillance and maintenance; facility deactivation and demolition; and other programmatic and institutional initiatives.
- *Waste Management Facilities* includes the waste management facility operations, including the Radioactive Liquid Waste Treatment Facility (TA-50); the Solid Radioactive Waste Management Facility (TA-54); the Radioactive Materials, Research, Operations, and Development facility; the Waste Characterization, Reduction, and Repackaging facility; and the Radioassay and Non-Destructive Test facility.

(dollars in thousands)

FY 2000	FY 2001	FY 2002
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Sandia National Laboratories 172,491 163,101 131,364

Includes DP's share of the operations of several programmatic support test and manufacturing facilities as well as institutional and other infrastructure support.

- *Programmatic Support Facilities* includes the microelectronics and semiconductor test facilities, such as the Microelectronics Development Laboratory, Compound Semiconductor Research Laboratory, and the Integrated Materials Research Laboratory; research, development and testing facilities such as the Albuquerque Full-Scale Experimental Complex and the Tonopah Test Range; pulsed power facilities, such as the Z machine; Technical Area - V operations, such as the Sandia Pulse Reactor, Gamma Irradiation Facility, Radiation Metrology Laboratory, and the Annular Core Research Reactor; and the neutron generator production facility.
- *Institutional and other Infrastructure* includes costs such as infrastructure support; conceptual design reports; construction line item other project costs; institutional capital equipment; general plant projects; and waste management activities.

Nevada Test Site 45,081 45,005 43,611

Includes DP's share of the operations of the Device Assembly Facility, Big Explosives Experiment Facility, U1a Experimental Complex, Joint Actinide Shock Physics Experimental Research Facility, general plant projects, and other NTS support facilities.

Y-12 Plant 132,128 75,956 72,179

Includes operation of facilities used for the production of materials contained in secondaries. This includes the following buildings: 9201-1, 9201-5, 9201-5N, 9202, 9204-2, 9204-2E, 9204-4, 9206, 9212, 9215, 9720-5, 9995, 9998. These costs include maintenance, environmental, safety, health programs, waste management, and utilities.

Savannah River Site 52,046 72,899 70,104

Includes operation of SRS facilities required to provide tritium and non-tritium loaded reservoirs to meet the requirements of the Nuclear Weapons Stockpile Memorandum, to conduct reservoir surveillance operations, gas transfer system testing, and to manage existing tritium inventories. These activities are carried out in the following buildings: 232, 233, 234 and 238. These costs include maintenance, environmental, safety, health programs, waste management, and utilities.

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Kansas City Plant	138,006	93,519	84,989
Includes operations of facilities at the Kansas City Plant to manufacture and procure nonnuclear components for nuclear weapons, including electrical, electronic, electromechanical, mechanical, plastic, and nonfissionable metal. These costs include maintenance, environmental, safety, health programs, waste management, and utilities.			
Pantex Plant	92,854	71,039	77,989
Facility operations at the Pantex Plant include the fabrication of chemical explosives; development work in support of the design laboratory, pit storage; and nuclear weapons assembly, disassembly, testing, quality assurance, repair, retirement, and disposal. The bulk of the Pantex operations are located in Zone 4, Zone 11, and Zone 12. These costs include maintenance, environmental, safety, health programs, waste management, and utilities. The FY 2002 request includes \$1 million for the Amarillo National Research Center (ANRC). In FY 2000 and FY 2001, funding for the ANRC was included in Special Projects.			
All Other Sites	34,926	17,840	13,419
Includes DP's share of miscellaneous facility related costs at Idaho, Albuquerque, and Oak Ridge.			
Total, Operations of Facilities	922,754	837,102	830,427

Explanation of Funding Changes from FY 2001 to FY 2002

FY 2002 vs. FY 2001 (\$000)

Operations of Facilities

# Lawrence Livermore National Laboratory: reflects increased costs at hydrotest facilities at Site 300 and Superblock; HEAF explosives research and facility maintenance; LINAC operations and maintenance; gas gun experiments; and increased experimental support costs for subcritical experiments, and funding necessary for safety improvements to Corral Hollow Road at the entrance to Site 300	5,952
# Los Alamos National Laboratory: reflects increased costs mostly associated with operations of facilities which support the Pit Manufacturing and Certification Campaign	33,097
# Sandia National Laboratories: The decrease reflects the FY 2001 congressional add-ons of \$30 million for pulsed power, microsystems and microelectronics activities; these activities are included in Program Readiness in FY 2002	-31,737

FY 2002 vs. FY 2001 (\$000)

# Nevada Test Site: no significant change	-1,394
# Oak Ridge Y-12 Plant: reflects one time congressional add-on in FY 2001	-3,777
# Savannah River: reflects reduction in infrastructure support and the one time congressional add-on in FY 2001	-2,795
# Kansas City Plant: reflects one time congressional add-on in FY 2001	-8,550
# Pantex Plant: supports roof repairs, HVAC replacement, cooling tower replacement, beryllium program, soil stabilization, roads and parking preservation; and includes \$1 million for the Amarillo National Research Center	6,950
# All Other DP-Funded Facilities: reflects FY 2001 funding originally held at Headquarters pending final site allocation decisions; in FY 2001, there is no funding held at Headquarters	-4,421
Total Funding Change, Operations of Facilities	-6,675

Capital Operating Expenses & Construction Summary

Capital Operating Expenses ^a

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
General Plant Projects	33,088	33,824	35,824	2,000	5.9%
Capital Equipment	41,815	55,457	57,457	2,000	3.6%
Total, Capital Operating Expenses . .	74,903	89,281	93,281	4,000	4.5%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Unappropriated Balance
Total, Construction	0	0	0	0	0	0

Major Items of Equipment (TEC \$2,000,000 or greater)

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Acceptance Date
Automated Storage/Retrieval System Replacement	2,470	0	0	0	2,470	FY 2002
Total, Major Items of Equipment	2,470	0	0	0	2,470	

^a Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2001 and FY 2002 funding shown reflects estimates based on actual FY2000 obligations.

Program Readiness

Mission Supporting Goals and Objectives

Program Readiness includes select activities that support more than one facility, campaign, or DSW activity, but are essential to achieving the objectives of the Stockpile Stewardship Program. The activities may vary from site to site due to the inherent differences in site activities and organizational structure. Ongoing activities support Nevada Test Site readiness and maintenance of nuclear test capability, manufacturing process capabilities required to support the stockpile, critical skill needs consistent with Chiles Commission recommendations, pulsed power science and technology, and studies supporting the relocation of TA-18.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Nevada Test Site Readiness	36,519	42,577	41,601	-976	-2.3%
Materials Processing	0	81,855	93,934	12,079	14.8%
Critical Production and Engineering Skills . . .	0	2,344	8,717	6,373	271.9%
Pulsed Power Science and Other Technical Support	23,727	17,306	43,874	26,568	153.5%
TA-18 Relocation	0	6,071	0	-6,071	-100.0%
Total, Program Readiness	60,246	150,153	188,126	37,973	25.3%

Performance Measures

Performance will be demonstrated by:

- # Maintaining the capability to resume underground nuclear testing in accordance with the Presidential Decision Directive through a combined experimental and test readiness program.
- # Reviewing the adequacy of the Site-wide Environmental Impact Statement for Nevada.
- # Addressing critical skill issues at the plants, laboratories, and the Nevada Test Site.
- # Ensuring that manufacturing processes are available to support manufacturing requirements as scheduled.
- # Ensuring continuous operation of classified computing capability for production and manufacturing.

Detailed Program Justification

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Nevada Test Site readiness	36,519	42,577	41,601
<p>Includes most of the unique test readiness activities required to maintain the Nevada Test Site to support the test readiness mission as well as the stockpile stewardship mission. Activities include archiving, test readiness exercises, resumption planning, logistical support for laboratory experiments conducted at NTS, and other activities required to maintain the NTS in compliance with state regulations. In addition to these unique test readiness activities, there are other experimental and direct stockpile activities included in DSW and campaigns, which also contribute to the test readiness posture.</p>			
Materials Processing	0	81,855	93,934
<p>Includes processing of various materials streams, manufacturing of components and assemblies, quality evaluation processes, dismantlement processes, surveillance processes, and those supporting systems required for production and program planning and control of Enriched Uranium Operations at the Y-12 Plant.</p>			
Sustenance of critical production and engineering skills	0	2,344	8,717
<p>Hire critical skills to sustain production and engineering capabilities in support of directed stockpile work including the B61-7, W76, and W80 life extension programs, and to address Chiles Commission recommendations. In FY 2002, personnel would perform technical apprenticeships, and knowledge preservation and development projects.</p>			
Pulsed Power Science and other technical support	23,727	17,306	43,874
<p>Includes knowledge preservation and archiving; microsystems infrastructure readiness, pulsed power science, and technical support to Headquarters. In FY 2002, pulsed power science and technology and microsystems infrastructure readiness activities continue at a relatively steady rate. In FY 2001, some of the funding added by the Congress for these activities (\$10 million for the operation of the pulsed power facilities and \$20 million for microsystems and microelectronics) is reflected under the Operations of Facilities budget element. Thus, the increase here is offset by a relatively equal decrease in SNL's Operations of Facilities funding.</p>			
TA-18 Relocation	0	6,071	0
<p>TA-18 Relocation expenses include the preparation of environmental documentation and engineering/cost studies for the four alternative sites to reach a decision on the siting of the TA-18 missions by September 2001. In FY 2001, the Congress provided an additional \$6.1 million to support the relocation of the TA-18 capabilities currently at LANL. Design activities, begun in FY 2000, are continued in FY 2002 within Project Engineering and Design (PED) 01-D-103.</p>			
Total, Program Readiness	60,246	150,153	188,126

Explanation of Funding Changes from FY 2001 to FY 2002

Program Readiness	FY 2002 vs. FY 2001 (\$000)
# Decrease at Nevada Test Site reflects completion of radio upgrade, offset by bore hole requirements	-976
# Increase at the Y-12 Plant is associated with classified computing and binary capabilities	12,079
# Chiles Commission recommendations associated with critical skills at the KC and Y-12 Plants	6,373
# Increase reflects the fact that the congressional add-on funding in FY 2001 for microsystems and microelectronics activities and for pulsed power facilities under the Operations of Facilities budget element are more appropriately included in Program Readiness, and are therefore requested in Program Readiness in FY 2002. These funds support investments in microelectronics technology needed to support Weapons Life Extension activities as well as pulsed power research and development and science to support an increased shot rate on the Z machine	26,568
# Reflects the completion of studies associated with TA-18 relocation in FY 2001	-6,071
Total Funding Change, Program Readiness	37,973

Capital Operating Expenses & Construction Summary

Capital Operating Expenses ^a

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
General Plant Projects	0	0	0	0	N/A
Capital Equipment	452	600	600	0	0%
Total, Capital Operating Expenses . .	452	600	600	0	0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Unappropriated Balance
Total, Construction	0	0	0	0	0	0

Major Items of Equipment (TEC \$2,000,000 or greater)

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Acceptance Date
Radio Conversion.	18,000	13,000	0	5,000	0	FY 2002
Total, Major Item of Equipment .		13,000	0	5,000	0	

^a Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2001 and FY 2002 funding shown reflects estimates based on actual FY2000 obligations.

Special Projects

Mission Supporting Goals and Objectives

Special Projects includes activities which require special control or visibility, or do not fit easily into other budget categories.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Laboratory Critical Skills Development	3,731	5,707	5,368	-339	-5.9%
Los Alamos County School District	8,000	8,000	8,000	0	0.0%
New Mexico Educational Enrichment Foundation	6,000	3,000	6,900	3,900	130.0%
Criticality Experiments	2,600	3,540	3,800	260	7.3%
RTBF Engineering and Technical Support . . .	30,980	17,617	5,207	-12,410	-70.4%
LANL Land Transfer Activities	0	0	1,878	1,878	100.0%
Other Support	37,195	38,522	33,340	-5,182	-13.5%
Subtotal,	88,506	76,386	64,493	-11,893	-15.6%
Use of Prior Year Balances		0			
Total, Special Projects	88,506	76,386	64,493	-11,893	-15.6%

Performance Measures

Performance will be demonstrated by:

- # Completing the full endowment of \$25 million over 5 years to the Northern New Mexico Educational Foundation.
- # Continuing support for Los Alamos County School District through FY 2002.
- # Supporting an aviation contractor and providing for pension liabilities at former Defense Program sites.

Detailed Program Justification

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Laboratory Critical Skills Development	3,731	5,707	5,368
<p>The Laboratory Critical Skills Development program focuses on meeting Chiles Commission critical skills needs at the three weapons laboratories. (Previously reported as Education.)</p>			
Los Alamos County School District	8,000	8,000	8,000
<p>Support to Los Alamos County School District to enhance teacher salaries and provide education enrichment activities.</p>			
New Mexico Educational Enrichment Foundation	6,000	3,000	6,900
<p>Funding to fully endow the New Mexico Education Enrichment Foundation. With the FY 2002 increment, the Department will complete its commitment to provide a total of \$25 million over the past several years to fully endow the Foundation by FY 2002.</p>			
Criticality Experiments	2,600	3,540	3,800
<p>Costs associated with the conduct of criticality safety experiments, baselining, and training in support of DNFSB Recommendation 97-2.</p>			
RTBF Engineering and Technical Support.	30,980	17,617	5,207
<p>Engineering and technical support for RTBF activities; for example, independent reviews and internal reviews such as the 30-Day Review and the Chiles Commission; internal reviews; condition assessment surveys; R&D Tracking System; resolution of findings, issues, and concerns from external independent reviews; Federal Laboratory Consortium with National Institute of Science and Technology, and independent cost estimating requirements.</p>			
LANL Land Transfer Activities	0	0	1,878
<p>Landlord cost associated with conveyance and transfer of land at LANL to the County of Los Alamos and San Ildefonso Pueblo, as directed by P.L. 105-119. Landlord expenses associated with this program are estimated at about \$22 million. Land parcels to be transferred include the Site 22 and the Manhattan Monument to the County of Los Alamos and Technical Area - 74 (excluding canyon contaminated areas) to the San Ildefonso Pueblo.</p>			
Other Support	37,195	38,522	33,340
<p>Other support includes aviation support, pension liabilities, special access programs, information system upgrades, START III studies/support. Defense Programs has provided \$1 million to the Amarillo National Research Center (ANRC) in both FY 2000 and FY 2001. In FY 2002, funding for the ANRC is included in Operations of Facilities, Pantex Plant.</p>			
Total, Special Projects	88,506	76,386	64,493

Explanation of Funding Changes from FY 2001 to FY 2002

FY 2002
vs. FY 2001
(\$000)

Special Projects

# Continues support for Los Alamos County School District at the FY 2001 level; fully endows the New Mexico Education Foundation (+\$3.9 million); and maintains the Laboratory Critical Skills Development program at approximately the FY 2001 funding level as the former direct Education program (-\$.3 million).	3,561
# Full support for criticality safety experiments, baselining, and training in accordance with DNFSB Recommendation 97-2; full landlord support for land transfer implementation at LANL; and offset by reductions in engineering and technical support for RTBF, and reductions in Special Access Programs, Information Systems Upgrades, and START III studies/support	-15,454
Total Funding Change, Special Projects	-11,893

Capital Operating Expenses & Construction Summary

Capital Operating Expenses ^a

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
General Plant Projects	0	2,000	0	-2,000	-100.0%
Capital Equipment	0	2,000	0	-2,000	-100.0%
Total, Capital Operating Expenses . .	0	4,000	0	-4,000	-100.0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Unappropriated Balance
Total, Construction	0	0	0	0	0	0

^a Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2001 and FY 2002 funding shown reflects estimates based on actual FY2000 obligations.

Material Recycle and Recovery

Mission Supporting Goals and Objectives

Includes the recycle and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement of weapons and components. Supports the development and implementation of new processes or improvements to existing processes for fabrication and recovery operations and for material stabilization, conversion, and storage. Involves the process of recycling and purifying the above materials to meet specifications for safe, secure, and environmentally acceptable storage, including meeting the directive schedule for tritium reservoir refills. Also includes the cost of Central Scrap Management Office (CSMO) management of receipts, storage, and shipments of enriched uranium scrap; and deactivation of Building 9206 at the Y-12 Plant.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Material Recycle & Recycle	32,500	67,876	101,311	33,435	49.3%
Total, Material Recycle & Recycle	32,500	67,876	101,311	33,435	49.3%

Performance Measures

Performance will be demonstrated by:

- # Recovering and recycling material from fabrication and assembly operations, limited life components, and dismantlement/disposal of weapons and weapon components.
- # Supporting DNFSB recommendation 94-1, operation of the Special Recovery Line, and material accountability at LANL.
- # Supporting commercial processing of HEU scrap at Y-12 Plant; completing the nondestructive assay profile and removing pyrophoric material from the Building 9206, receiving CSMO enriched uranium scrap as well as material returned from university test reactors and Los Alamos National Laboratory.
- # Transferring 100 drums of material to a commercial recovery facility.

Detailed Program Justification

FY 2001 Items of Congressional Interest: The FY 2001 appropriations act added \$8 million for Material Recycle and Recovery at Y-12 Plant for hydrogen fluoride and wet chemistry operations. No additional funds were provided for Uranium 233 processing, but the Department is expected to act expeditiously to process this material in a manner that would retain and make available isotopes for beneficial use.

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Material Recycle and Recovery	32,500	67,876	101,311
<p>Includes the recycle and recovery of plutonium, enriched uranium, and tritium from fabrication and assembly operations, limited life components, and dismantlement of weapons and components. Involves the process of recycling and purifying the above materials to meet specifications for safe, secure, and environmentally acceptable storage, including meeting the directive schedule for tritium reservoir refills. Also includes the cost of Central Scrap Management Office (CSMO) management of receipts, storage, and shipments of enriched uranium scrap; and deactivation of Building 9206 at the Y-12 Plant.</p> <p>In FY 2002, \$3.8 million is included to support requirements of the Pit Manufacturing and Certification campaign. The increase in FY 2002 in funding primarily supports Y-12's Enriched Uranium Operations (EUO). The increase also reflects funding at LANL associated with DNFSB Recommendation 94-1; increased support for an accelerated schedule (2010 vs. 2020); and supports operations of the Special Recovery Line and material accountability activities.</p>			
Total, Material Recycle and Recovery	32,500	67,876	101,311

Explanation of Funding Changes from FY 2001 to FY 2002

	FY 2002 vs. FY 2001 (\$000)
Material Recycle and Recovery	
# The increase in funding primarily supports Y-12's Enriched Uranium Operations (EUO). The increase also reflects funding at LANL associated with DNFSB Recommendation 94-1; increased support for an accelerated schedule (2010 vs. 2020); and supports operations of the Special Recovery Line and material accountability activities	33,435
Total Funding Change, Material Recycle and Recovery	33,435

Containers

Mission Supporting Goals and Objectives

Containers includes research and development, design, recertification and maintenance, off-site transportation certification of component containers in accordance with Federal regulations, off-site transportation authorization of non-certifiable nuclear materials transportation configuration; test and evaluation, production/procurement, fielding and maintenance, and decontamination and disposal to provide adequate quantities of containers to support the nuclear weapons mission (transportation and storage).

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Containers	5,833	14,363	8,199	-6,164	-42.9%
Total, Containers	5,833	14,363	8,199	-6,164	-42.9%

Performance Measures

Performance will be demonstrated by:

- # Recertifying and maintaining transportation and storage containers in a timely manner.
- # Procuring containers to support repackaging of pits in support of DNFSB Recommendation 99-1.

Detailed Program Justification

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Containers	5,833	14,363	8,199
<p>Includes research and development, design, recertification and maintenance, off-site transportation certification of component containers in accordance with Federal regulations, off-site transportation authorization of non-certifiable nuclear materials transportation configuration; test and evaluation, production/procurement, fielding and maintenance, and decontamination and disposal to provide adequate quantities of containers to support the nuclear weapons mission (transportation and storage).</p>			
Total, Containers	5,833	14,363	8,199

Explanation of Funding Changes from FY 2001 to FY 2002

	FY 2002 vs. FY 2001 (\$000)
Containers	
# Decrease reflects pending review of requirements of commitments made in response to DNFSB Recommendation 99-1	-6,164
Total Funding Change, Containers	-6,164

Storage

Mission Supporting Goals and Objectives

Includes cost of receipt, storage and inventory management of nuclear materials, nonnuclear material, highly enriched uranium, enriched lithium, and weapon components from dismantled weapons; does not include the cost of temporary storage of materials awaiting processing, staging for dismantlement, or any other interim storage.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Storage	19,627	20,841	10,643	-10,198	-48.9%
Total, Storage	19,627	20,841	10,643	-10,198	-48.9%

Performance Measures

Performance will be demonstrated by:

- # Storing weapons and weapon components for the foreseeable future in a safe, secure, and cost-effective manner.

Detailed Program Justification

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Storage	19,627	20,841	10,643
<p>Includes cost of receipt, storage and inventory management of nuclear materials, nonnuclear material, highly enriched uranium, enriched lithium, and weapon components from dismantled weapons; does not include the cost of temporary storage of materials awaiting processing, staging for dismantlement, or any other interim storage.</p>			
Total, Storage	19,627	20,841	10,643

Explanation of Funding Changes from FY 2001 to FY 2002

	FY 2002 vs. FY 2001 (\$000)
Storage	
# The decrease is at the Y-12 Plant and associated with the transfer of Other Project Costs (OPC) funding for the HEU storage facility to the Secondary Readiness campaign in FY 2002	-10,198
Total Funding Change, Storage	-10,198

Capital Operating Expenses & Construction Summary

Capital Operating Expenses ^a

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
General Plant Projects	0	0	0	0	N/A
Capital Equipment	293	388	388	0	0%
Total, Capital Operating Expenses . .	293	388	388	0	0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Unappropriated Balance
Total, Construction	0	0	0	0	0	0

^a Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2001 and FY 2002 funding shown reflects estimates based on actual FY2000 obligations.

Nuclear Weapons Incident Response

Mission Supporting Goals and Objectives

Weapons Incident Response provides funding for emergency management and response activities that ensure a central point of contact and an integrated response to emergencies affecting Departmental operations and activities or requiring Departmental assistance. Specific attention is focused on providing an appropriate technical response to any nuclear or radiological emergency within the Department and the United States or abroad. This is accomplished through the seven unique Departmental assets for both crisis and consequence management events.

In meeting these mission requirements, DOE possesses the ability to monitor and predict environmental impacts of radiation at major DOE and other Federal agency facilities in the event of a radiological accident or incident. DOE's response is further rounded out by the ability to provide medical and health physics support to radiological accidents and for incident resolution. This requires a close working relationship with federal agencies and the military to support the operations, exercise and training of associates who provide technical assistance in response to the incident/situation .

The funding requested will ensure all assets maintain their people-intensive technical capabilities, operational technical capabilities and are maintained as a shared/integrated asset to meet mission requirements.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Accident Response Group (ARG)	11,834	12,053	12,082	29	0.2%
Nuclear Emergency Search Team (NEST) . . .	44,181	42,986	43,188	202	0.5%
Nuclear Incident Response - Other Assets . . .	14,691	19,183	20,903	1,720	9.0%
Nuclear Incident Response - Emergency Management	13,282	11,576	12,952	1,376	11.9%
Total, Nuclear Weapons Incident Response . .	83,988	85,798	89,125	3,327	3.9%

Performance Measures

Performance will be demonstrated by:

- # Ensure that the appropriate infrastructure is in place to provide command, control, communications, and trained response personnel necessary to ensure the successful resolution of an emergency event. Readiness is measured through the exercise program and improvements are measured through policy, training and assets technical integration of capabilities.
- # Provide technical advice and assistance to Departmental elements for cost effective implementation of the emergency operations programs through the development, maintenance, and promulgation of policy, planning and preparedness guidance, and readiness assurance activities.

Detailed Program Justification

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
Accident Response Group (ARG)	11,834	12,053	12,082
ARG is deployed to manage or support the successful resolution of a U. S. nuclear accident anywhere in the world			
Nuclear Emergency Search Team (NEST)	44,181	42,986	43,188
NEST provides the Nation's specialized nuclear weapons expertise to the Federal responders in resolving nuclear/radiological terrorist incidents			
Nuclear Incident Response - Other Assets	14,691	19,183	20,903
Nuclear Incident Response - Other Assets includes the Aerial Measuring System, Atmospheric Release Advisory Capability, Federal Radiological Monitoring and Assessment Center, Radiological Assistance Program, and the Radiation Emergency Assistance Center/Training Site which provide DOE assistance to local, state and national government agencies in response to nuclear weapon or radiological emergencies and drills.			
Nuclear Incident Response - Emergency Management	13,282	11,576	12,952
Nuclear Incident Response - Emergency Management provides for the comprehensive, integrated emergency planning, preparedness, and response programs throughout the Department and provides threat assessment support to the Department's Headquarters and field operations			
Total, Nuclear Weapons Incident Response	83,988	85,798	89,125

Explanation of Funding Changes from FY 2001 to FY 2002

Nuclear Weapons Incident Response	FY 2002 vs. FY 2001 (\$000)
# The increase maintains the current level of radiological emergency response capability . .	3,327
Total Funding Change, Nuclear Weapons Incident Response	3,327

Capital Operating Expenses & Construction Summary

Capital Operating Expenses ^a

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
General Plant Projects	0	0	0	0	N/A
Capital Equipment	484	500	500	0	0%
Total, Capital Operating Expenses . .	484	500	500	0	0%

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Unappropriated Balance
Total, Construction	0	0	0	0	0	0

^a Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2001 and FY 2002 funding shown reflects estimates based on actual FY2000 obligations.

Construction

Mission Supporting Goals and Objectives

Construction includes cost of new and ongoing line-item construction projects which support the nuclear weapons complex, but are not directly attributable to a specific campaign or DSW. Individual construction project data sheets provide detailed information on each project.

Three new start construction projects are requested for FY 2002: one to initiate long lead procurements associated with the retooling of the Microelectronics Development Laboratory (MDL) at SNL as part of the Microsystems Engineering Sciences and Applications Complex (MESA); one for project engineering and design; and one infrastructure upgrade project.

Funding Schedule

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
Construction	99,298	161,258	154,664	-6,594	-4.1%
Total, Construction	99,298	161,258	154,664	-6,594	-4.1%

Detailed Program Justification

(dollars in thousands)

	FY 2000	FY 2001	FY 2002
02-D-101, Microsystems and Engineering Sciences Applications (MESA) Complex, SNL	0	0	2,000
02-D-103, Project Engineering and Design, VL	0	0	9,180
02-D-107, Electrical Power Systems Safety, Communications and Bus Upgrades, NV	0	0	3,507
01-D-103, Project Engineering and Design, VL	0	35,422	45,379
01-D-800, Sensitive Compartmented Information Facility, LLNL	0	1,993	12,993
01-D-124, HEU Storage Facility, Y-12	0	17,710	9,500
01-D-126, Weapons Evaluation Test Laboratory, Pantex	0	2,993	7,700
99-D-103, Isotope Sciences Facilities, LLNL	1,992	4,964	4,400
99-D-104, Protection of Real Property (Roof Reconstruction - PH II), LLNL	2,391	2,780	2,800
99-D-105, Central Health Physics Calibration Facility, LANL	996	0	0
99-D-106, Model Validation & System Certification Test Center, SNL	6,475	5,189	4,955
99-D-108, Renovate Existing Roadways, NV	4,981	1,870	0
99-D-122, Rapid Reactivation, VL	11,656	0	0
99-D-125, Replace Boilers & Controls, KC	0	12,971	300
99-D-127, SMRI-Kansas City Plant II, KC	16,935	23,514	22,200
99-D-128, SMRI-Pantex Consolidation, PX	3,416	4,987	3,300
98-D-123, SMRI-Tritium Facility Modernization & Consolidation, SR	20,233	30,699	13,700
98-D-124, SMRI-Y-12 Consolidation	0	0	6,850
97-D-123, Structural Upgrades, KC	4,282	2,858	3,000
96-D-102, Stockpile Stewardship Facility Revitalization, Phase VI, VL	139	0	2,900
96-D-104, Processing & Environmental Tech Laboratory, SNL	10,859	0	0

95-D-102, CMR Upgrades Project, LANL	14,943	13,308	0
Total, Construction	99,298	161,258	154,664

Explanation of Funding Changes from FY 2001 to FY 2002

Construction	FY 2002 vs. FY 2001 (\$000)	
# Initiates three new construction starts: Microsystems and Engineering Sciences Applications (MESA) Complex at SNL; Electrical Power Systems Safety, Communications and Bus Upgrades at NV; and the FY 2002 Project Engineering and Design at various locations		14,687
# Supports follow-on funding to complete design and other activities initiated under the Project Engineering and Design line item in FY 2001		9,957
# Supports second year funding for the Sensitive Compartmented Information Facility at LLNL which will be transferred from the Office of Intelligence beginning in FY 2002. . .		11,000
# Continues mortgages for ongoing projects at planned levels		-42,238
Total Funding Change, Construction		-6,594

Capital Operating Expenses & Construction Summary

Capital Operating Expenses ^a

(dollars in thousands)

	FY 2000	FY 2001	FY 2002	\$ Change	% Change
General Plant Projects	0	0	0	0	N/A
Capital Equipment	0	0	0	0	N/A
Total, Capital Operating Expenses . .	0	0	0	0	N/A

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2000	FY 2001	FY 2002	Unappropriated Balance
02-D-101, Microsystems and Engineering Sciences Applications (MESA) Complex, SNL (<i>MDL Retooling</i>)	51,000	0	0	0	2,000	TBD ^b
02-D-103, Project Engineering and Design, VL	19,880	0	0	0	9180	10,700
02-D-107, Electrical Power Systems Safety, Communications and Bus Upgrades, NV	15,900	0	0	0	3,507	12,393
01-D-103, Project Engineering and Design, VL	110,665	0	0	35,422	45,379	29,864

^a Since funds are appropriated for Operations and Maintenance, which includes operating expenses, capital equipment and general plant projects, we no longer budget separately for capital equipment and general plant projects. FY 2001 and FY 2002 funding shown reflects estimates based on actual FY2000 obligations.

^b The TEC/TPC, funding profile and schedule milestone dates for MESA *MDL Retooling* reflected in this summary are preliminary. The TEC/TPC, outyear funding profile, and schedule have not been validated and may be modified after completion of a thorough review and validation. In addition, the Administration is conducting an on-going review of the strategic nuclear mission of the United States, which could impact funding requirements and schedules.

	Total Estimated Cost (TEC)	Prior Year Approp- riations	FY 2000	FY 2001	FY 2002	Unapprop- riated Balance
01-D-124, HEU Storage Facility, Y-12	119,961	0	0	17,710	9,500	92,751
01-D-126, Weapons Evaluation Test Laboratory, Pantex	22,181	0	0	2,993	7,700	11,488
01-D-800, Sensitive Compartmented Information Facility, LLNL	24,597	0	0	1,993	12,993	9,611
99-D-103, Isotope Sciences Facilities, LLNL	17,367	2,000	1,992	4,964	4,400	4,011
99-D-104, Protection of Real Property (Roof Reconstruction - PH II), LLNL	19,886	2,500	2,391	2,780	2,800	9,415
99-D-105, Central Health Physics Calibration Facility, LANL	0	0	996	0	0	-996
99-D-106, Model Validation & System Certification Test Center, SNL	18,219	1,600	6,475	5,189	4,955	0
99-D-108, Renovate Existing Roadways, NV	8,981	2,130	4,981	1,870	0	0
99-D-122, Rapid Reactivation, VL	22,900	11,244	11,656	0	0	0
99-D-125, Replace Boilers & Controls, KC	14,271	1,000	0	12,971	300	0
99-D-127, SMRI-Kansas City Plant II, KC	122,201	13,752	16,935	23,514	22,200	45,800
99-D-128, SMRI-Pantex Consolidation, PX	13,218	1,108	3,416	4,987	3,300	407
98-D-123, SMRI-Tritium Facility Modernization & Consolidation, SR	113,613	38,500	20,233	30,699	13,700	10,481
98-D-124, SMRI-Y-12 Consolidation	19,600	17,150	0	0	6,850	-4,400
97-D-123, Structural Upgrades, KC	17,940	7,800	4,282	2,858	3,000	0

**Weapons Activities/
Readiness in Technical Base & Facilities/
Construction/Capital Operating Expenses
& Construction Summary**

FY 2002 Congressional Request

	Total Estimated Cost (TEC)	Prior Year Approp- riations	FY 2000	FY 2001	FY 2002	Unapprop- riated Balance
96-D-102, Stockpile Stewardship Facility Revitalization, Phase VI, VL	15,374	9,335	139	0	2,900	3,000
96-D-104, Processing & Environmental Tech Laboratory, SNL	45,900	35,041	10,859	0	0	0
95-D-102, CMR Upgrades Project, LANL	106,020	77,769	14,943	13,308	0	0
Total, Construction		220,929	99,298	161,258	154,664	246,918

02-D-101, Microsystems and Engineering Sciences Applications (MESA) Complex, Sandia National Laboratories, Albuquerque, New Mexico

The TEC/TPC, funding profile and schedule milestone dates reflected in this data sheet are preliminary. The TEC/TPC, outyear funding profile, and schedule have not been validated and may be modified after completion of a thorough review and validation. In addition, the Administration is conducting an on-going review of the strategic nuclear mission of the United States, which could impact funding requirements and schedules.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 2002 Budget Request (<i>Preliminary Estimate</i>)	N/A	N/A	2Q 2002	TBD	51,000 ^a	51,000

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2002	2,000	2,000	2,000
2003	TBD	TBD	TBD

3. Project Description, Justification and Scope

Long-lead Procurement for Rad-hard Integrated Circuit Retooling

This project supports the costs of retooling the already existing Microelectronics Development Laboratory (MDL) at Sandia National Laboratories in Albuquerque. It is necessary to initiate the long lead procurements associated with this part of the Microsystems Engineering and Sciences Applications (MESA) Complex in FY 2002 in order to support radiation hardened integrated circuits (rad-hard IC) production. The Department is

^a The TEC/TPC, funding profile and schedule milestone dates reflected in this data sheet are preliminary. The TEC/TPC, outyear funding profile, and schedule have not been validated and may be modified after completion of a thorough review and validation. In addition, the Administration is conducting an on-going review of the strategic nuclear mission of the United States, which could impact funding requirements and schedules.

also proceeding with the design and associated infrastructure upgrades for the full MESA Complex in FY 2002 under the Project Engineering and Design line item, 01-D-103. The retooling work requested in this line item will be required whether or not the Department decides, following completion of the preliminary design, to proceed with construction of the full MESA Complex.

This cost estimate is based on the Conceptual Design Report completed in May 2000 for the MESA Complex. The estimate for the rad-hard IC retooling is primarily equipment, design and fit-up costs. The tool delivery time is estimated at 6-12 months after order, followed by installation, inspection and start up time. Tools are ordered in sequence to maximize efficiency and minimize downtime and disruptions to on-going MDL activities.

Justification:

Management of the stockpile focuses on the surveillance, maintenance, refurbishment, assessment, and certification activities necessary to extend the life of the current stockpile. As weapons approach, or exceed, their useful (warranted) lifetimes, their limited-life components require periodic refurbishment, retrofit and remanufacture. These activities are driven by the Stockpile Life Extension Process (SLEP). SLEP is an evaluation and prioritization framework for performing systematic, life-extension upgrades on, and replacements of, subsystems and components of nuclear weapons.

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

This portion of the MESA project proposes to retool the existing Microelectronics Development Lab (MDL) with the equipment that is required in order to produce radiation hardened integrated circuits. The MDL currently does not have the complete tool set needed to produce qualified war reserve (WR) microsystem products. The existing tool set is developmental in nature, is missing some key tools, and includes critical one-of-a-kind tools with no backup. Many of MDL's fabrication tools are more than 10 years old and have exceeded, or are approaching, the end of their useful lives. Downtime is increasing, supplier support for tool maintenance is decreasing, and spare parts are increasingly unavailable. More importantly, commercial vendors for radiation hardened integrated circuits soon will cease to exist, leaving Sandia as the only supplier for these key weapons components. Therefore, refurbishment of the MDL fabrication toolset is a critical capability that the Department must have, regardless of whether a decision is made to proceed with the full MESA Complex. The parts of the MESA project involving retooling of the MDL will play a substantial role in developing refurbishment options. If a decision is made to construct the full MESA Complex, the MDL will be subsumed into the Microsystems Fabrication (MicroFab) facility, and in this way will be an enduring, critical part of the MESA Complex.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2002	FY 2003	FY 2004	Outyears	Total
Project Cost						
Facility Costs						
Design	0	100	TBD	TBD	TBD	TBD
Construction	0	1,900	TBD	TBD	TBD	TBD
Total, Line item TEC	0	2,000	TBD	TBD	TBD	TBD
Total Facility Costs (Federal and Non-Federal)	0	2,000	TBD	TBD	TBD	TBD
Other Project Costs						
Conceptual design costs	0	0	0	0	0	0
NEPA documentation costs	0	0	0	0	0	0
Other project-related costs	0	0	0	0	0	0
Total, Other Project Costs ^a	0	0	0	0	0	0
Total Project Cost (TPC)	0	2,000	TBD	TBD	TBD	TBD

7. Related Annual Funding Requirements

(FY 2002 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^b	N/A	N/A
Total related annual funding (operating from FY 2002 through FY 2004)	N/A	N/A

^a Conceptual design costs and other project costs are part of the full MESA project and currently are reflected in line item 01-D-103.

^b There are no new related annual operating costs as this project is for equipment upgrades to the already existing Microelectronics Development Laboratory.

02-D-103, Defense Programs Project Engineering and Design (PED), Various Locations

1. Construction Schedule History

Fiscal Quarter				Total Estimated Cost (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	

FY 2002 Budget Request (A-E and technical design only) 1Q 2002 4Q 2004 N/A N/A 19,880 ^a

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2002	9,180	9,180	5,800
2003	7,200	7,200	9,980
2004	3,500	3,500	4,100

3. Project Description, Justification and Scope

This project is to provide for Architect-Engineering (A-E) services (Title I and Title II) for several Defense Programs construction projects, allowing designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction costs based on the approved design and working drawings and specifications, and provide construction schedules, including procurements.

Conceptual design studies are prepared for each project using Operations and Maintenance funds. These studies define the scope of the project and produce a rough cost estimate and schedule. Currently they are completed 9-12 months before a Congressional budget is submitted requesting line item funding for a project. The effect of this process is that the conceptual design study is at least 24 months old by the time a line-item appropriation for the project is enacted. The use of a PED line item will enable a project to proceed immediately upon completion of the conceptual design into preliminary and final designs. It will permit

^a The Total Estimated Cost reflected here is to initiate design efforts for one or more of the subprojects included in this line item. Additional funding will be requested in outyears to fund the completion of Title II designs for subprojects that Defense Programs determines should proceed.

acceleration of new facilities, provide savings in construction costs based on current rates of inflation, and permit more mature cost, schedule, and technical baselines for projects when the budget is submitted to Congress.

Once FY 2002 appropriations have been provided for this project, final decisions will be made as to which sub-projects should proceed to Title I design efforts to best support the Stockpile Stewardship mission and how much funding should be applied to each of these subprojects. These decisions will be documented in the project data sheet included in the FY 2003 Congressional budget request. The Department will notify Congress if program developments require the expenditure of funds for Title I efforts on a subproject not described in this data sheet.

Following completion of Title I design activities, Defense Programs will determine preliminary Title I project baselines, providing detailed funding and schedule estimates for Title II and physical construction. The Department will request external independent experts to assess the project scope, schedule and budget. Based upon the results of this assessment, and a review of the continuing programmatic requirement for the project, Defense Programs will either cancel further action on the subproject, or set final Title I baselines for the project and proceed to Title II activities.

The Title I baseline will be the basis for the request to Congress for authorization and appropriations for physical construction. It is estimated that the request for physical construction funding for most projects will occur in the second fiscal year following initiation of the Title I effort, e.g., FY 2002 Title I subprojects would request physical construction line item funding in the FY 2004 request. Larger or more complex projects requiring additional design effort may not request physical construction funding until the third or fourth year following initiation of Title I activities. Each project that proceeds to physical construction will be separated into an individual construction line item, the total estimated cost (TEC) of which will include the costs of the engineering and design activities funded through the PED line item.

Following is the current list of subprojects for which Defense Programs may begin Title I design activities during FY 2002 using PED appropriations. Preliminary estimates for the cost of Title I and II design and engineering efforts for each subproject are provided, as well as very preliminary estimates of the Total Estimated Cost (including physical construction) of each subproject.

FY 2002 Proposed Design Projects

02-01: Test Capabilities Revitalization, SNL

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2002	3Q 2003	1Q 2004	TBD	9,000	90,000-100,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
9,000	0	0	0	3,500	5,500	3Q 2003

This design project provides Architect-Engineering (A-E) services required to develop and complete preliminary and final (Title I and Title II) design for the proposed Sandia Test Capabilities Revitalization (TCR) project.

The TCR project will support urgently needed renovation and renewal work on the physical testing facilities and infrastructure at Sandia National Laboratories (SNL) required to support the Stockpile Life Extension Program (SLEP) nuclear weapons refurbishment work. All of the physical test facilities are decades old and in need of very significant repair and maintenance. Some of them are in need of outright reconstitution in order to enable them to meet currently scheduled SLEP requirements, or even the minimum anticipated demands over the next few decades. The goal of the proposed Test Capabilities Revitalization (TCR) project is to ensure that SNL is fully prepared to meet the physical testing demands of the Stockpile Life Extension Program (SLEP) mission under any circumstances. An operational “fit-for-use” survey of existing physical testing capabilities, cross-referenced against currently scheduled or reliably anticipated SLEP requirements, has revealed the need to renovate, rebuild, or otherwise revitalize up to three dozen different physical testing facilities, the bulk of which are located in Sandia’s Technical Area III (TA-III). The objective of the proposed TCR project is to redress the aging and deterioration of physical testing facilities and infrastructure in an orderly, integrated, efficient, organized, and cost-effective manner, through a single comprehensive construction line item.

02-02: Nevada Test Site (NTS) Facility Consolidation, NV

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2002	4Q 2003	1Q 2004	TBD	2,880	29,000-32,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
2,880	0	0	0	2,880	0	4Q 2003

This design project provides Architect-Engineering (A-E) services required to develop and complete preliminary and final (Title I and Title II) design for the Nevada Test Site Facility Consolidation, which will provide for planned consolidation of administrative, engineering, training, and emergency management functions at the Nevada Test Site. These functions will be consolidated in new, state-of-the-art, energy efficient, multi-purpose buildings in Area 23 and Area 6. Coincident with the implementation of the new buildings, at least an equivalent quantity of existing facility space will be disposed. The new multi-purpose buildings will be tailored to the current and projected NTS programs and will result in long-term operational and maintenance savings.

As currently envisioned, this project phase will encompass approximately 80,000 square feet of space; 40,000 representing replacements of cafeteria space in Areas 6 and Area 23, and the remaining 40,000 square feet accounting for administrative, engineering, training and emergency management functions. This project will also include the costs of disposing of the aging facilities that house the functions that will be replaced.

02-03: Exterior Communications Infrastructure Modernization (ECIM), SNL

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2002	3Q 2003	1Q 2004	TBD	2,000	18,000-28,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
2,000	0	0	0	2,000	0	3Q 2003

This design project provides for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and Title II) design of the proposed Exterior Communications Infrastructure Modernization (ECIM) project.

The objectives of this project are to modernize and integrate the exterior communications duct bank system that provides data, voice, dedicated security communications and facility control systems connectivity within Tech Area I of the Sandia National Laboratories (SNL) New Mexico site. The original duct bank system, much of which is still used today, was installed in the 1950s. It is composed of collapsing clay and ceramic duct banks mixed with direct burial cables. Manholes often flood and remain filled with water for long periods of time. Some of the 50-year-old copper cables are constructed with hazardous lead sheathing and deteriorating paper composites that have become unreliable. Optical fiber cables installed in the 1970s have become inadequate in capacity, brittle, and difficult to maintain and service.

The infrastructure system currently supports a workforce of approximately 9,000 people at the SNL/NM site. Many of SNL’s current and emerging capabilities rely heavily on the communications infrastructure. Ideally, this infrastructure system enables the high-speed, high-fidelity transmission of data within and between buildings, and across sites, in support of a multitude of mission activities. SNL/NM invested \$30 million to modernize the interior cabling systems within most large buildings on the site from 1992 through 1996. Eighty percent of interior telecommunication cabling has been completed, thereby permitting modern internal connectivity and enhanced maintenance cost effectiveness. However, these enabled facilities now communicate with each other with an aging, failing, and incapable inter-building cabling system. The ECIM project addresses these issues and integrates voice, data, security and access control telecommunications systems as well as providing the flexibility to adjust to future requirements. The new exterior infrastructure will provide a combination of new and renovated exterior duct banks, manholes, cabling and building termination equipment within Tech Area I of the SNL/NM site.

02-04: Replacement of Function Tester, SRS

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 2002	4Q 2004	1Q 2005	4Q 2007	6,000	19,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
6,000	0	0	0	800	5,200	4Q 2004

This project will replace the existing Function Test Facility located in 232-H. This building is over 40 years old and employs obsolete technology. It is being deactivated to reduce operating and maintenance costs. Two other function testers are currently located in 233-H. The number of required function tests to support reservoir surveillance in the future will require the use of a third tester to ensure that there is no backlog of testing. It is proposed to locate a new function tester in 233-H near the existing two testers. The new tester will make use of existing support systems where practical. The capability of a real time mass spectrometer will be included.

4. Details of Cost Estimate ^a

(dollars in thousands)

Current Estimate	Previous Estimate
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Design Phase ^b

Preliminary and Final Design Costs (Design Drawings and Specifications)	14,860	N/A
Design Management Costs (15.9% of TEC)	3,155	N/A
Project Management Costs (9.4% of TEC)	1,865	N/A
Total, Design Costs (100% of TEC)	19,880	N/A
Total, Line Item Costs (TEC)	19,880	N/A

^a This cost estimate is based upon direct field inspection and historical cost estimate data, coupled with parametric cost data and completed conceptual studies and designs, when available. The cost estimate includes design phase activities only. Construction activities will be requested as individual line items upon completion of Title I design.

^b The percentages for Design Management; Project Management; and Design Phase Contingency are estimates base on historical records and are preliminary estimates.

5. Method of Performance

Design services will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, production, proliferation, etc. concerns.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2002	FY 2003	Outyears	Total
Project Cost					
Facility Cost					
Project Engineering and Design	0	5,800	9,980	4,100	19,880
Total, Line item TEC	0	5,800	9,980	4,100	19,880
Total, Facility Costs (Federal and Non-Federal)	0	5,800	9,980	4,100	19,880
Other Project Costs					
Conceptual design costs	2,980	600	0	0	3,580
Other project-related costs	2,080	1,035	1,300	2,300	6,715
Total, Other Project Costs	5,060	1,635	1,300	2,300	10,295
Total, Project Cost (TPC)	5,060	7,435	11,280	6,400	30,175

02-D-107, Electrical Power Systems Safety, Communications and Bus Upgrades, Nevada Test Site, Nye County, Nevada

Significant Changes

This project is requested in FY 2002 concurrent with a request for design funding in line item 01-D-103, Project Engineering and Design, in order to support long lead procurements that must be placed from 6 to 18 months in advance of the time they are needed for installation. In addition, the detailed specifications from the vendors for these items are needed in order to complete the preliminary design. The long lead procurements include transformers with load tap changers (12 - 18 months), gas circuit breakers (9 - 12 months), 15kV metal-clad switchgear (6 - 9 months).

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		

FY 2002 Budget Request (*Preliminary Estimate*)

1Q 2002 ^a 3Q 2003 ^a 4Q 2002 2Q 2005 16,531 ^b 16,896 ^b

2. Financial Schedule ^c

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2002	3,507	3,507	3,500
2003	7,500	7,500	6,807
2004	2,831	2,831	2,500
2005	0	0	1,031

^a Design for this project is funded in line item 01-D-103, Project Engineering and Design.

^b The TEC/TPC estimate is the Preliminary Baseline and is based on the conceptual design report. It reflects total project funding, including \$2,693,000 requested for design in FY 2002 in line item 01-D-103. The Performance Baseline for this project will be established at Critical Decision-2 following completion of Preliminary Design.

^c The Financial Schedule includes only construction funding requested in this line item.

3. Project Description, Justification and Scope

This project is requested in FY 2002 concurrent with a request for design funding in line item 01-D-103, Project Engineering and Design. A safe, reliable power system at the Nevada Test Site (NTS) is a critical element of the science-based Stockpile Stewardship program. This project is necessary to support the increased demands for safety and reliability in the power system for sub-critical experiments and planned gas gun experiments, as well as emergency management, test readiness, other weapons experiments, work for other national security organizations, and other experimental programs. It is part of an ongoing, multi-year construction program needed to maintain the NTS in a state of readiness to support DOE's strategic objectives. Previous line item projects have upgraded various aspects of the NTS Power Distribution and Transmission System, which includes eight substations and one switching center. These projects (the Power Systems Distribution project, 90-D-102, and the 138kV Substation Modernization project, 96-D-102) provided for a Supervisory Control and Data Acquisition (SCADA) System at all but one of the substations, and SCADA fiber optics communications systems and relay upgrades at all of the substations.

Most of the NTS transmission facilities and systems are already between 35 and 40 years old. As such, during the next decade as many critical components of the 138 kV transmission system experience failure, vital replacement components (e.g., transformers, circuit switchers, oil circuit breakers, etc.) will no longer be manufactured or even available for purchase. Over the past several years increased outages due to the equipment failure have demonstrated that these facilities have reached the end of their expected useful life span. In fact, in 1998 at Mercury Distribution Substation, a "flash-over" incident occurred and "substation configuration" was a major contributing factor. This project will correct this and other hazardous conditions.

Timely upgrades on obsolete portions of the power system must be made to maintain the ability to meet the following minimum criteria for the NTS Power Transmission and Distribution System.

1. Maintain all basic safety requirements in accordance with the American National Standards Institute (ANSI), the Institute of Electrical & Electronic Engineers (IEEE) and the Occupational Safety and Health Act (OSHA).
2. Maintain voltage levels at 95% or more of nominal on the entire 138 kV system during normal operating condition and above 90% during emergency or single outage conditions of limited duration. The voltage levels are in accordance with ANSI/IEEE Standards 141 and ANSI C84.1 which have been adopted for the NTS power system.
3. Act as a *de facto* public utility in providing adequate and reliable power to the users of the NTS, which have no other source of power.
4. Provide sufficient capacity to ensure reliable service to existing loads while allowing additional moderate-sized loads to come on line.
5. Ensure adequate system fault protection.

The Electrical Power Systems Safety, Communications and Bus Upgrades project will provide for the complete reconstruction of Mercury Distribution Substation and the upgrade of Jackass Flats Substation and Mercury

Switching Center. The substations and the switching center are located within the primary power transmission loop at the Nevada Test Site (NTS). The project will mitigate safety and environmental issues that now exist in the Mercury Distribution Substation and take it off the radial feed from the Mercury Switching Center and place it on the 138 kilovolt (kV) loop. In addition, this project will improve the connection between the NTS power system and Valley Electric Association transmission lines, one of two external power sources available to the test site, at the Jackass Flats Substation. Another key element of this project will include adding a transfer bus scheme at the Mercury Switching Center by reusing the existing radial feeder gas circuit breaker and associated bay which will become available when the new Mercury Distribution Substation is built. Mercury Switching Center serves as either the back-up or primary point of connection for commercial power.

Specifically, the upgrades supported by this project will include the following:

1. Mercury Distribution Substation - The upgrade to this substation will require complete reconstruction. The substation will be constructed on the 138 kV loop and be located near the existing substation. The new substation will include new 138 kV gas circuit breakers; a new indoor 15 kV metal-clad switchgear lineup; and two new dual rated 138 kV-12.47/4.16 kV, 10 MVA oil-filled transformers with automatic load tap changer (LTC). In addition, the new substation will include a new control house, new substation Supervisory Control and Data Acquisition (SCADA) components which will tie into the existing SCADA system, and miscellaneous relaying and hardware required for a complete substation installation. The existing substation and related appurtenances will be de-energized and demolished.
2. Jackass Flats Substation - New gas circuit breakers and a new 138 kV-69 kV, 20 MVA oil-filled transformer with automatic LTC will replace four existing 138 kV oil circuit breakers, one existing 69 kV oil circuit breaker, one existing 69 kV disconnect switch, and the existing 138 kV-69 kV, 20 MVA transformer. It will also rearrange the existing bus configuration into a more efficient and safer layout. The twelve existing obsolete 138 kV gang operated disconnect switches will be replaced and the new upgrades will be tied to the existing SCADA system.
3. Mercury Switching Center - This is the main switching station at the NTS, and it serves as a back-up or primary connection point for commercial power from Valley Electric Association or Nevada Power Company and provides power to the NTS transmission and distribution system. The upgrade will include modifications to the existing Mercury Distribution Substation gas circuit breaker and associated structure and hardware, which will be converted into a transfer bus scheme, once the new Mercury Distribution Substation is built. The controls, hardware and protection devices associated with the gas circuit breaker will be developed into a transfer bus breaker scheme. It could then be used as a replacement for any of the other three existing breakers and would be used during maintenance or breaker temporary outage. This will permit relay settings to be consistent with other system breaker settings and offer full circuit protection.

Project Milestones:

FY 2002: Complete long-lead procurement 4Q

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase ^a		
Preliminary and Final Design costs (Design Drawings and Specifications)	0	0
Design Management Costs (0% of TEC)	0	0
Project Management Costs (0% of TEC)	0	0
Total Design Costs (0% of TEC)	0	0
Construction Phase		
Improvements to Land	9,520	0
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	503	0
Construction Management (5.7% of TEC)	938	0
Project Management (3.9% of TEC)	645	0
Total Construction Costs (70.2% of TEC)	11,606	0
Contingencies		
Design Phase (0% of TEC)	0	0
Construction Phase (13.5% of TEC)	2,232	0
Total Contingencies (16.7% of TEC)	2,232	0
Total, Line Item Costs (TEC) ^b	13,838	0

5. Method of Performance

Design engineering services and other related functions will be performed by the on-site performance based management contractor. To the extent feasible, construction and procurement will be accomplished by fixed-priced contracts and subcontracts awarded on the basis of competitive bidding. Inspection, contract administration, surveying, and related project functions will be accomplished by the performance-based management contractor.

^a Design funding is included in line item 01-D-103, Project Engineering and Design.

^b Escalation rates taken from the FY 2000 DOE escalation multiplier tables; total shown is for construction only and does not include the \$2,693,000 requested for design in line item 01-D-103.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2002	FY 2003	FY 2004	Outyears	Total
Project Cost						
Facility Costs						
Design ^a	0	0	0	0	0	0
Construction	0	3,500	6,807	2,500	1,031	13,838
Total, Line item TEC	0	3,500	6,807	2,500	1,031	13,838
Total Facility Costs (Federal and Non-Federal)	0	3,500	6,807	2,500	1,031	13,838
Other Project Costs ^b						
Conceptual design costs	0	0	0	0	0	0
NEPA documentation costs	0	0	0	0	0	0
Other ES&H costs	0	0	0	0	0	0
Total, Other Project Costs	0	0	0	0	0	0
Total Project Cost (TPC)	0	3,500	6,807	2,500	1,031	13,838

7. Related Annual Funding Requirements

(FY 2002 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	0	0
Total related annual funding (operating from FY 2002 through FY 2035)	0	0

^a Design funding is included in line item 01-D-103, Project Engineering and Design.

^b Other Project Costs for this project are reflected in line item 01-D-103.

01-D-103, Defense Programs Project Engineering and Design (PED), Various Locations

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [§] in the left margin.)

Significant Changes

- # Subprojects for proof of concept and completion of facility operational capability for the Atlas pulsed power machine at the Nevada Test Site and initiation of design activities for the relocation of the TA-18 nuclear materials handling facility at Los Alamos National Laboratory were added to this project as a result of congressional direction in the FY 2001 Energy and Water Development Appropriations Act. In addition, emerging requirements have resulted in a decision to proceed with design of the Sandia Underground Reactor Facility (SURF), a safeguards and security project to replace the aging facility that houses the Sandia Pulse Reactor.

- # Included in this project is a subproject for the Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories. The FY 2001 Energy and Water Development Appropriations Act provided \$20,000,000 for design and supporting infrastructure upgrades for this subproject.

- # Section 1403 of the FY 2001 Consolidated Appropriations Act reduced the \$35,500,000 appropriated for this project in FY 2001 by \$78,000.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	
FY 2001 Budget Request (<i>A-E and technical design only</i>)	1Q 2001	2Q 2002	N/A	N/A	14,500 ^a
FY 2002 Budget Request (<i>A-E and technical design only</i>)	1Q 2001	4Q 2003	N/A	N/A	110,665

^a The FY 2001 Energy and Water Development appropriation for design and other non-design activities increased the requested appropriation from \$14,500,000 to \$35,500,000.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	35,422 ^{a b}	35,422	16,650
2002	45,379	45,379	57,842
2003	29,864	29,864	30,003
2004	0	0	6,170

3. Project Description, Justification and Scope

This is the second year of a pilot project to provide for Architect-Engineering (A-E) services (Title I and Title II) for several Defense Programs construction projects. This allows designated projects to proceed from conceptual design into preliminary design (Title I) and definitive design (Title II). The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction costs based on the approved design and working drawings and specifications, and provide construction schedules, including procurements.

Conceptual design studies are prepared for each project using Operations and Maintenance funds. These studies define the scope of the project and produce a rough cost estimate and schedule. Currently they are completed 9-12 months before a Congressional budget is submitted requesting line item funding for a project.

The effect of this process is that the conceptual design study is at least 24 months old by the time a line-item appropriation for the project is enacted. The use of a PED line item will enable a project to proceed immediately upon completion of the conceptual design into preliminary and final designs. It will permit acceleration of new facilities, provide savings in construction costs based on current rates of inflation, and permit more mature cost, schedule, and technical baselines for projects when the budget is submitted to Congress.

Defense Programs has made decisions as to which sub-projects should proceed to Title I design efforts to best support the Stockpile Stewardship mission; the amount of funding to be applied to each of these subprojects is reflected in this data sheet. The FY 2002 funding request provides funding only to complete those subprojects initiated in FY 2001. New design requests are included in a new FY 2002 PED line item, 02-D-103.

Following completion of Title I design activities, Defense Programs will determine preliminary Title I project baselines, providing detailed funding and schedule estimates for Title II and physical construction. The Department will request external independent experts to assess the project scope, schedule and budget. Based

^a The FY 2001 Energy and Water Development appropriation for design and other non-design activities increased the requested appropriation from \$14,500,000 to \$35,500,000.

^b Original appropriation was \$35,500,000. This was reduced by \$78,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

upon the results of this assessment, and a review of the continuing programmatic requirement for the project, Defense Programs will either cancel further action on the subproject, or set final Title I baselines for the project and proceed to Title II activities. The Department will notify Congress if program developments require the expenditure of funds for Title I efforts on a subproject not described in this data sheet.

The Title I baseline will be the basis for the request to Congress for authorization and appropriations for physical construction. It is estimated that the request for physical construction funding for most projects will occur in the second fiscal year following initiation of the Title I effort, e.g., the FY 2001 Title I subprojects in this data sheet would be ready, in most cases, to request physical construction line item funding in the FY 2003 request. Larger or more complex projects requiring additional design effort may not request physical construction funding until the third or fourth year following initiation of Title I activities. Each project that proceeds to physical construction will be separated into an individual construction line item, the total estimated cost (TEC) of which will include the costs of the engineering and design activities funded through the PED line item.

Following is the current list of subprojects for which Defense Programs plans to initiate Title I design activities during FY 2001 using PED appropriations. Preliminary estimates for the cost of Title I and II design and engineering efforts for each subproject are provided, as well as very preliminary estimates of the Total Estimated Cost (including physical construction) of each subproject.

FY 2001 Design Projects

01-01: Microsystems & Engineering Sciences Applications (MESA), SNL

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q 2001	3Q 2002	1Q 2003	TBD	31,956 ^{a b}	375,000 - 400,000

Design TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Design Completion
14,956 ^a	0	10,456 ^b	4,500	0	0	3Q 2002

Infrastructure TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Construction Completion
17,000 ^a	0	9,500	7,500	0	0	3Q 2002

^a Congress provided \$20,000,000 in the FY 2001 appropriation for design and supporting infrastructure upgrades for MESA. The total TEC for design is \$15,000,000; the total TEC for the infrastructure upgrades is \$17,000,000.

^b Original FY 2001 appropriation was \$20,000,000. This was reduced by \$44,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

This subproject provides for preliminary and definitive design of the Microsystems and Engineering Sciences Applications (MESA) Complex at Sandia National Laboratories in Albuquerque, a proposed state-of-the-art national complex that will provide for the design, integration, prototyping and fabrication, and qualification of microsystems into weapon components, subsystems, and systems within the stockpile. In addition, consistent with the direction given by Congress in the FY 2001 Energy and Water Development Appropriations Act, supporting infrastructure upgrades associated with the MESA Complex will be funded in this subproject. The infrastructure upgrades include systems upgrades to the existing Microelectronics Development Laboratory and utilities upgrades to reroute existing utilities to enable construction of the MESA Complex.

The design of the MESA Complex proceeds from the Conceptual Design which was completed in FY 2000. It provides for a total of about 377,000 gross square feet of space accommodating approximately 650 people, and includes the following elements:

- Supporting infrastructure upgrades (systems upgrades and site utility upgrades);
- Retooling of equipment in Sandia's existing Microelectronics Development Lab (MDL);
- Construction of new facilities: Microsystems Fabrication (MicroFab) Microsystems Laboratory (MicroLab) and Weapons Integration Facility (WIF). MicroFab will provide cleanrooms that replace the Compound Semiconductor Research Lab (CSRL) and transition cleanroom space for prototyping new devices. MicroLab will be used to conduct research and development critical to the development of microsystems components as well as rapid prototyping and testing of these components. The WIF will include a classified portion (WIF-C) that will facilitate design, system integration, and the qualification of weapons systems, and an unclassified portion (WIF-U) that will enable collaboration and close proximity between partners from industry and academia and Sandia scientists and engineers, which will encourage and provide the environment necessary for process development and information transfer;
- New tooling for the MicroFab and MicroLab; and
- Integration of classified and unclassified supercomputing, visualization and ultra-high speed telecommunications resources to the MESA Complex.

The systems upgrades to the Microelectronics Development Laboratory will repair and modify the existing building infrastructure including the acid exhaust system, specialty gas room, process chilled water, make-up air, de-ionized water plant, and nitrogen plant. These upgrades are necessary in order to prepare for the equipment retooling of the MDL. Defense Programs is initiating a separate MESA line item, 02-D-101, as part of the FY 2002 budget request to support the long lead procurements necessary to retool the MDL. This work must proceed in order to produce rad-hard integrated circuits and will be required whether or not the Department decides, following completion of the preliminary design, to proceed with construction of the full MESA Complex.

The utilities upgrades work reroutes existing communications, power, and water utilities and brings the required utilities to the perimeter of the proposed MESA building site.

01-02: Special Materials Complex, Y-12

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
4Q 2001	4Q 2003	1Q 2003	1Q 2006	33,583 ^a	250,000 - 300,000

Design TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Design Completion
33,583	0	7,483 ^a	17,100	9,000	0	4Q 2003

The Department is currently conducting an evaluation of this project to address changes in facility/operations and program requirements, ongoing site planning, the establishment of a new M&O contractor, and funding availability. Project funding profiles have been adjusted to reflect revised project needs, but the Total Estimated Cost of design (with the exception of the rescission as noted) and the Preliminary Full Total Estimated Cost Projection have not been changed pending completion of the evaluation and Departmental approval of any proposed baseline changes.

This design subproject provides preliminary and final (Title I and Title II) A-E services associated with the Special Material Complex at the Y-12 Plant. This Facility will include:

A Seabreeze and Diallyl Phthalate (DAP) production area - The current production equipment for these materials has deteriorated to the point that operational reliability and worker protection cannot be assured.

- A Beryllium facility - The current facility cannot meet the current exposure limits without burdensome administrative controls and personal protective equipment. The new facility will offer state of the art engineering controls to limit personnel exposure.
- A Purification facility- the current facility is a development scale facility incapable of meeting the projected workloads. The Department will reestablish this capability in a new facility with new equipment better suited to meet the current environment safety and health requirements, maintainability, and operational reliability.
- An Isostatic Press - This will provide a collocated press to streamline the production process.

This project is being done in support of the remanufacturing requirements of the future Stockpile Life Extension Programs. Currently the plant cannot meet these goals in the special materials area and this project is needed to provide those capabilities.

^a Original appropriation was \$7,500,000. This was reduced by \$17,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

01-03: Electrical Power Systems Safety, Communications and Bus Upgrades, NTS (formerly Buss Upgrades for Substations)

Fiscal Quarter				Total Estimated Cost (Design Only) (\$000)	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2002	3Q 2003	3Q 2002	2Q 2005	2,693	16,000-18,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
2,693	0	0	0	2,693	0	3Q 2003

This design project provides for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and Title II) design of the proposed Electrical Power Systems Safety, Communications and Bus Upgrades project.

A safe, reliable power system at the Nevada Test Site (NTS) is a critical element of the science-based Stockpile Stewardship program. This project is necessary to support the increased demands for safety and reliability in the power system for sub-critical experiments and planned gas gun experiments, as well as emergency management, test readiness, other weapons experiments, work for other national security organizations, and other experimental programs. It is part of an ongoing, multi-year construction program needed to maintain the NTS in a state of readiness to support DOE's strategic objectives.

The Electrical Power Systems Safety, Communications and Bus Upgrades project will provide for the complete reconstruction of Mercury Distribution Substation and the upgrade of Jackass Flats Substation and Mercury Switching Center. The substations and the switching center are located within the primary power transmission loop at the Nevada Test Site (NTS). The project will mitigate safety and environmental issues that now exist in the Mercury Distribution Substation and take it off the radial feed from the Mercury Switching Center and place it on the 138 kilovolt (kV) loop. In addition, this project will improve the connection between the NTS power system and Valley Electric Association transmission lines, one of two external power sources available to the test site, at the Jackass Flats Substation. Another key element of this project will include adding a transfer bus scheme at the Mercury Switching Center by reusing the existing radial feeder gas circuit breaker and associated bay which will become available when the new Mercury Distribution Substation is built. Mercury Switching Center serves as either the back-up or primary point of connection for commercial power.

Construction funding is requested in FY 2002, concurrent with this request, in line item 02-D-107 to support long-lead procurements that must be placed from 6 to 18 months in advance of the time they are needed for installation. In addition, the detailed specifications from the vendors for these items are needed in order to complete the preliminary design. The long-lead procurements include transformers with load tap changers (12-18 months), gas circuit breakers (9-12 months), 15kV metal-clad switchgear (6-9 months).

01-04: Engineering Technology Complex Upgrade, LLNL

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q 2002	3Q 2003	1Q 2003	1Q 2006	2,000	26,000-28,000

Design TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Design Completion
2,000	0	0	0	2,000	0	3Q 2003

This design project provides for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and Title II) design of the proposed Engineering Technology Complex Upgrade (ETCU) project.

The Building 321 Complex at Lawrence Livermore National Laboratory (LLNL) currently supports the weapons program by manufacturing parts for research programs important to the Stockpile Stewardship Program including the National Ignition Facility (NIF), Lasers, Computations, and the Weapons Program. Services of programmatic importance include diamond turning of small classified targets; dimensional inspection of a variety of parts with tolerances measured in the millionths of an inch; and characterization of various unique weapons materials.

The Building 321 Complex was constructed in 1956 to provide fabrication services to research programs at LLNL. Existing equipment and facilities will not adequately meet anticipated program requirements. This project will address the issue of technological obsolescence, as well as correcting a number of code compliance issues including seismic design, accessibility and gender-based standards and current stringent environmental, safety and health (ES&H) requirements. The project will provide for improved and cost effective operations by consolidating and reorganizing laboratories and shops and maintaining all of the programmatic functions in a contiguous complex.

01-05: Stockpile Quality Evaluation and Surveillance Upgrades, Y-12 Plant

This project has been deferred beyond FY 2002 for start of design.

01-06: Atlas Relocation and Operations, NTS

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q 2001	4Q 2001	1Q 2002	4Q 2003	12,189 ^a	12,189

Design TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Design Completion
1,200	0	1,200 ^a	0	0	0	4Q 2001

Relocation & Operations TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Relocation & Operations Completion
10,989	0	3,789 ^a	0	7,200	0	3Q 2004

The FY 2001 Appropriation Act designated \$5,000,000 for proof of concept and completion of facility operational capability for the Atlas pulsed power machine at the Nevada Test Site. This subproject will support a joint team of Los Alamos National Laboratory (LANL), Bechtel Nevada (BN), personnel from other laboratories, and NNSA Nevada Operations Office staff in the development and implementation of a plan that will relocate Atlas to an optimum site at the Nevada Test Site (NTS). It is anticipated that this project will include NEPA documentation and permitting activities, conceptual, preliminary and definitive design, interim operation of Atlas at Los Alamos by a joint LANL/BN operating team, construction project implementation at the NTS, and disassembly, reassembly and recommissioning of the pulse power system at the NTS. The schedule for Atlas operation at LANL, facility construction at the NTS, disassembly, reassembly and recommissioning, and operation at Nevada will be closely coupled to provide minimum downtime of the machine. The central role for Atlas in the Stockpile Stewardship program is to provide experimental data to validate the physics models in the newly emerging suite of certification codes.

^a Original appropriation was \$5,000,000. This was reduced by \$11,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

01-07: TA-18 Mission Relocation, LANL

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
4Q 2001	4Q 2002	1Q 2003	TBD	24,998 ^a	250,000

Design TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Design Completion
24,998	0	998 ^a	10,586	13,414	0	4Q 2003

The FY 2001 Appropriations Act designated \$1,000,000 for initiation of design activities for relocation of TA-18 Nuclear Materials Handling Facility at LANL.

This design subproject provides preliminary and final (Title I and Title II) A/E services associated with the Los Alamos National Laboratory Technical Area (TA)-18 Mission Relocation Project. The goal of this proposed project is to provide a secure, modern location for conducting general purpose nuclear materials handling activities currently conducted at TA-18. The need for this project is based on the projected large capital investment for security and infrastructure upgrades required over the next 10 years to remain at TA-18. The Department is currently conducting environmental, engineering, cost and other technical studies to evaluate alternative siting options for TA-18 missions, including remaining at the present location. Presently, four alternative sites are under evaluation and a final siting decision is anticipated late in the fourth quarter of FY 2001. Because of the varying degree of work projected for each alternative, it is premature to provide details on the scope of activities that would be encompassed by this proposed project. However, it is anticipated that the project will include capabilities to house and operate critical assemblies, store associated special nuclear material, and provide infrastructure to support criticality training and detection development activities.

TA-18 is the sole remaining facility in the United States capable of performing general purpose nuclear materials handling experiments and conducting training essential to important national security missions including: the continued safe and efficient handling and processing of fissile materials; the development of technologies vital to implementing arms control and nonproliferation agreements; the development of emergency response technologies to respond to terrorist attacks, etc; training for criticality safety professionals, fissile material handlers, emergency responders, International Atomic Energy Agency professionals and others.

^a Original appropriation was \$1,000,000. This was reduced by \$2,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

01-08: Sandia Underground Reactor Facility (SURF), SNL

Fiscal Quarter				Total Estimated Cost (Design Only (\$000))	Preliminary Full Total Estimated Cost Projection (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
2Q 2001	2Q 2002	1Q 2003	TBD	2,996 ^a	18,000 - 20,000

Design TEC	Previous	FY 2001	FY 2002	FY 2003	Outyears	Design Completion
2,996 ^a	0	1,996 ^a	1,000	0	0	2Q 2002

This design project provides for Architect-Engineering (A-E) services to develop and complete preliminary and final (Title I and Title II) design of the proposed Sandia Underground Reactor Facility (SURF).

The objective of the Sandia Underground Reactor Facility (SURF) project is to provide a modern, secure, underground facility to house the existing Sandia Pulse Reactor (SPR) at significantly less annual security costs than are being incurred today. The Special Nuclear Materials (SNM) used to fuel the SPR demand a high level of security. While the actual SPR has undergone sequential modernization through the years, the existing facility, in which the SPR is now housed, is many decades old and was not designed to maintain the currently required high level of security in an efficient or cost effective manner. As a result, the cost to maintain this level of security at the existing SPR facility, in its current configuration, is approximately \$10 million per year.

In order to support the Stockpile Life Extension Program (SLEP) mission, the capabilities provided by the SPR need to be maintained. By producing fast neutron environments that serve as a necessary test bed for assessing and verifying the response and robustness of weapon components and subsystems to such radiation, SPR is a unique and essential tool for the development and certification of weapon components and subsystems. The security costs associated with sustaining SPR capabilities in the existing SPR facility are, however, no longer affordable and a more cost effective means of meeting the SLEP requirements is required as soon as possible. The SURF will require a smaller protective force and will be inherently responsive to future changes in security requirements. Preliminary cost analyses shows that the significant savings in security costs of approximately \$6 million per year will pay for the cost of the new facility in less than five years.

The proposed Sandia Underground Reactor Facility (SURF) will be constructed in Technical Area V (TA-V) close to the existing SPR facility and control room to minimize infrastructure costs. The new facility construction will not interfere with existing operations and will not compromise security. Upon completion of the new facility, the reactor will be relocated into the new underground facility and operations will continue.

^a Original amount allocated to this subproject was \$2,000,000. This was reduced by \$4,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

4. Details of Cost Estimate ^a

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design Costs (Design Drawings and Specifications)	63,035	10,575
Design Management Costs (5.5% of TEC)	6,100	1,450
Project Management Costs (12.1% of TEC)	13,441	725
Design Phase Contingency (current estimates include contingency based on risk analysis)	0	1,750
Total Design Costs (74.6% of TEC)	82,576	14,500
Construction Phase		
Improvements to Land	100	0
Buildings	7,400	0
Utilities	9,300	0
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	6,650	0
Construction Management (2.1% of TEC)	2,350	0
Project Management (0.5% of TEC)	550	0
Total, Construction Phase (23.8% of TEC)	26,350	0
Contingency		
Design Phase (0.1% of TEC)	100	0
Construction Phase (1.5% of TEC)	1,639	0
Total Contingency (1.6% of TEC)	1,739	0
Total, Line Item Costs (TEC)	110,665	14,500

5. Method of Performance

Design services will be obtained through competitive and/or negotiated contracts. M&O contractor staff may be utilized in areas involving security, production, proliferation, etc. concerns.

^a This cost estimate is based upon direct field inspection and historical cost estimate data, coupled with parametric cost data and completed conceptual studies and designs, when available.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2001	FY 2002	FY 2003	Outyears	Total
Project Cost						
Facility Costs						
Design	0	12,750	41,042	25,503	3,381	82,676
Construction	0	3,900	16,800	4,500	2,789	27,989
Total, Line item TEC	0	16,650	57,842	30,003	6,170	110,665
Total Facility Costs (Federal and Non-Federal)	0	16,650	57,842	30,003	6,170	110,665
Other Project Costs						
Conceptual design costs	2,240	7,640	0	0	0	9,880
Other project-related costs	4,095	11,960	10,270	2,620	600	29,545
Total, Other Project Costs	6,335	19,600	10,270	2,620	600	39,425
Total Project Cost (TPC)	6,335	36,250	68,112	32,623	6,770	150,090

01-D-124, Highly Enriched Uranium Materials Facility

Y-12 Plant, Oak Ridge, Tennessee

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [§] in the left margin.)

Significant Changes

- # The Department is currently conducting an evaluation of this project to address changes in facility/operations and program requirements, ongoing site planning, the establishment of a new M&O contractor, and funding availability. Project funding profiles have been adjusted to reflect revised project needs, but the Total Estimated Cost and Total Project Cost (with the exception of the Safeguards and Security Amendment adjustment as noted below) have not been changed pending completion of the evaluation and Departmental approval of any proposed baseline changes.
- # The TEC for this project was reduced in FY 2001 appropriation by \$51,000 due to the Safeguards and Security Amendment. This reduction does not affect the scope of work for this project. The TPC is also reduced by \$51,000 from \$144,000,000 to \$143,949,000.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		

FY 2001 Budget Request (<i>Preliminary Estimate</i>)	1Q 2001	1Q 2002	2Q 2001	2Q 2005	120,000	144,000
FY 2002 Budget Request (<i>Current Estimate</i>)	3Q 2001	4Q 2002	4Q 2001	2Q 2005	119,949 ^a	143,949

^a Original appropriation was \$120,000,000. This was reduced by \$51,000 for the Safeguards and Security (S&S) Amendment in 2001.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	17,710 ^{a b}	17,710	800
2002	9,500	9,500	22,000
2003	41,700	41,700	24,300
2004	27,000	27,000	48,800
2005	24,039	24,039	24,049

3. Project Description, Justification and Scope

The Highly Enriched Uranium (HEU) Materials Facility will support the consolidation of long-term highly enriched uranium materials into a state-of-the-art facility. The new facility will result in cost savings and an increased security posture and will feature: storage in an earthen-bermed structure for enhanced security, an automated inventory system which minimizes inventory validation, new Safe Secure Trailer (SST) or Safeguard Transport (SGT) shipping/receiving station, a central location near HEU processing facilities, an underground connector to allow direct tie-in to a future Enriched Uranium Operations (EUO) Modernization Facility which allows a reduced footprint for HEU activities, and a small administrative facility to house the building operators. This facility will be located in a Protected Area. The Systems Requirements Document for the Y-12 Plant HEU Materials Facility, Y/EN-5636 (May 1999), documents the forecasted long-term storage requirement of approximately 14,000 cans and approximately 14,000 55-gallon drums equivalents. It will also provide a contingency storage area for an additional 4,000 drums which will be designed such that it can be retrofitted and segregated from the main storage area for non-proliferation initiatives.

The Y-12 Plant Environmental, Safety, and Health (ES&H) Vulnerability Assessment, dated October 1996, resulted in a number of findings related to the current storage of HEU in multiple buildings. The assessment raised issues concerning fire, flooding, natural phenomena, and related concerns which would likely involve major upgrades to existing facilities in order to continue present HEU storage. In addition to ES&H vulnerabilities, existing conditions are inefficient. Maintaining and expanding HEU storage in multiple facilities involves increased security personnel, increased operations personnel, increased maintenance and utility costs, increased Special Nuclear Material (SNM) vehicle transfers, increased cost for ES&H, facility safety assessments and upgrades, and management oversight. Costs for HEU storage will be reduced by implementing this initiative. Cost savings are achieved by reduced personnel requirements, by the efficient use of space and technology, by reduction of the footprint, and by eliminating the necessity for creating additional storage in the old facilities.

^a The original appropriation request was \$17,800,000. This was reduced by \$51,000 by the Safeguards and Security (S&S) Amendment, and the amount appropriated in FY 2001 was \$17,749,000.

^b The revised appropriation request of \$17,749,000 was reduced by \$39,000 to \$17,710,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

This project will provide the following:

- # receipt and storage for Canned Sub-Assemblies (CSAs) as well as cans of uranium oxide and metal
- # docks for SST/SGT shipping/receiving
- # a small administrative facility
- # storage space for materials subject to International Atomic Energy Agency (IAEA) safeguards inspections.

The life expectancy of the facilities is 50 years, thereby assuring a viable, long-term HEU storage capability to support the enduring weapons stockpile and strategic reserve for the foreseeable future.

The facilities will be designed to meet Conduct of Operations requirements, minimize the number of personnel required for operations, and meet DOE requirements for SNM accountability and control.

FY 2002 funding will be utilized to complete Titles I and II activities, complete site clearances and readiness activities, initiate building construction, and continue construction management.

Project Milestones:

FY 2001: A-E Work Initiated	4Q
Physical Construction Started	4Q
FY 2002: A-E Work Completed	4Q
FY 2005: Physical Construction Completed	2Q

4. Details of Cost Estimate ^a

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	7,470	7,750
Design Management Costs (0.7% of TEC)	853	884
Project Management Costs (0.9% of TEC)	1,098	1,227
Total, Design Costs (7.9% of TEC)	9,421	9,861
Construction Phase		
Other Structures	72,350	73,050
Construction Management (8.4% of TEC)	10,090	10,350
Project Management (5.2% of TEC)	6,220	6,100
Total, Construction Costs (73.9% of TEC)	88,660	89,500
Contingencies		
Design Phase (1.7% of TEC)	2,070	2,000
Construction Phase (16.5% of TEC)	19,798	18,588
Total, Contingencies (18.2% of TEC)	21,868	20,588
Total, Line Item Costs (TEC)	119,949	119,949

5. Method of Performance

Overall project direction and responsibility resides with the DOE.

A design and build subcontractor under contract to the Facility Manager will design and manage the construction of the HEU Materials Facility except as noted below. The Facility Manager will be responsible for procuring and then managing the design and build subcontractor.

^a Conceptual design defining these costs was completed in FY 1999 at an estimated cost of \$1,160,000. The annual escalation rates assumed for FY 2001 through FY 2005 are 2.0, 2.4, 2.8, 2.9, and 2.9 percent, respectively.

The Facility Manager will be responsible for project integration and will design the data acquisition system, which will tie in to the existing Central Alarm system. The Facility Manager will design and procure speciality systems and equipment, and will design a portion of the site clearance and readiness package.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	0	0	800	10,200	491	11,491
Construction	0	0	0	11,800	96,658	108,458
Total, Line item TEC	0	0	800	22,000	97,149	119,949
Total, Facility Costs	0	0	800	22,000	92,761	119,949
Other Project Costs						
Conceptual design cost ^a	1,160	0	0	0	0	1,160
Other project-related costs ^b	0	7,010	5,000	6,000	4,830	22,840
Total, Other Project Costs	1,160	7,010	5,000	6,000	4,830	24,000
Total, Project Costs (TPC)	1,160	7,010	5,800	28,000	101,979	143,949

^a A Conceptual Design Report (CDR) was completed in FY 1999 at an estimated cost of \$1,160,000.

^b NEPA for this project is included in a Site Wide Environment Impact Study resulting in no cost to this project. Major FY 2000 cost result from criticality safety evaluations/analysis of process and conceptual designs for \$1,400,000, Criticality Safety Accident Alarm evaluations/analysis for \$220,000, Hazards Evaluation and initiation of the Preliminary Safety Analysis Report for \$900,000, preparation of the design criteria and Request for Proposal for \$2,500,000, subsurface geological investigation for \$370,000, can pallet prototyping and testing for \$350,000, and independent reviews for \$225,000. Other items such as project management, development of project procedures/processes in accordance with the Construction Project Management Plan, subcontractor support, operations support, process descriptions account for approximately \$1,045,000 in cost. FY 2001 activities include: completion of the PSAR for an estimated cost of \$990,000, continuing the Criticality Safety Evaluations (CSE) for \$960,000, and other project costs of approximately \$3,050,000. FY 2002 activities include: preparing documentation for use of Safe Secure Transports (SST) for transporting HEU on site for \$320,000, and continuing the criticality safety analysis along with other project documentation for approximately \$2,250,000, and \$4,830,000 for project support. An Operational Readiness Review (ORR) technical basis for operations, relocation of cans, development of operational procedures, training, revisions to fire protection plans, revisions to nuclear control and accountability (NMC&A) procedures, and user acceptance testing will be performed in the out-years at an estimated cost of \$3,430,000.

7. Related Annual Funding Requirements ^a

(FY 2005 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^b	60	60
Annual facility maintenance/repair costs ^c	2,000	2,000
Programmatic operating expenses directly related to the facility ^d	7,600	7,600
Other costs ^e	350	350
Total related annual funding (operating from FY 2005 through FY 2054)	10,010	10,010

^a These costs are from the cost/benefit analysis for the HEU building, with additions for the surge capacity .

^b Operating costs are the costs of managing the facility.

^c Facility utility costs are combined with the facility maintenance and repair costs.

^d These are the costs for receipt, storage, and inventory of the contents.

^e Other costs include the ES&H costs for keeping the facility compliant.

01-D-126, Weapons Evaluation Test Laboratory (WETL), Pantex, Amarillo, Texas

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [§] in the left margin.)

Significant Changes

None.

1. Construction Schedule History

	Fiscal Quarter					
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete	Total Estimate d Cost (\$000)	Total Project Cost (\$000)
FY 2001 Budget Request (<i>Preliminary Estimate</i>)	2Q 2001	2Q 2002	3Q 2002	1Q 2004	22,181	23, 483
FY 2002 Budget Request (<i>Current Estimate</i>)	2Q 2001	2Q 2002	3Q 2002	1Q 2004	22,181	23, 483

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	2,993 ^a	2,993	1,577
2002	7,700	7,700	9,116
2003	8,650	8,650	7,812
2004	2,838	2,838	3,676

3. Project Description, Justification and Scope

The Weapons Evaluation Testing Laboratory (WETL) facility is currently located at the Department of Energy Pantex Plant in Amarillo, Texas, and has been in operation since 1965. This project will construct a new facility at the Pantex site; relocate some of the existing equipment, augmented with state-of-the-art upgraded high resolution test data acquisition hardware and software systems, from the existing WETL into the new facility; continue existing functions and operations of the WETL in the new facility indefinitely into the future, and remediate any legacy contamination in the existing facility. The existing facility will be retained for other Pantex operations.

^a Original appropriation was \$3,000,000. This was reduced by \$7,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. There is no change to the TEC due to a corresponding increase to the FY 2004 appropriation amount.

The WETL will be relocated from a Material Access Area (MAA) to a Limited Area (LA) zone on the Pantex site. Removal of WETL from the MAA will result in reduction of man-hours necessary to process or move material between WETL and other Pantex facilities. There will be operational cost savings on any material that comes to WETL from outside sources due to decreased security requirements. By locating WETL outside the MAA, guard inspections, security requirements, and radiation safety requirements for outside shipments will be reduced. In addition to providing the operational cost savings from the safeguards and security and radiation safety operations, the new facility will provide cost savings from the workflow improvements, automated data collection and analysis, and material handling procedures.

The new WETL consists of an approximately 30,000-gross-square-foot facility, providing offices and office support, lab/test and test support spaces, and storage space. It is designed architecturally to enhance functional operations and flexibility and provide a more suitable work environment. The proposed site, which is located next to a LA, will be fenced for inclusion into the existing LA at the completion of construction.

Some equipment will be replaced or upgraded. Data acquisition hardware and software will be updated or replaced to permit higher resolution, a higher rate of data transfer, and state-of-the-art data processing capabilities. An existing hydraulic centrifuge will be replaced by an all-electric drive centrifuge. The new facility will enhance efficiency in performing existing work functions. No operational changes will be expected to result from the transfer of functions from the old to the new facility.

The new facility will provide a laboratory environment capable of supporting the Enhanced Surveillance Campaign (ESC) through flexibility of floor space configuration, appropriate adjacencies for an optimal work environment, and the mechanical and data infrastructure to be dependable and efficient in supporting advanced test technologies.

Each year the Stockpile Evaluation Program draws weapons from the stockpile. These are disassembled and inspected in other Pantex facilities. Some non-nuclear parts and components from these weapon samples are built into system beds and tested at environmental extremes at WETL. Approximately 65 principal tests and hundreds of subsequent tests are conducted each year. If problems are detected or failures occur, a team is formed to evaluate the cause of the anomaly, assess its impact (on stockpile reliability), and recommend a solution. This testing is conducted and the necessary data acquired with special test equipment that is housed in the WETL.

The inefficient layout of the current facility does not support optimal workflow, and the facility also has a number of issues that require immediate attention, including roof leaks and an aging mechanical system. An improved WETL is needed to modernize the facility to integrate ESC initiatives, decrease operational expenses, upgrade old and outdated equipment, and mitigate risk of loss (these needs are discussed in more detail in the following sections).

Support to the Enhanced Surveillance Campaign (ESC)

ESC is an initiative to develop advanced capabilities for understanding degradation mechanisms in the enduring stockpile. The campaign has invested tens of millions of dollars in research and development of methodologies to observe and analyze changes in stockpile material prior to aging failure.

| The technology base of test data collection equipment used at the existing WETL lacks the capability to acquire the data at the needed volume levels and clarity to support the ESC. In addition to improved data collection equipment, the WETL facility must be capable of supporting advanced test technologies by providing accurate and dependable environmental controls, wide bandwidth data transfer infrastructure, and floor space configuration flexibility.

Decreased Operational Expense

The WETL facility is currently located within the MAA at the Pantex plant, but for security reasons is only required to be located in a LA. The Complex 21 Study completed in May 1993 recommended that WETL should be relocated outside the MAA.

The MAA is the most secure area on the site, designed to protect access to special nuclear material. Because of WETL's location within the MAA, all staff and visitors are subject to security and personnel assurance program (PAP) requirements. This program actively monitors and periodically re-certifies personnel as suitable to perform nuclear explosive duties in a safe and reliable manner and involves medical and psychological evaluation. The security and PAP requirements for WETL personnel and visitors add operational expense that will be avoided if WETL is relocated to a LA.

| Additionally, there will be operational cost savings on any material that comes to WETL from outside sources due to decreased security requirements. Incoming and outgoing shipments of support material are now received in an area outside the MAA due to security requirements of the MAA. All shipments are inspected prior to movement to WETL, and all shipments require movement through many guard stations. Outgoing shipments require green tags from radiation safety, as does the calibration equipment discussed above. Locating WETL outside the MAA will reduce guard inspections, security requirements and radiation safety requirements. In addition, the project will provide funding for the acquisition of modern test equipment, reducing the number of testers required and thereby reducing labor costs. This labor savings, estimated over a 40-year life cycle, returns the initial investment by a factor of 7.

New building systems will be designed to meet Federal guidelines for energy efficiency, which will also reduce operating costs.

Scope:

Plan and design the project.

Construct a new facility, approximately 30,000 gsf, which includes test support spaces, below grade centrifuge rooms and laboratories, storage space, offices and support space, conference and video conference space, and mechanical and electrical systems.

Provide site work including curbs and gutters, walkways, parking lot, minor paving, and landscaping.

Extend site utilities to serve WETL.

Provide equipment for data acquisition systems (\$3.8M).

Provide standard equipment, including new furniture and video conferencing equipment.

The FY 2002 funds will be used to complete the design and initiate physical construction.

Project Milestones:

FY 2001: Start Design	2Q
FY 2002: Complete Design	3Q
CD3	3Q
Construction Start	3Q
FY 2004: Construction Complete	1Q
Fit Up/Move In	4Q
CD4	4Q
Project Closeout	2Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design, Drawings and Specifications \$629)	1,209	1,258
Design Management Costs (1.8% of TEC)	400	418
Project Management Costs (0.2% of TEC)	41	32
Total, Design Costs (7.4% of TEC)	1,650	1,708
Construction Phase		
Procurement	98	0
Improvements to Land	485	503
Buildings	7,288	7,230
Special Equipment	3,570	3,800
Utilities	1,006	1,148
Standard Equipment	306	247
Equipment Relocation	684	1,283
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	2,787	1,802
Construction Management (3.2% of TEC)	720	522
Project Management (3.5% of TEC)	779	555
Total, Construction Costs (79.9% of TEC)	17,723	17,090
Contingencies		
Design Phase (0.7% of TEC)	165	307
Construction Phase (11.9% of TEC)	2,643	3,076
Total, Contingencies (12.7% of TEC)	2,808	3,383
Total, Line Item Costs (TEC) ^a	22,181	22,181

^a Escalation rates taken from the FY 2001 DOE escalation multiplier tables.

5. Method of Performance

Architectural and engineering design will be performed under a negotiated fixed-price contract based on capability and capacity to perform the work. Inspection will be performed by Sandia Facilities Department. Construction will be performed under a competitive-bid fixed-price contract based on best value. BWXT Pantex will provide consultation as needed.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyear s	Total	
Project Cost							
Facility Cost							
Design		0	0	1,577	238	0	1,815
Construction		0	0	0	8,878	11,488	20,366
Total, Line item TEC		0	0	1,577	9,116	11,488	22,181
Total Facility Costs (Federal and Non-Federal)		0	0	1,577	9,116	11,488	22,181
Other Project Costs							
Conceptual design cost ^a		458	0	0	0	0	458
Other project-related costs ^b		248	228	118	87	173	844
Total, Other Project Costs		706	228	118	87	173	1,302
Total, Project Costs (TPC)		706	228	1,695	9,203	11,661	23,483

^a Includes NEPA documentation costs.

^b Including tasks such as Project Execution Plan, Pre-Title I Development, Design Criteria, Safeguards and Security Analysis, Architect/Engineer Selection, Value Engineering Study, Independent Cost Estimate, Energy Conservation Report, Fire Hazards Assessment, Site Surveys, Soils Reports, Permits, Administrative Support, Operations and Maintenance Support, ES&H Monitoring, Operations Testing, Energy Management Control System Support, Readiness Assessment.

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	194	194
Annual facility maintenance/repair costs ^b	118	118
Programmatic operating expenses directly related to the facility ^c	7,343	7,343
Utility costs	23	23
Total related annual funding (operating from FY 2004 through FY 2044)	7,678	7,678

^a When the facility is operational in the 2nd Quarter of FY 2004, the average cost will be \$265,000 for labor and materials per year.

^b A total of 1.0 staff years per year is required to maintain the facility.

^c Annual programmatic operating expenses are estimated at \$7.4M, based on representative current WETL operating expenses and the System Test Equipment (STE) labor. The majority of this funding is expected to come from DOE/DP for activities in support of the Nuclear Weapons Stockpile Stewardship Program. If a new WETL is constructed, funds will be provided to acquire modern test equipment, which reduces the number of testers required, thus reducing the current labor costs to the representative amount. This labor savings, estimated over a 40-year life cycle, returns the initial investment by a factor of 7.

01-D-800, Sensitive Compartmented Information Facility, Lawrence Livermore National Laboratory, Livermore, California

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [§] in the left margin.)

Significant Changes

- # In FY 2001, this project was requested and appropriated within the other Defense Account of the Energy and Water Development Appropriation. The Department has determined that this project is more appropriately managed and funded by Defense Programs, the Lawrence Livermore National Laboratory landlord, and as such, is requesting FY 2002 funds within the Weapons Activity account.
- # The Total Estimated Cost (TEC) for this project was increased by \$600,000 from \$24,000,000 to \$24,600,000 based on the results of an independent cost review.

1. Construction Schedule History

	Fiscal Quarter					
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	Total Estimated Cost (\$000)	Total Project Cost (\$000)
FY 2001 Budget Request (<i>Preliminary Estimate</i>)	2Q 2001	1Q 2002	2Q 2002	2Q 2004 ^a	24,000	24,200
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	2Q 2001	1Q 2002	2Q 2002	4Q 2003	24,597 ^b	25,102

^a 2Q 2004 was a typographical error and the correct date should have been 4Q 2003 for Physical Construction Complete.

^b The Total Estimated Cost (TEC) for this project was increased by \$600,000 from \$24,000,000 to \$24,600,000 based on the results of an independent cost review. This revised TEC of \$24,600,000 was reduced by \$3,000 to \$24,597,000 because of the FY 2001 Safeguards and Security (S&S) Amendment.

2. Financial Schedule

(dollars in thousands)

Fiscal Year		Appropriation	Obligations	Costs
2001	b	1,993 ^a	1993	1,657
2002		12,993	12,993	5,897
2003		9,611	9,611	2,397 ¹
2004		0	0	4,646

3. Project Description, Justification and Scope

The new Sensitive Compartmented Information Facility (SCIF) is essential for the Nonproliferation Arms Control and International Security (NAI) directorate to continue to carry out its mission, to reduce maintenance and special security costs and to consolidate Lawrence Livermore National Laboratory (LLNL) national security programs, enhancing their capability to execute projects. To accomplish mission, as the primary occupant of the SCIF, Z Division must have a facility that can accommodate modern technologies. The fast moving information revolution requires major enhancements in information management, networking, storage, and retrieval, and real time communications with DOE and the intelligence community. The planned SCIF will be housed in a new building located in close proximity to the rest of the NAI directorate.

The planned Sensitive Compartmented Information Facility (SCIF) is proposed as a new two story building with a gross floor area of approximately 60,000 square feet. This SCIF is sited on the west side of the laboratory, adjacent to and north of Building 132, which currently houses most of the NAI directorate. A new parking lot west of the facility will also be provided.

FY 2001 funds will be used for project startup and design..

FY 2002 funds will be used for construction..

^a Original appropriation was \$2,000,000. This was reduced by \$4,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. This action caused no change to the TEC due to a corresponding increase to the FY 2003 appropriation amount.

^b The revised FY 2001 appropriation of \$1,996,000 was reduced by \$3,000 for the Safeguards and Security (S&S) Amendment. This action resulted in a reduction of the TEC.

Project Milestones:

FY 2001: Start Design	2Q
FY 2002: Start Construction	2Q
FY 2003: Physical Construction Complete (Beneficial Occupancy)	4Q
FY 2004: Transition to Operations	2Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design, Drawings and Specifications \$629)	1,230	1,070
Design Management Costs (0.7% of TEC)	180	190
Project Management Costs (1.6% of TEC)	385	395
Total, Design Costs (7.3% of TEC)	1,795	1,655
Construction Phase		
Procurement	0	0
Improvements to Land	800	800
Buildings	11,555	10,958
Special Equipment	0	0
Utilities	1,815	1,815
Standard Equipment	3,670	3,670
Equipment Relocation	0	0
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	875	875
Construction Management (2.5% of TEC)	615	615
Project Management (2.5% of TEC)	615	615
Total, Construction Costs (81.1% of TEC)	19,945	19,945
Contingencies		
Design Phase (0.7% of TEC)	170	310
Construction Phase (10.9% of TEC)	2,687	2,687
Total, Contingencies (11.6% of TEC)	2,857	2,970
Total, Line Item Costs (TEC) ^a	24,597	24,000

^a Escalation rates taken from the FY 2002 Guidance contained in the January, 2000 DOE escalation table. Current estimate based on enhanced CDR dated may 2000.

5. Method of Performance

The design for the project shall be performed by a negotiated best value architect/engineer contract. The construction will be accomplished by a fixed-price contract based on competitive bidding, pre-qualified and best value award.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyear s	Total	
Project Cost							
Facility Cost							
Design		0	0	1,657	310	0	1,967
Construction		0	0	0	5,587	17,043	22,630
Total, Line item TEC		0	0	1,657	5,897	17,043	24,597
Total Facility Costs (Federal and Non-Federal)		0	0	1,657	5,897	17,043	24,597
Other Project Costs							
Conceptual design cost ^a		115	20	0	0	0	135
Other project-related costs ^b		0	55	180	70	65	370
Total, Other Project Costs		115	75	180	70	65	505
Total, Project Costs (TPC)		115	75	1,837	5,967	17,108	25,102

^a Includes previous conceptual design reports and updating the conceptual design report for the FY 2001 budget submission.

^b Includes funds for one-time training of Plant Engineering personnel on building operations, migration costs for 185 people, survey, geological investigation, design criteria development, and A/E selection.

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	510	510
Annual facility maintenance/repair costs ^b	0	0
Programmatic operating expenses directly related to the facility ^c	0	0
GPP or other construction related to the programmatic effort in the facility ^d	30	30
Utility costs ^e	95	95
Total related annual funding (operating from FY 2004 through FY 2044)	635	635

^a Includes the LLNL space charge and annual cost for a facility coordinator.

^b Included in facility operating costs.

^c Included in facility operating costs.

^d Minor additions and modifications to the facility related to programmatic effort.

^e Electricity costs only. Other utilities are provided without a separate charge.

**Weapons Activities/RTBF/Construction/
01-D-800--Sensitive Compartmented
Information Facility**

FY 2002 Congressional Budget

99-D-103, Isotope Sciences Facility, Lawrence Livermore National Laboratory, Livermore, California

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

The Total Estimated Cost (TEC) for this project was reduced in the FY 2001 Appropriation by \$25,000 due to the Safeguards and Security amendment. This reduction does not affect the scope of work for this project.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1999 Budget Request (<i>Preliminary Estimate</i>)	1Q 1999	4Q 1999	2Q 2000	2Q 2002	19,400	19,800
FY 2000 Budget Request	4Q 1999	1Q 2003	2Q 2000	2Q 2004	17,400	17,700
FY 2001 Budget Request	2Q 2000	3Q 2003 ^a	3Q 2000	2Q 2004	17,392	17,692
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	2Q 2000	1Q 2004	2Q 2000	2Q 2004	17,367 ^b	17,667

^a Project design and construction components are organized into separate phases with construction on individual phases proceeding upon completion of the design for that phase.

^b Appropriation of \$5,000,000 was reduced by \$25,000 by the Safeguards and Security (S&S) amendment.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	2,000	0	0
2000	1,992 ^a	3,992	1,214
2001	4,964 ^{b c}	4,964	4,321
2002	4,400	4,400	5,875
2003	4,011	4,011	3,870
2004	0	0	2,087

3. Project Description, Justification and Scope

This project provides for a major rehabilitation of the nuclear chemistry facilities at Lawrence Livermore National Laboratory to extend the life of these essential program facilities. The principle objective of the project is to enhance the radio chemistry research, analytical, and characterization services provided to Defense Program activities at LLNL. These facilities also support critical analytical waste characterization and programmatic environmental monitoring activities as well.

The project provides for a seismic retrofit and construction of an office addition to the Isotope Science Facility (Building 151), retrofit of Building 151/Building 154 ventilation systems, decontamination of the Refractory Materials Facility (Building 241). The current nuclear chemistry building (B-151) is a 31-year old wet-chemistry research building in need of a major rehabilitation to extend its life in support of the Weapons Stockpile Stewardship Program. The seismic rating of Building 151 does not meet current code requirements. This project will provide the seismic modifications necessary to meet current code requirements for performing isotopic research and to support the ongoing mission.

The Building 151 Office Addition (**B-155**) is approximately 22,000 square feet contiguous to B-151. It resolves long-standing co-location and program operating efficiency issues in a cost-effective package. Exterior treatment will be selected consistent with the existing building, with access provided directly from Building 151 at both floor levels. The addition will contain offices, conference and meeting rooms, elevator, rest rooms, programmatic storage, and various support facilities.

^a Original appropriation was \$2,000,000. This was reduced by \$8,000 for the FY 2000 rescission enacted by P.L. 106-113.

^b Appropriation of \$5,000,000 was reduced by \$25,000 by the Safeguards and Security (S&S) amendment.

^c Original appropriation was \$4,975,000. This was reduced by \$11,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriation Act. There is no change to the TEC due to a corresponding increase to the FY 2003 appropriation amount.

The existing Building 151 HVAC system is inefficient, difficult to maintain, and does not meet current requirements for exhaust and control. The majority of mechanical work entails replacing older fume-hood and glove box exhaust systems with up-to-date variable air volume systems. Two air handling units will be converted from constant-volume to variable-air-volume systems with variable-frequency drives. Building 154 is underutilized due to the difficulties in balancing the three air-pressure zones as required by researchers. To fully utilize this building for wet-chemistry laboratory use, the existing HVAC system, retention tank system, utilities, and fire-protection system must be upgraded. The HVAC work done under an FY 1998 General Plant Project corrected some of the HVAC system problems but not all. In addition, approximately 11 new fume hoods with associated exhaust ductwork, fans, and controls will be provided. B-151 and B-154 HVAC modifications and fume hood replacements will rehabilitate these high downtime and high maintenance subsystems and extend life to meet the current mission. Some safety and operational benefits also result.

After moves are completed from Building 241, it will be characterized and decontaminated for future use by Defense Programs at Lawrence Livermore National Laboratory. Consolidation of operations from B-241 and personnel from four older trailers complete the efficiency and cost-driven elements, which though minor in cost, have substantial operational benefits.

Along with the seismic retrofit and HVAC system/fume hood replacement, the project encompasses program consolidation for increased efficiency of operations, indirect cost savings, and safety of operations benefits. These are reflected respectively in the B151 Addition, the B-154 HVAC modifications, and program moves from B-241 and various trailers.

Project Milestones:

FY 2001:

	Start Construction: B-154 HVAC	1Q
	Start Title I Design: B-151 Seismic Upgrade	2Q
	Start Title I Design: B-151 HVAC	3Q
	Start Construction: B-151 Office Addition	3Q

FY 2002:

	Start Operations: B-154 HVAC	1Q
	Start Construction: B-151 Seismic Upgrade	3Q
	Complete Construction: B-151 Office Addition (B-155)	3Q

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications - \$1,125) . .	1,405	1,350
Design Management Costs (0.7% of TEC)	115	20
Project Management Costs (1.0% of TEC)	175	80
Total Design Costs (9.8% of TEC)	1,695	1,450
Construction Phase		
Improvements to Land	260	275
Buildings	7,270	7,050
Utilities	90	80
Standard Equipment	950	960
Removal Cost Less Salvage	2,115	2,080
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	1,080	770
Construction Management (6.3% of TEC)	1,100	1,080
Project Management (2.3% of TEC)	405	500
Total Construction Costs (76.4% of TEC)	13,270	12,795
Contingencies		
Design Phase (1.0% of TEC)	175	235
Construction Phase (12.8% of TEC)	2,227	2,912
Total Contingencies (13.8% of TEC)	2,402	3,147
Total, Line Item Costs (TEC) ^a	17,367	17,392

The current estimate is based on the Conceptual Design Report of March 1997 and the supplement dated April 1998.

5. Method of Performance

Contracting arrangements are as follows: Design will be performed by A-E and Lawrence Livermore National Laboratory forces. Construction will be accomplished by fixed-price contracts awarded on the basis of competitive bidding. Activation will be done by Lawrence Livermore National Laboratory forces.

^a Escalation rates taken from the FY 2001 DOE escalation multiplier tables (January 1999 update).

6. Schedule of Project Funding

(dollars in thousands)

Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
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Project Costs

Facility Costs

Design	0	473	862	410	125	1,870
Construction	0	741	3,459	5,465	5,832	15,497
Total, Line item TEC	0	1,214	4,321	5,875	5,957	17,367
Total Facility Costs (Federal and Non-Federal) .	0	1,214	4,321	5,875	5,957	17,367
Other Project Costs						
Conceptual design costs	150	0	0	0	0	150
NEPA documentation costs	25	0	0	0	0	25
Other project-related costs	75	0	0	0	50	125
Total, Other Project Costs	250	0	0	0	50	300
Total Project Cost (TPC)	250	1,214	4,321	5,875	6,007	17,667

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

Current Estimate	Previous Estimate
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Annual facility operating costs	740	740
Total related annual funding (operating from FY 2004 through FY 2023)	740	740

99-D-104, Protection of Real Property (Roof Reconstruction-Phase II) , Lawrence Livermore National Laboratory, Livermore, California

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

The Total Estimated Cost (TEC) for this project was reduced in the FY 2001 Appropriation by \$14,000 due to the Safeguards and Security amendment. This reduction does not affect the scope of work for this project.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1999 Budget Request (<i>Preliminary Estimate</i>)	1Q 1999	1Q 2000	3Q 1999	4Q 2001	19,900	19,930
FY 2000 Budget Request	3Q 1999	2Q 2003	4Q 1999	4Q 2003	19,900	19,970
FY 2001 Budget Request	4Q 1999	2Q 2003	4Q 1999	4Q 2003	19,900	19,970
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	4Q 1999	2Q 2003	4Q 1999 ^a	4Q 2003	19,886 ^b	19,956

^a Design and construction is planned as five separate packages, each including 1 to 4 buildings. Construction on each package will begin upon completion of the design for that package, while design continues on the remaining packages.

^b Appropriation of \$2,800,000 was reduced by \$14,000 by the Safeguards and Security (S&S) amendment.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	2,500	2,500	419
2000	2,391 ^a	2,391	2,090
2001	2,780 ^{b c}	2,780	4,514
2002	2,800	2,800	3,205
2003	9,415	9,415	6,321
2004	0	0	3,337

3. Project Description, Justification and Scope

This project is the second of three phases of the LLNL roof replacement program. The first Phase is funded under 96-D-102. Phase II addresses 11 Weapons Stockpile Stewardship Program buildings which require complete roofing system replacement along with the replacement of associated roof mounted equipment and piping systems which have deteriorated beyond economical repair. This is required in order to maintain and protect the integrity of the facilities and to assure that programmatic work can proceed without the risk of serious damage to the buildings or the programmatic efforts contained within. Work includes buildings: B111, B113, B121, B141, B194, B231, B241, B251, B281, B321, and B332. In all cases, the roofing systems have exceeded their 20-year design life by 11 to 23 years. The same holds true for most of the roof mounted equipment and piping systems as they are original equipment, again with an average design life of 20 years. Both the roofing and mechanical systems have deteriorated to the point where normal repair is no longer a viable alternative.

The 11 roofs in this project are experiencing severe deterioration problems including membrane failure, and the associated roof mounted mechanical equipment is also showing high levels of unreliable operation which adversely effect the support to the programmatic effort. As stated, normal maintenance procedures no longer are effective to maintain weather integrity of the roofing systems, to the point that leaks in the roofing system are jeopardizing experiments, experimental data and equipment. The impact from not replacing the roofing and mechanical equipment systems will result in excessive maintenance and repair costs. In addition, the adverse programmatic impact could cost the Lab and Defense Programs significant dollars in lost production.

^a Original appropriation was \$2,400,000. This was reduced by \$9,000 for the FY 2000 rescission enacted by P.L. 106-113.

^b Appropriation of \$2,800,000 was reduced by \$14,000 by the Safeguards and Security (S&S) amendment.

^c Original appropriation was \$2,786,000. This was reduced by \$6,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriation Act. There is no change to the TEC due to a corresponding increase to the FY 2003 appropriation amount.

Operating expense budgets fund maintenance at a level of required repair, but not at the level required to replace roofs and roof mounted mechanical equipment. Since these 11 buildings are required to support critical Weapons Stockpile Stewardship Program missions, capital funding is requested for the replacement of the roofs and associated roof mounted mechanical equipment.

In FY 2001, buildings 121 and 141 will be re-roofed.

| In FY 2002, buildings 251 and 281 will be re-roofed.

Project Milestones:

FY 2001: Package No. 3 (Building 121 and 141)

Start Design	1Q
Complete Design	2Q
Start Construction	3Q
Complete Construction	4Q

| FY 2002: Package No. 4 (Buildings 251 and 281)

Start Design	1Q
Complete Design	2Q
Start Construction	3Q
Complete Construction	4Q

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications - \$640) . . .	947	947
Design Management Costs (0.2% of TEC)	29	29
Project Management Costs 0.3% of TEC)	50	50
Total Design Costs (5.2% of TEC)	1,026	1,026
Construction Phase		
Other Structures	9,018	9,018
Standard Equipment	3,672	3,672
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	2,160	2,160
Construction Management (2.2% of TEC)	444	444
Project Management (4.3% of TEC)	857	857
Total Construction Costs (81.2% of TEC)	16,151	16,151
Contingencies		
Design Phase (1.0% of TEC)	200	200
Construction Phase (12.6% of TEC)	2,509	2,523
Total Contingencies (13.6% of TEC)	2,709	2,723
Total, Line Item Costs (TEC) ^a	19,886	19,900

5. Method of Performance

The Laboratory proposes a new approach to the implementation of this project. Mechanical and electrical modifications will be completed prior to re-roofing construction start. Modifications will be accomplished using LLNL personnel. The construction contract is planned to be a unit price based contract with standard construction details. Change order processing and negotiations will be greatly simplified. This new approach should greatly reduce the cost of engineering and design.

^a Escalation rates taken from FY 1999 DOE escalation multiplier tables. Current estimate based on Conceptual Design Report of March 1997.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Costs						
Design	12	264	259	286	405	1,226
Construction	407	1,826	4,255	2,919	9,253	18,660
Total, Line item TEC	419	2,090	4,514	3,205	9,658	19,886
Total Facility Costs (Federal and Non-Federal)	419	2,090	4,514	3,205	9,658	19,886
Other Project Costs						
Conceptual design costs	30	0	0	0	0	30
NEPA documentation costs	2	0	0	0	0	2
Other ES&H costs	38	0	0	0	0	38
Total, Other Project Costs	70	0	0	0	0	70
Total Project Cost (TPC)	489	2,090	4,514	3,205	9,658	19,956

7. Related Annual Funding Requirements

(FY 2003 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	0	0
Total related annual funding (operating from FY 2003 through FY 2022)	0	0

99-D-106, Model Validation and Systems Certification Test Center, Sandia National Laboratories, Albuquerque, New Mexico

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

- # The Total Project Cost is increased by \$150,000 largely to cover the cost to relocate the current occupants of Building 6584, which previously had not been included as part of the Other Project Costs for this project.
- # The TEC for this project was reduced by the FY 2001 Consolidated Appropriations Act from \$18,230,000 to \$18,219,000. The rescission will be absorbed within project contingency and, therefore, will not affect the project scope.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1999 Budget Request (<i>Preliminary Estimate</i>)	2Q 1999	2Q 2000	3Q 2000	4Q 2001	18,219	19,111
FY 2000 Budget Request	3Q 1999	4Q 2000	3Q 2000	4Q 2002	18,230	19,122
FY 2001 Budget Request	4Q 1999	3Q 2000	4Q 1999	4Q 2002	18,230	19,122
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	4Q 1999	3Q 2001	4Q 1999	4Q 2002	18,219 ^a	19,261

^a Original appropriation was \$5,200,000. This was reduced by \$11,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	1,600	1,600	507
2000	6,475 ^a	6,475	1,526
2001	5,189 ^a	5,189	9,098
2002	4,955	4,955	7,049
2003	0	0	39

3. Project Description, Justification and Scope

The Department of Energy (DOE) has the statutory and mission responsibility for the design, production, maintenance, retirement and dismantlement of the United States nuclear weapons. In support of this mission, Defense Programs is responsible for the engineering development of the nonnuclear components and the overall systems engineering and integration for all nuclear weapons, including the integration of nuclear weapons with their delivery vehicles. Responsibilities also include assuring that weapons' military characteristics (MCs) and Stockpile-to-Target-Sequence (STS) requirements are met for hostile, normal, and abnormal environments.

Pertinent, reliable, and timely information is key to fulfilling these responsibilities, and in part, this information is obtained through laboratory testing and corresponding analysis. Testing is performed in five primary areas in support of nonnuclear components and systems:

- # Development testing (testing to certify design intent)
- # Experimentation to validate and certify analytical models
- # Product certification (such as neutron generators and AT 400 containers)
- # Surveillance testing, which sometimes includes investigative testing
- # Testing to support dismantlement.

Confidence in certifying the stockpile has been and will continue to be contingent upon high-quality, reliable, and pertinent data and competent analysis of that data, although the approach to obtain and analyze data and the nature of the data will change in response to DOE stockpile stewardship challenges.

In support of DOE's Science-Based Stockpile Stewardship and Sandia's weapon system performance and surety missions, the Model Validation and System Certification Test Center (MVSCTC) will:

- # Enable existing, essential test capabilities to continue to provide data necessary for certifying that weapons systems will function as designed in a variety of normal and abnormal environments.

^a Original appropriation was \$6,500,000. This was reduced by \$25,000 for the FY 2000 rescission enacted by P.L. 106-113. The FY 2002 appropriation amount was increased by \$25,000.

- # Enhance existing capabilities to facilitate delivery of large volumes of experimental data and information required to confirm prediction of weapon system behavior by computational tools.
- # Replace an aging and, to a large extent, non-existent communications infrastructure to enable the integration of command and control along with data collection, processing, archival, and distribution systems, and thereby enhance operational effectiveness and efficiencies for meeting strategic needs.

The MVSCTC Project will provide a modern communications infrastructure coupled with a common control/operations facility for Sandia's eleven full-scale environmental test capabilities located in Tech Area III. The concept design of the MVSCTC reflects an optimized operational system composed of three subsystems including: Communications Infrastructure, Command and Control, and facilities to accommodate related operational functions.

The MVSCTC Project will implement an operational system that allows for both remote and local control of each of the test capabilities. This system will allow for more effective and efficient management of test operations and provide flexibility in meeting programmatic and specific customer needs. The Command and Control Center (CCC) will provide the remote control; Mobile Interface Units (MIUs) will provide local data acquisition and command and control to field test capabilities.

The MVSCTC communications infrastructure will be comprised of a communications hub (the CCC) and supporting infrastructure (communications media from the CCC to each of the test sites) that will link Sandia's environmental test capabilities to other Sandia personnel involved in modeling, simulation, design and related activities. Additionally, the infrastructure will link the MVSCTC into the nuclear weapons complex (NWC) electronic information network. The communications infrastructure will consist of high-capacity cabling installed in an underground concrete-encased ductbank of conduits and radio frequency (RF) and microwave technologies. The capacity and robust nature of this infrastructure protection ensures not only the viability of the communications infrastructure over the long run but also allows advances in communications technology to be easily incorporated over the life of the system.

Two MIUs, which are self-contained mobile trailers that house the equipment necessary to control the test capabilities and collect data from them, will be used for local control of field test capabilities. Shared use of these two MIUs to support test facilities standardizes and reduces the equipment that is otherwise required at each of the test facilities. The MIUs are being built as part of Sandia's Modernization Program; only the purchase and installation of the pertinent communications infrastructure termination equipment to be placed in the MIUs as part of the MVSCTC are included in this capital project request.

Facilities to Accommodate Related Operational Functions

| The MVSCTC will use approximately 18,640 gross square feet within Building 6584 and its related site for the collocation of existing functions (command and control capabilities, customer support, staff offices, and light laboratories), as well as new functions (communications hub and network support equipment.) This new operations center will allow for operational effectiveness and efficiency that has previously been impossible within the current configuration of functions dispersed across multiple facilities.

Special Facilities

Communications Infrastructure

The communications infrastructure is the overall system of fiber-optic and copper lines and related infrastructure elements. To provide needed communications capacities, two unspliced 48-fiber cables will be installed from the CCC to each direct connected test capability. Use of unspliced runs assures longevity of the infrastructure and maximum information transmission capacity.

In addition to the fiber-optic cable, copper lines consisting of up to 50 pairs of telephone cable will be installed. The telephone cable provides 24-hour service to each test capability for telephone, fire, and intrusion systems.

All fiber-optic and copper lines will be installed in a PVC ductbank, placed in a trench and encased in concrete. The depth of the concrete encased ductbank will be 30-inches below grade.

The proposed communications infrastructure is located primarily within Sandia's Tech Area III. However, the main fiber optic trunk, which is to be installed from the existing Tech Control Center (TCC) in the Technology Support Center (TSC, Building 6585) to the MVSTC, extends beyond the Tech Area III borders. The TSC is located just outside Tech Areas III and V, approximately 400 linear feet from the MVSTC common control facility in Building 6584. The Tech Control Center (TCC) in the TSC will provide the point of physical connection into existing telecommunications infrastructure.

Planned connection to the existing copper telephone infrastructure will occur at a location close to the TSC (specifically, Building 6585A containing an optical remote).

Command/Control System

The command and control system includes all the electronic systems required to manage the communications systems, interface the information systems to the test capabilities and allow operators, engineers, and customers to control capability functions and observe and record operations. Electronic equipment required to perform these functions includes: digital network and video switching and transmission hardware; computer systems; video display and recording systems; and hardcopy peripherals. The majority of this equipment will be located in the CCC. Hardware required for the communications network completion at the test site or in the MIUs is also included in the MVSTC Project scope.

Project Milestones:

FY 2001: Complete Backbone Construction	1Q
Start Command and Control Construction	4Q
FY 2002: Complete Building Construction and Occupancy	1Q
Complete Command and Control	4Q
Start Operations	4Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications -\$691)	1,636	1,228
Design Management Costs (0.8% of TEC)	142	135
Project Management Costs (0.7% of TEC)	121	123
Total Design Costs (10.4% of TEC)	1,899	1,486
Construction Phase		
Improvements to Land	496	280
Buildings	3,723	2,918
Special Equipment	8,789	9,247
Standard Equipment	371	486
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	611	500
Construction Management (1.9% of TEC)	357	297
Project Management (0.8% of TEC)	147	172
Total Construction Costs (79.5% of TEC)	14,494	13,900
Contingencies		
Design Phase (0.3% of TEC)	50	215
Construction Phase (9.7% of TEC)	1,776	2,629
Total Contingencies (10.0% of TEC)	1,826	2,844
Total, Line Item Costs (TEC) ^a	18,219	18,230

5. Method of Performance

This work will be accomplished using a Sandia administered fixed-price, incentive, design-build contract.

^a Escalation rates taken from the January 1998 DOE Price Change Index. Current estimate based on Conceptual Design Document dated October 27, 1998.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Costs						
Design	65	1,374	510	0	0	1,949
Construction	442	152	8,588	7,049	39	16,270
Total, Line item TEC	507	1,526	9,098	7,049	39	18,219
Total Facility Costs (Federal and Non-Federal) ..	507	1,526	9,098	7,049	39	18,219
Other Project Costs						
Conceptual design costs	310	0	0	0	0	310
NEPA documentation costs	20	0	0	0	0	20
Other ES&H costs	0	14	14	20	0	48
Other project-related costs	350	98	110	95	11	664
Total, Other Project Costs	680	112	124	115	11	1,042
Total Project Cost (TPC)	1,187	1,638	9,222	7,164	50	19,261

7. Related Annual Funding Requirements

(FY 2002 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	128	141
Annual facility maintenance/repair costs ^b	768	818
Programmatic operating expenses directly related to the facility ^c	5,733	5,733
Capital equipment not related to construction but related to the programmatic effort in the facility	235	235
Utility costs	64	77
Total related annual funding (operating from FY 2002 through FY 2041)	6,928	7,004

^a Facility operating costs will average \$117,000 for labor and \$11,000 for materials per year. An average of 1.7 staff years will be required to operate all facilities. The facility does not replace any other facility.

^b Maintenance and repair costs for all facilities average \$328,000 for labor and \$440,000 for materials. A total of 4.8 staff years per year is required to maintain all facilities.

^c Estimate reflects annual programmatic operating expenses associated with the operations and maintenance of the eleven test capabilities that are to be connected through the communications infrastructure to the common command and control facility implemented by the MVSTC. Estimate includes: all loaded labor associated with direct test activities as well as preventative maintenance; facility costs (space charges, direct purchases, service contracts, etc.) and associated overhead loads. Estimate also includes projected, annualized operating expenditures incurred to maintain, repair, or replace-in-kind the existing equipment in these test capabilities.

99-D-125, Replace Boilers and Controls, Kansas City Plant Kansas City, Missouri

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

The TEC for this project was reduced by the FY 2001 Consolidated Appropriations Act from \$14,300,000 to \$14,271,000. The rescission will be absorbed within project contingency and, therefore, will not affect the project scope.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1999 Budget Request <i>(Preliminary Estimate)</i>	2Q 1999	4Q 2000	4Q 2000	4Q 2002	14,000	14,400
FY 2001 Budget Request	1Q 2000	2Q 2001	2Q 2001	4Q 2003	14,300	14,977
FY 2002 Budget Request <i>(Current Baseline Estimate)</i>	1Q 2000	2Q 2001	2Q 2001	4Q 2003	14,271 ^a	14,948

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	1,000	0	0
2000	0	635	416
2001	12,971 ^a	12,971	6,384
2002	300	300	6,900
2003	0	0	571

^a Original appropriation was \$14,300,000. This was reduced by \$29,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

3. Project Description, Justification and Scope

This project will renovate and upgrade the existing steam generating facility located at the West Boilerhouse. This project removes four 100,000 PPH (Pound per Hour) boilers, boiler control panels and boiler annunciator panels, water softeners, polisher, pumps, forced draft fans, deaerator, piping, controls, and other existing ancillary boiler support equipment, and replaces them with new equipment including new microprocessor-based control panels and a boiler control room containing annunciator panels and system status indicators, in the same general location. The project will essentially be a one-for-one replacement with slightly reduced overall generating capacity; it will provide system improvements to reflect current technology.

The new boilers will be designed to efficiently and cleanly burn natural gas or No. 2 fuel oil. The burner assembly will contain a ring for natural gas and main and auxiliary fuel oil guns. The main fuel will be natural gas with No. 2 fuel oil as backup. Automatic and continuous blowdown systems, stack opacity monitoring, oxygen monitoring, steam, gas, and oil flow meters, draft fans, drum level fuel and draft controls will be included as well as feedwater pumps and a deaerator. The boiler controls will be microprocessor-based direct digital and will include all safeties. The system is to come complete with heat recovery equipment and controls that are technologically and economically feasible such as economizers and blow down heat recovery. A method to protect the boiler when off line will also be included. Low nitrogen oxide burners will be evaluated, and continuous environmental monitoring of nitrogen oxide and sulphur dioxide will be included as required by the 1990 revisions to the Clean Air Act.

Controls work will consist of the replacement of control components, boiler control panels, annunciator panels in the control room, and installation of a system schematic wall. Control valves will be installed on feedwater, natural gas and fuel oil, and will include positioners, air locks and limit switches. A vortex meter will be installed on each natural gas line. Self-calibrating opacity monitors will be installed on the stacks and continuously monitor stack conditions. The oil, gas trains, and boiler installation will be designed in compliance with National Fire Protection Association (NFPA) 8501.

The equipment in the control room will consist of an industrial grade console computer system, with a high resolution color monitor, laser printer and data logger. The computer will be supplied complete with software, manuals, graphics and reporting capabilities and efficiency calculations.

The control room will contain two work stations to control the boilers. The work stations will contain multiple computer screens to display alarms and the boilers operating conditions. The screens will be touch sensitive to acknowledge the alarms.

The following items have been considered and will not be included as part of this project:

**Weapons Activities/RTBF/Construction/
99-D-125—Replace Boilers and
Controls**

FY 2002 Congressional Budget

- # Cogeneration: Several previous studies have determined that cogeneration under the existing natural gas and electricity rates is not economically feasible.
- # Tempered Water System: It is not currently planned to provide any interface and/or connection between the steam and tempered water system as a part of this project; this project will not include the use of chiller recovered heat as combustion air preheat.
- # Number 6 Fuel Oil: The project will not provide the capability to fire on Number 6, (residual) fuel oil due to lack of local availability and environmental concerns with this fuel. It is believed that the availability of Number 2 fuel oil is sufficient.
- # Building Ventilation: This project is going to locate equipment on the induced draft fans fan deck which is normally significantly above ambient temperatures. The existing building operable louvers and windows, as well as the existing Boilerhouse roof exhaust fans, will provide sufficient ventilation and combustion air. The “Chilled Water System Replacement” project has completely separated the chiller’s room from the boiler’s room by walls and doors. Each resulting building now has an emergency ventilation system independent of the other. The decrease in boiler size will help decrease the indoor ambient air temperatures.

The old boilers will be dismantled and removed in pieces. The overhead door on the west side of the West Boilerhouse will be removed; and replaced with masonry compatible with the existing building. A new permanent wall opening will be created to facilitate the removal of the scrap boilers and to allow the new, factory assembled boilers and other ancillary equipment to be moved into place. Equipment located in the basement will be moved via the well opening on the southwest corner of the building.

| The project design started in FY 1999 with construction to be staged so that steam production to the plant will not be interrupted for significant periods of time. The general plan will be to remove two boilers from either the north or south end of the building, install two new boilers and bring them on line, then remove and replace the other two boilers. Preparatory work such as construction of the new steam headers, deaerator, feedwater piping and work on other support systems will be done to the extent possible before demolition of the boilers begins.

Energy Conservation Analysis

An economizer will be included in this project to preheat the feedwater. This system will reclaim heat from the boiler exhaust steam to heat the feedwater before it enters the deaerator.

Blow down heat recovery will be included in this project. Heat exchangers will recover heat from the blow down water. This heat will be used to preheat the make up water.

During Title I design, variable frequency drives (VFDs) will be evaluated for use with the induced draft fans. The use of VFDs will be based on Life Cycle Cost Analysis and design issues.

Background

The West Boilerhouse at the Department of Energy (DOE), Kansas City Plant (KCP), provides steam for heating, humidity control, and manufacturing processes for tenants of the Bannister Federal Complex. These tenants include the DOE, the General Services Administration (GSA), the Internal Revenue Services (IRS), the Federal Aviation Administration (FAA), the Department of Agriculture (DOA) and the Marine Corps. The steam from this boilerhouse is the only available source of heat for all of these tenants.

Although originally rated at 100,000 pounds per hour, the existing boilers can only achieve 80,000 to 90,000 pounds per hour for any sustained period of time due to their age and deteriorated condition. The boilers are unreliable, mechanically deteriorated, technologically obsolete, and spare parts are not readily available. These boilers must be replaced if the reliability of the steam plant is to be assured.

The bulk of steam generated by these boilers is consumed by the DOE's KCP in meeting its critical Defense Programs (DP) mission. However, the other Federal tenants have critical loads of their own, for which they reimburse the DOE based on memoranda of understanding with DOE.

The boilers were installed in the early 1970's (completion of project in 1974), under a contract administered by GSA. The GSA procedure was to issue a contract to a General Contractor who in turn purchased boilers, burners, controls and accessories and assembled these components on site to provide a complete and working system. The GSA specified system performance and did not detail or specify individual component parts such as burners and controls. To minimize cost and expedite construction, the forced draft fans from the original 1942 boiler system were reused in the installation. The general contractor had no previous experience with plant steam systems and/or boilers. This less than ideal situation was further aggravated when the general contractor went into bankruptcy about two-thirds of the way through the contract. GSA provided additional funds to assure the completion of the project, however, since this was going to be the contractor's last job and all profits were to go to the bankruptcy proceeding, there was little incentive for quality work.

According to both the boiler manufacturer, Riley Stoker, and the burner manufacturer, Peabody Engineering, the contractor's choice of burners was not sanctioned or approved by either manufacturer for installation on an "A" type Riley boiler. As a result of this situation, there have always been problems with the operation of the boilers. These problems have included flame impingement, incomplete combustion of fuel and other systemic problems. Throughout the period since the boilers were started up, the KCP has repeatedly had both Riley and Peabody on site and have made numerous changes to the boilers and controls in an effort to provide efficient and reliable operation. These efforts have only been partially successful.

The boilers, as originally provided, were set up and equipped to burn natural gas as the primary fuel

and number 6 fuel oil, a residual fuel, as backup. However, according to Riley Stoker, the boilers were not fabricated with the intended capability to burn any fuel that left a residual deposit. As a result of this, fly ash built up in the combustion chamber during periods when the boilers were fired on number 6 fuel oil. This problem was aggravated by the fact that the poor burner selection resulted in flame impingement and incomplete combustion which increased the problem of fly ash production.

The following problems necessitate replacement of the existing system:

Tube Failure

All four boilers in the West Boilerhouse have had a history of excessive tube failure. The fly ash residue created by the poor selection of burners has permeated the refractory in the bottom of the boilers so that over a period of time the tubes in the bottom of the boilers and at the tube connection to the mud drum were packed with the fly ash. Fly ash by nature is hygroscopic and any introduction of moisture, whether from airborne moisture or tube leaks, rapidly finds its way to the fly ash. This fly ash produces an acid compound that attacks the exterior of the tubes. Moisture is trapped between the refractory and the tubes. Historically, the tube failures in these boilers have in almost all cases been in locations where the tube is buried in refractory.

The history of tube failures began almost at the boiler start up. The rate of failure has accelerated so that since 1992, over 2,000 tubes have been replaced in the four boilers. Between 1991 and 1995 there have been eleven separate occurrences of boiler tube leaks with an average down time per lead of between one and two months. A project to retrofit the burners so that number 2 fuel oil is used as the backup fuel was completed in the late 1980's. This has reduced fly ash buildup, but does little to repair already damaged tubes or reduce the residual fly ash in the refractory left by years of using number 6 fuel oil.

Refractory Problems

The boilers have also experienced a history of refractory failure. The refractory on the front section of the boilers was originally poured in place and cured while the panel was in a horizontal position. When the refractory was cured, the panel was erected and connected to the boiler body. This procedure has not proven to be satisfactory and is no longer used by Riley Stoker. Over time the front refractory separated from the boiler wall and allows flames to enter the space between the refractory and the boiler shell. The front refractory has been repeatedly repaired on all four boilers. New methods of refractory application have been developed which have reduced but not eliminated the problem. Refractory tile at the throat of the burners are also a maintenance problem and have to be replaced repeatedly.

Controls & Air Emissions

The controls for these boilers were technologically obsolete when the system was originally installed.

The boiler controls are electro-pneumatic technology. The new standard for boiler controls that was making rapid transitions into the industry when the boilers were installed in 1974 was all electric/electronic based controls. The controls, when they were installed on the Kansas City Plant boilers, were the last generation of old, electro-pneumatic technology produced by Hays Republic, the controls manufacturer. Hays Republic has not been able to furnish replacement repair parts for many of the control components since the mid-1980's. It is becoming increasingly difficult to find repair parts and it is estimated that within 5 years, no spare parts will be available. The controls have deteriorated and now drift from the control set point and require continuous resetting. Because of the age and condition of the controls, failure of component parts is common. These failures can and often do alter the combustion process to the point that air emissions are outside KCP's permitted values. Failure of a control component in 1992 caused an out of compliance condition on opacity (visual emissions), which resulted in a notice of violation being issued by the city of Kansas City, Missouri. The KCP air emissions are permitted by the Kansas City Air Board and must meet Federal EPA Regulations (40 CFR 60, Appendix B, Sec. 1.), Missouri State Regulation (10 CFR 10-2/06), and Kansas City, Missouri Regulations (section 18.86.D). It is predicted that without new controls, the existing boilers will experience repeated out of compliance conditions as the existing controls continue to age and malfunction.

Deaerator

The existing deaerator was installed during the 1970's. The deaerator removes dissolved gases, primarily oxygen, from the feedwater prior to it entering the boilers. This process protects and prolongs the life of boilers and piping system. There is a very limited capability to fire the boilers if this unit is out of service. The deaerator has experienced accelerated deterioration that has repeatedly required work to repair chemical stress cracking to the unit. The corrosion in the deaerator has gotten to the point where frequent repairs are necessary. In the event of a failure of this component, prolonged firing of the boiler on untreated water would significantly damage the already deteriorated boilers and piping systems.

Ancillary Problems

In general the ancillary equipment such as piping, softeners, polishers, fans and pumps is in a deteriorated condition. Maintenance on this equipment is increasing with mean time between failures decreasing. All systems have obsolete technology and the acquisition of repair parts continues to be a problem – especially for the boiler feedwater pumps and softener controls.

Implications

The existing boilers are deteriorated beyond a point where normal repair and maintenance is cost effective, reliability of the steam plant cannot be assured. Repairs of the boilers and ancillary equipment would require replacement components and many exact replacements are no longer available. It will require significant engineering design support to retrofit other components in areas where original replacements are not available.

Significant deterioration to boiler tubes and internals is so extensive that the only adequate repair would be a complete tube replacement. This would be very costly and would not put the boiler in a like new condition. Release of industrial waste from a ruptured pipe would most likely enter the plant sanitary sewer system. This occurrence would cause the plant to be in violation of permit.

If a reliable steam supply is to be maintained, it is essential that these boilers be replaced as soon as possible. Failure to replace the existing boilers will subject the KCP to an unacceptable risk of inadequate and unreliable steam supply.

Project Milestones:

FY 2000: A-E Work Initiated	1Q
FY 2001: A-E Work Completed	2Q
FY 2001: Physical Construction Starts	2Q
FY 2003: Physical Construction Complete	4Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications) . .	626	626
Design Management Costs (0.7% of TEC)	102	102
Project Management Costs (0.08% of TEC)	12	12
Total, Design Costs (5.2% of TEC)	740	740
Construction Phase		
Utilities	10,968	10,968
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance .	392	392
Construction Management (1.2% of TEC)	166	166
Project Management (0.6% of TEC)	81	81
Total, Construction Costs (81.2% of TEC)	11,607	11,607
Contingencies		
Design Phase (0.7% of TEC)	97	97
Construction Phase (12.8% of TEC)	1,827	1,856
Total, Contingencies (13.4% of TEC)	1,924	1,953
Total, Line Item Costs (TEC) ^a	14,271	14,300

^a The Conceptual Design Report was completed in February 1997. Escalation is calculated to the midpoint of each activity. Escalation rates were taken from the FY 1999 DOE escalation multiplier tables. Overhead rates were calculated at a factor of 14% for procurement and 77% for internal labor.

5. Method of Performance

Design and inspection will be performed under a KCP negotiated architectural-engineering contract. Construction will be accomplished by fixed-price contract awarded on the basis of competitive proposals and administered by Honeywell.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	0	416	421	0	0	837
Construction	0	0	5,963	6,900	571	13,434
Total, Line item TEC	0	416	6,384	6,900	571	14,271
Total, Facility Costs (Federal and Non-Federal)	0	416	6,384	6,900	571	14,271
Other Project Costs						
Conceptual design cost	40	0	0	0	0	40
NEPA documentation costs	11	0	0	0	0	11
Other project-related costs	209	106	150	120	41	626
Total, Other Project Costs	260	106	150	120	41	677
Total, Project Cost (TPC)	260	522	6,534	7,020	612	14,948

7. Related Annual Funding Requirements

(FY 2003 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	0	0
Annual facility maintenance/repair costs	10	10
Total related annual funding (operating from FY 2003 through FY 2032) ..	10	10

^a Estimated life of project—30 years.

99-D-127, Stockpile Management Restructuring Initiative Kansas City Plant, Kansas City, Missouri

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

TEC and TPC was reduced in the FY 2001 Appropriation by \$199,000 by the Safeguards and Security Amendment. This reduction does not affect the scope of work for this project.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1999 Budget Request (<i>Preliminary Estimate</i>)	1Q 1999	2Q 2004 ^a	3Q 1999	3Q 2006	122,500	139,500
FY 2000 Budget Request	2Q 1999	3Q 2004	3Q 1999	2Q 2005	119,500	139,700
FY 2001 Budget Request	2Q 1999	3Q 2004	3Q 1999	2Q 2005	122,400	141,600
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	2Q 1999	3Q 2004	3Q 1999	2Q 2005	122,201	141,401

^a The work packages will be phased as required to maintain production operations. Title I design, Title II design and construction contracts for multiple work packages overlap and are phased over the 6 years of the project.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	13,700	2,349	153
2000	16,935 ^a	26,066	12,384
2001	23,514 ^{b c}	25,786	31,174
2002	22,200	22,200	25,692
2003	29,900	29,900	30,316
2004	15,100	15,100	20,660
2005	852	852	1,822

3. Project Description, Justification and Scope

The end of the Cold War radically changed the defense posture of the United States, calling for significant changes and reductions in nuclear weapons complex structure and operations. The initial phase of this retrenchment began when the Department of Energy decided to cease nonnuclear production at three plants and consolidate most of its nonnuclear manufacturing at the Kansas City Plant (KCP). However, even with the influx of new missions, the downturn in defense production meant continued reductions in operating costs and work force.

The Stockpile Management Restructuring Initiative provides a cost-effective plan that capitalizes on the KCP's logistic and manufacturing expertise to ensure quality nonnuclear products through the year 2010 and beyond. Furthermore, the initiative minimizes DOE costs in the near term by lessening risks and reducing operating expenditures concurrent with capital investments. It also provides the technical capability, production capacity, and flexibility necessary to allow the KCP to support scheduled nonnuclear production and a wide range of unanticipated production requirements, confidently and effectively.

The Stockpile Management Restructuring Initiative will allow the KCP's infrastructure to be altered and greatly reduced from the current plant profile, substantially reducing costs to operate the KCP. The restructuring initiative consists of changing the existing plant and operational approach in four major aspects: 1) physically reducing the size of the facility, 2) changing the approach to manufacturing from product-based to process-

^a Original appropriation was \$17,000,000. This was reduced by \$65,000 for the FY 2000 rescission enacted by P.L. 106-113.

^b Original appropriation request was \$23,765,000. This was reduced by \$199,000 by the Safeguards and Security (S&S) Amendment. The comparable S&S amount for FY 2000 for this project was \$142,000; the comparable appropriation amount was \$16,793,000.

^c Original appropriation was \$23,566,000. This was reduced by \$52,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. There is no change to the TEC due to a corresponding increase to the FY 2005 appropriation amount.

based, 3) reducing the support infrastructure appropriate for the right-sized operation, and 4) further streamlining the organizational structure to focus directly on the core manufacturing mission.

Currently, the KCP consists of approximately 3.2 million square feet of floor space contained in three connected buildings: the main building, the manufacturing support building (MSB) and the technology transfer center (TTC). Approximately 3 million square feet of floor space is Defense Programs funded. Much of the floor space is underutilized and costly to maintain and approximately 666,000 square feet of vacant floor space will be returned to GSA for reallocation to other Federal agencies. The KCP will be rearranged into three business units and a support operations business unit to bring about an overall reduction in total managed floor space, streamline operations, and produce increased long-term operating efficiencies in manufacturing processes. The approximate square footage of each business unit after consolidation is as follows:

	<u>Square Ft.</u>
Electrical Products Business Unit	236,000
Mechanical Business Unit	350,000
Engineered Materials Business Unit	198,000
Support Operations Business Unit	850,000
Unallocated and Unusable	<u>666,000</u> (includes aisles, restrooms, and utility set backs)
Total	2,300,000

Electronics Products Business Unit (EPBU) Technology Overview

The electronics products factory includes three process modules: microelectronics, interconnects, and final assembly. Each electronic process module will fabricate all product lines that require the processes of that module. In addition to the three process modules, there will be three manufacturing areas for specialized products: Joint Test Assembly (JTA), Special Electronic Assembly (SEA), and Test Equipment.

The three process modules are:

Microelectronics: All substrates, hybrid microcircuits, chip packages, and leadless chip carriers that require clean room processing are fabricated in the state-of-the-art microelectronics module. The module is located in the new microelectronics facility which was completed in June 1995 and became fully operational in September 1998.

Interconnects: The interconnects module contains all the processes used to attach and interconnect components. This includes processes such as welding, conventional hand soldering, wave soldering, vapor phase soldering, and belt furnace re-flow soldering. In addition to printed wiring assemblies, interconnect products, such as cables and junction boxes, can be fabricated in this module.

Final Assembly: The fabrication of complete electronic systems is performed in the final assembly module. This consists of the assembly and encapsulation of all components required for complete electronic products.

Procured components, printed wiring assemblies, and manufactured hardware are assembled to produce complete electronic systems such as radars, programmers, trajectory sensing, and firesets.

Mechanical Business Unit (MBU) Technology Overview

The MBU will consist of 14 modules which will fabricate or procure all required product lines. This is a process-based approach for most mechanical technologies, complemented by generic product-based manufacturing departments, mechanical support laboratories, and engineering services as follows:

Mechanical Welding: Mechanical Welding is a process-based activity group providing welded mechanical hardware and welding operations in common support of factory operations. The in-place consolidation will combine operations which currently exist in Welding Operations, Interim Reservoir Welding, Model Shop and Tool Room, and the Mechanical Welding Laboratory.

Sheet Metal and Mechanical Assembly: The sheet metal fabrication assembly area will provide common support for a range of mechanical and electromechanical products, and includes typical sheet metal processes as well as laser marking.

Electromechanical Assembly: Electromechanical Assembly will be restructured in a downsized and consolidated operation to provide support of stronglinks and other miniature assemblies which have design features that include miniature solenoids, ceramic electrical headers, miniature springs, friction reducing coatings and bearings, low resistance electrical contacts, magnetically coupled switching, and a host of other unique designs. Most miniature mechanisms require assembly in a Class 100 clean environment, utilizing clean benches within a class 100,000 clean room.

Heat Treating and Abrasive Blasting: The heat treat and abrasive blasting areas provide service for all mechanical product lines. Included in the relocation of the Heat Treat department is the replacement of a portion of the furnaces and support equipment which will not survive the relocation due to their poor condition. The structural integrity of the furnaces being replaced is very poor and modifications would be required to refurbish fire brick and heating elements and the equipment may not survive the relocation. Due to the large size of these furnaces and the criticality of this equipment as a unique capability, new furnaces will be procured and installed in the new location prior to excess of the old equipment.

Mechanical Machining: Mechanical machining and inspection will be a downsized and consolidated operation that will fabricate hardware through traditional and non-traditional means in sizes ranging from large case-type housings to miniature piece parts for assemblies. The machined hardware provided by this module will support requirements of all programs at KCP for both internal and external customers.

Reservoir Fabrication and Assembly: Reservoir production responsibility was transferred from the DOE's Rocky Flats Plant to the KCP through the nonnuclear reconfiguration program. Because of special handling, cleaning and contamination considerations associated with reservoir production, KCP's reservoir facility contains most processes necessary to manufacture, test and inspect a wide variety of production reservoirs. SMRI implementation will not change the Reservoir facility.

STA Products Manufacturing: Secure Transportation Asset Products Manufacturing supports the secure transportation needs for the DOE Secure Transportation Asset including refurbishment of existing trailers, original manufacture of the new design Safeguards Transporter Trailer (SGT) and multiple short-term special maintenance activities. The TSD manufacturing area will be consolidated by combining the secure trailer sheet metal area with the primary SGT assembly facility.

Mechanical Support Laboratories: Support laboratories for Mechanical Operations will continue to provide the current types of support, though in a smaller footprint through consolidation.

Plastics Molding & Filled Elastomers: This area supports injection, compression, and transfer molding of thermoset and thermoplastic compounds, and material preparation and compression molding of filled elastomeric products.

Cellular Silicone Production: The Cellular Silicone processing operations will not be consolidated with other operations for material incompatibility reasons. The activities associated with the production of cellular silicone products require three major processes: urea screening; silicone base and cellular silicone compounding; and cellular silicone molding, part processing, and product inspection.

Foam Products: Foam Products is a process-based approach, which has combined equipment needed for fabrication of rigid polyurethane foams, filled elastomer foams and foam desiccant product lines.

Plastics Machining, Assembly & Inspection: In the Plastics Machining, Assembly & Inspection module, the manufacturing and machining of all Special Plastics Case Assemblies and Subassemblies, Gas Getters, Composites, and all other plastic products and the related inspection of these products will be consolidated. This consolidation allows for some enhanced utilization of floor space and equipment.

Plating & Painting: These two process modules provide custom metal finishing services to the entire plant. They are not undergoing consolidation as part of the SMRI project.

Engineered Materials Business Unit (EMBU) Technology Overview

The engineered materials factory consists of four processing modules as follows:

Model Shop and Tool Room: The Model Shop and Tool Room is a support organization that will provide prototype and evaluation hardware, tool and gage fabrication and maintenance, special grinding of cutting tools, and limited tool design in support of unique and short-cycle time needs of production operations.

Engineering Laboratories: The Engineered Materials Business Unit contains several large laboratories. Except for the Nuclear Grade Steels Receiving and Inspection, and Environmental & Non-Destructive test labs, the Engineering Laboratories will remain unchanged by the SMRI project.

Engineering Services: The Engineered Materials Business Unit provides document control, drafting, and other support services for the other business units. These functions are primarily office areas, and are not modified in the SMRI project.

Metrology: Metrology provides calibration services to the plant and will not be modified under SMRI.

Support Operations Technology Overview

Support operations includes boilerhouses, waste management operations, patrol headquarters, stores (including enduring stockpile), maintenance, cafeteria, offices and other functions that are essential for plant operations. Included under this function is the physical plant separation work for walls and utilities and security guard support during construction. Also included is the construction and relocation of a downsized cafeteria. These functions, generally placed in the category of support, are common to plant operations and are not assigned to a specific factory.

Physical Plant Separation: Maximum Foreseeable Fire Loss (MFL) rated separation between the DOE and GSA will be provided by construction of fire rated subdivision walls. Major air handling and utilities systems serving both DOE and GSA will be separated to allow for independent maintenance of these services on both sides of the separation line after the SMRI project is complete.

Stores: New stores will occupy approximately 21 areas, down from the existing 70. Gages and fixtures, chemicals, and some of the production and non-production stores areas will remain in their current locations. Bulk materials and large production and non-production areas will be relocated and resized to meet future stores requirements. This bulk storage area will be located in a high-roof, unexcavated area of the plant which is adjacent to a new high-rack storage area.

Enduring Stockpile: This project provides space for enduring stockpile inventory and to construct fire-rated storage facility enclosures to limit the Maximum Foreseeable Loss (MFL) in accordance with DOE dollar limits. Sites will be provided for a proposed short-term storage of DOE-managed Enduring Stockpile materials. Approximately 105,000 square feet of plant floor space within the new boundaries derived from the facility consolidations will be allocated for the storage of these materials. Thirteen plant areas will be dedicated to this purpose and will be upgraded in place to meet the enduring stockpile storage criteria.

Project Milestones:

FY 1999: A-E Work Initiated	2Q
Physical Construction Starts	3Q
FY 2000: A-E Work Completed	3Q
FY 2005: Physical Construction Completed	2Q

4. Details of Cost Estimate

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	8,451	8,451
Design Management Costs (1.0% of TEC)	1,268	1,268
Project Management Costs (0.4% of TEC)	422	422
Total, Design Costs (8.3% of TEC)	10,141	10,141
Construction Phase		
Buildings	46,381	46,381
Standard Equipment	32,210	32,210
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	3,440	3,440
Construction Management (5.1% of TEC)	6,278	6,477
Project Management (4.7% of TEC)	5,750	5,750
Total, Construction Costs (77.0% of TEC)	94,059	94,258
Contingencies		
Design Phase (1.5% of TEC)	1,799	1,799
Construction Phase (13.3% of TEC)	16,202	16,202
Total, Contingencies (14.7% of TEC)	18,001	18,001
Total, Line Item Costs (TEC)^a	122,201	122,400

5. Method of Performance

Design and inspection will be performed under KCP negotiated architect-engineer contract. Construction will be accomplished either by fixed-price contract awarded after competitive proposals or by cost plus incentive fee contracts. All contracts will be administered by Honeywell.

^a The Conceptual Design Report was completed in March 1997. Escalation is calculated to the midpoint of each activity. Escalation rates were taken from the FY 1998 DOE escalation multiplier tables. Overhead estimates were calculated at a factor of 14 percent for procurement and 85 percent for internal labor.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	153	3,839	2,959	2,441	1,435	10,827
Construction	0	8,545	28,215	23,251	51,363	111,374
Total, Line item TEC	153	12,384	31,174	25,692	52,798	122,201
Total, Facility Costs (Federal and Non-Federal)	153	12,384	31,174	25,692	52,798	122,201
Other Project Costs						
Conceptual design cost	1,000	0	0	0	0	1,000
Other project-related costs	6,578	3,830	3,869	2,430	1,493	18,200
Total, Other Project Costs	7,578	3,830	3,869	2,430	1,493	19,200
Total, Project Cost (TPC)	7,731	16,214	35,043	28,122	54,291	141,401

7. Related Annual Funding Requirements

(FY 2005 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	3,700	3,700
Annual facility maintenance/repair costs	5,400	5,400
Programmatic operating expenses directly related to the facility	9,374	9,374
Total related annual funding (operating from FY 2005 through FY 2034)	18,474	18,474

^a Estimated life of project—30 years.

99-D-128, Stockpile Management Restructuring Initiative Pantex Plant, Amarillo, Texas

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

None.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 1999 Budget Request (Preliminary Estimate)	2Q 1999	2Q 2003	4Q 2000	4Q 2006	42,380	49,600
FY 2000 Budget Request	3Q 1999	4Q 2001	2Q 2000	4Q 2004	13,218	17,863
FY 2001 Budget Request	3Q 1999	4Q 2001	2Q 2000	4Q 2004	13,218	17,863
FY 2002 Budget Request (Current Baseline Estimate) . . .	3Q 1999	4Q 2001	2Q 2000	4Q 2004	13,218	17,863

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1999	1,108	920	74
2000	3,416 ^a	469	471
2001	4,987 ^b	4,440	3,872
2002	3,300	6,281	6,287
2003	286	789	2,195
2004	121	292	262

^a Original appropriation was \$3,429,000. This was reduced by \$13,000 for the FY 2000 rescission enacted by P.L. 106-113.

| ^b Original appropriation was \$4,998,000. This was reduced by \$11,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. There is no change to the TEC due to a corresponding increase to the FY 2004 appropriation amount.

3. Project Description, Justification and Scope

The Pantex Plant Stockpile Management Restructuring Initiative (SMRI) Project will provide for the design and construction for various relocation and upgrades and for the shutdown of obsolete structures. The project will help to reduce the plant footprint by consolidating functions into fewer and more modern facilities.

The scope for this project has been established based upon the Department of Energy's directed workload for the Pantex Plant. This directed workload is the weapons work Pantex is directed to do through Program Control Documents (PCDs), Retirement/Disposal Program Control Documents, the Quality Assurance Production Plan (QAPP), and other special written requests provided by DOE.

The technical baseline for this project has been broken up into three parts that are detailed below:

Relocation of High Explosive Formulation to 11-050

This portion of the SMRI project will remove existing High Explosive (HE) machining equipment from Building 11-050 following startup of HE machining operations in Building 12-121. Building 11-050 will be modified to receive the HE formulation related operations currently performed in Building 12-019 East and Building 12-017, and selected operations and equipment from Building 11-017. Following modifications to Building 11-050 the required equipment from these buildings will be relocated and the equipment put into operation in Building 11-050. Finally, Building 12-019 East will be placed into a long-term caretaker status. Equipment and support items will be procured and/or relocated as required and any items that cannot be successfully relocated will be replaced. This portion of the SMRI project was designed to meet the applicable DOE and regulatory requirements in place at the start of Title I design.

Relocate Mass Properties

This portion of the SMRI project will relocate the Mass Properties function to Buildings 12-084 and 12-104 and will consist of modifications to the buildings to accept the mass properties operations from Building 12-060. Four existing pieces of equipment will be replaced by procuring two new, more technically advanced pieces of equipment. Equipment and support items will be procured and/or relocated as required and any items that cannot be successfully relocated will be replaced. This portion of the SMRI project was designed to meet the applicable DOE and regulatory requirements in place at the start of Title I design.

Relocate 35 Account Materials

This portion of the SMRI project will relocate the 35 Account warehousing activities in Buildings 12-005A, 12-005B, 12-010, 12-009, and Ramp 12-R-010 into Building 12-118. The 35 Account activities include materials in contact with a weapon or weapon component during a weapon assembly, disassembly or test units. Typical materials include such items as epoxy resin, paint, dry air, rubber gloves and acetone. Equipment and support items will be procured and/or relocated as required and any items that cannot be successfully relocated will be replaced. This portion of the SMRI project was designed to meet the applicable DOE and regulatory requirements in place at the start of Title I design. Buildings 12-005A, 12-005B, 12-010, and 12-R-010 will be placed into Long-term Caretaker status.

Project Milestones:

FY 1999: A-E Work Initiated	3Q
FY 2000: Construction Start	2Q
FY 2004: Physical Construction Complete	4Q

4. Details of Cost Estimate

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	1,210	1,210
Project Management costs (4.4% of TEC)	579	579
Total, Design Costs (13.5% of TEC)	1,789	1,789
Construction Phase		
Improvements to Land	61	61
Buildings	4,298	4,298
Other Structures	510	510
Utilities	20	20
Standard Equipment	2,873	2,873
Removal Cost Less Salvage	35	35
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	146	146
Construction Management (5.8% of TEC)	773	773
Project Management (3.4% of TEC)	455	455
Total, Construction Costs (69.4% of TEC)	9,171	9,171
Contingencies		
Design Phase (2.7% of TEC)	358	358
Construction Phase (14.3% of TEC)	1,900	1,900
Total, Contingencies (17.1% of TEC)	2,258	2,258
Total, Line Item Costs (TEC) ^a	13,218	13,218

^aEscalation rates taken from the FY 1999 DOE escalation multiplier tables. The estimate was based on the Independent Cost Reviews (ICR 6/97 and 8/97) of the Conceptual Design Report (Revision 1) and included security guard costs under project management. The current estimate is based on new burden rates and correctly includes security guard costs under construction management.

5. Method of Performance

The design services (Title I, II, and III) were accomplished by an outside A-E firm and will be administered by the Operating Contractor (BWXT Pantex). Mason and Hanger Corporation will perform portions of the design for selected projects.

The construction services of this project will be performed by an outside construction contractor operating under a contract to be awarded on the basis of competitive bids. This contract will be administered by the Operating Contractor (BWXT Pantex).

Construction Management Services will be performed by the DOE Operating Contractor.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	74	471	1,352	184	66	2,147
Construction	0	0	2,520	6,103	2,448	11,071
Total, Line item TEC	74	471	3,872	6,287	2,514	13,218
Total, Facility Costs (Federal and Non-Federal)	74	471	3,872	6,287	2,514	13,218
Other Project Costs						
Conceptual design cost	768	0	0	0	0	768
NEPA documentation costs	328	25	63	45	92	553
Other ES&H costs	75	25	38	23	77	238
Other project-related costs	596	331	886	358	915	3,086
Total, Other Project Costs	1,767	381	987	426	1,084	4,645
Total, Project Cost (TPC)	1,841	852	4,859	6,713	3,598	17,863

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	355	355
Annual facility maintenance/repair costs	218	218
Programmatic operating expenses directly related to the facility	1,418	1,418
Capital equipment not related to construction but related to the programmatic effort in the facility	350	350
Utility costs	106	106
Total related annual funding (operating from FY 2004 through FY 2033)	2,447	2,447

^aEstimated life of project—30 years.

98-D-123, Stockpile Management Restructuring Initiative Tritium Facility Modernization and Consolidation, Savannah River Site, Aiken, South Carolina

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

The total estimated cost and total project cost have been increased to reflect the latest estimate performed at the completion of Title II design, which includes a capacity increase needed to improve operability and maintainability of the tritium systems.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1998 Budget Request (<i>Preliminary Estimate</i>)	2Q 1998	1Q 2000	1Q 1999	2Q 2002	68,790	85,540
FY 1999 Budget Request ^a	2Q 1998	2Q 2000	3Q 1998	3Q 2004	98,400	122,000
FY 2000 Budget Request ^b	2Q 1998	3Q 2000	3Q 1998	4Q 2004	98,400	122,000
FY 2001 Budget Request	2Q 1998	3Q 2000	3Q 1998	4Q 2004	98,400	122,000
FY 2002 Budget Request (<i>Title II Estimates</i>)	2Q 1998	3Q 2000	3Q 1998	4Q 2004	113,613	141,761

^aReflected changes from including scope and associated funding to process tritium containing gases from the Commercial Light Water Reactor (CLWR), which was originally included in the Tritium Extraction Facility (Line Item 98-D-125).

^bReflected changes in schedule due to delayed start of design on most processes in Building 233-H.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1998	11,000	5,119	5,092
1999	27,500	27,500	19,704
2000	20,233 ^a	20,673	24,481
2001	30,699 ^b	36,208	30,221
2002	13,700	13,700	19,662
2003	10,481	10,481	9,222
2004	0	0	5,231

3. Project Description, Justification and Scope

In 1994, production operations were curtailed at three of the seven weapons production facilities (Mound in Ohio, Pinellas in Florida, and Rocky Flats in Colorado). Their production responsibilities were transferred to two of the remaining four production plants (Kansas City Plant (KCP) and Savannah River Site (SRS)) and to two of the national laboratories (Los Alamos National Laboratory (LANL) and Sandia National Laboratory (SNL), New Mexico). After the closure of these production operations, studies were continued to determine the optimum size and configuration of the nuclear weapons complex. It was recognized that the remaining four production facilities provided excess capacity than that required to support the projected stockpile, and that further closure and consolidation or significant downsizing of operations was necessary. Studies were begun in late 1994 to address whether the reduced stockpile levels necessitated further plant closures and consolidation/collocation at the weapons laboratories or supported the downsizing of operations at the existing production plants. These studies were used to assess all reasonable alternatives which required little or no construction of new facilities. The result of these in-depth programmatic assessments culminated in the development and approval of the Justification of Mission Need document and the Critical Decision I authorization for the Stockpile Management Restructuring Initiative (SMRI) on April 2, 1996.

The SMRI will support the implementation of Departmental decisions related to production facility downsizing or relocation of missions consistent with the Stockpile Stewardship and Management (SSM) Programmatic Environmental Impact Statement (PEIS) and the Tritium Supply and Recycling PEIS Records of Decision (ROD). The preferred alternative for restructuring the stockpile management complex was announced by the Secretary of Energy on February 28, 1996. The Secretary of Energy approved a ROD for the Tritium Supply and Recycling PEIS on December 5, 1995.

^aOriginal appropriation was \$21,800,000. This was reduced by \$67,000 for the FY 2000 rescission enacted by P.L. 106-113, and by \$1,500,000 for an FY 2000 general reduction.

^b Original appropriation was \$30,767,000. This was reduced by \$68,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act. There is no change to the TEC due to a corresponding increase to the FY 2003 appropriation amount.

The goal of the Stockpile Stewardship Program, as implemented by the SMRI, is to attain the following objectives: (1) fully support the evaluation, enhanced surveillance, maintenance, and repair of the enduring stockpile; (2) provide flexibility to respond to new requirements or to achieve further reductions in the stockpile size; (3) maintain and improve (where necessary) the manufacturing technology necessary to fully support the stockpile; and (4) achieve significant reductions in operating costs for the complex.

The SMRI involves (1) the downsizing of weapons assembly/disassembly and high explosives missions at the Pantex Plant; (2) downsizing nonnuclear component manufacturing at the Kansas City Plant; (3) downsizing weapons secondary and case fabrication at the Y-12 Plant; and (4) consolidation of existing tritium operations at the SRS.

No new facilities are being proposed for implementing the SMRI. Existing facilities will be utilized to the maximum extent possible. All existing facilities that have been identified for utilization under each site specific recommended alternative will be repaired, upgraded, and/or modified to meet current environment, safety, and health requirements. In addition, they will be configured to maximize effectiveness and efficiency in support of the site-specific downsizing and/or consolidation management capability requirements for the smaller stockpile.

The Tritium Facility Modernization and Consolidation work package will relocate several process systems and equipment and/or process functions from Buildings 232-H into existing buildings within the Tritium Facility. High and Moderate hazard processes will be relocated into Building 233-H.

Low Hazard processes will be relocated to the North end of Building 234-H. The Building 233-H and 234-H service support systems will be upgraded to accommodate the additional loads.

The consolidation of Tritium processing activities into Buildings 233-H, 249-H, and the newer portion of 234-H will improve the safety of operations, reduce environmental releases, improve productivity, and significantly reduce future operating costs.

The consolidation of equipment into fewer operating buildings will allow for the reduction of maintenance, operations, and support staffing. The closure of 232-H will further reduce the Defense Programs operating budget for the SRS. It is estimated that financial pay back for this project can be realized in approximately four years.

The scope of work also includes work that was transferred from the Tritium Extraction Facility, Line Item 98-D-125. These are increases in capacities and flows in the primary separation system, process stripper/tritium recovery system, glovebox stripper/tritium recovery system. Also added is an isotope separation process. These additions will allow the Consolidation project to handle additional process and waste gases from any new tritium source.

Project Milestones

FY 1998: Physical Construction Starts	3Q
FY 2000: A-E Work Completed	3Q
FY 2004: Physical Construction Complete	4Q

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	25,349	13,370
Design Management Costs (1.4% of TEC)	1,539	413
Project Management Costs (1.0% of TEC)	1,164	987
Total, Design Costs (24.7% of TEC)	28,052	14,770
Construction Phase		
Improvements to Land	100	100
Buildings ^a	6,752	5,300
Special Equipment	46,000	36,345
Standard Equipment	3,906	3,080
Removal Cost Less Salvage	1,934	1,645
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	9,462	7,034
Construction Management (2.0% of TEC)	2,328	1,995
Project Management (2.5% of TEC)	2,793	2,367
Total, Construction Costs (64.5% of TEC)	73,275	57,866
Contingencies		
Design Phase	0	5,240
Construction Phase (10.8% of TEC)	12,286	20,524
Total, Contingencies (10.8% of TEC)	12,286	25,764
Total, Line Item Costs (TEC) ^b	113,613	98,400

5. Method of Performance

The Management and Operating (M&O) contractor, Westinghouse Savannah River Company, will have overall project performance responsibility. The M&O contractor will accomplish design, construction and procurement, utilizing fixed-price subcontracts awarded on the basis of competitive bidding to the extent feasible.

^aThis amount includes improvements to land, special equipment, other structures and utilities with more exact breakout to be determined.

^b Escalation rates taken from the FY 1998 DOE escalation multiplier tables.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	19,081	8,971	0	0	0	28,052
Construction	5,715	15,510	30,221	19,662	14,453	85,561
Total, Line item TEC	24,796	24,481	30,221	19,662	14,453	113,613
Total, Facility Costs (Federal and Non-Federal) ..	24,796	24,481	30,221	19,662	14,453	113,613
Other Project Costs						
R&D necessary to complete construction ...	800	0	0	0	0	800
Conceptual design cost	300	0	0	0	0	300
Decontamination and Decommissioning (D&D)	200	0	0	0	0	200
NEPA documentation costs	30	0	0	0	0	30
Other ES&H costs	90	0	0	0	0	90
Other project-related costs	5,482	2,218	4,352	3,800	10,876	26,728
Total, Other Project Costs	6,902	2,218	4,352	3,800	10,876	28,148
Total, Project Cost (TPC)	31,698	26,699	34,573	23,462	25,329	141,761

7. Related Annual Funding Requirements

(FY 2004 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs ^a	330	330
Annual facility maintenance/repair costs	440	440
Programmatic operating expenses directly related to the facility	1,100	1,100
Capital equipment not related to construction but related to the programmatic effort in the facility	30	30
GPP or other construction related to the programmatic effort in the facility	10	10
Utility costs	170	170
Total related annual funding (operating from FY 2004 through FY 2033)	2,080	2,080

^aEstimated life of project—30 years.

**Weapons Activities/RTBF/Construction/
98-D-123—Stockpile Management
Restructuring Initiative/Savannah
River Site**

FY 2002 Congressional Budget

98-D-124, Stockpile Management Restructuring Initiative Y-12 Consolidation, Y-12 Plant, Oak Ridge, Tennessee

(Changes from FY 2000 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

The Department is currently conducting an evaluation of this project to address changes in facility/operations and program requirements, ongoing site planning, the establishment of a new M&O contractor, and funding availability. Project funding profiles have been adjusted to reflect revised project needs, but the Total Estimated Cost and Total Project Cost have not been changed pending completion of the evaluation and Departmental approval of any proposed baseline changes.

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1998 Budget Request (<i>Preliminary Estimate</i>)	1Q 1998	2Q 2000	2Q 1999	4Q 2002	42,500	52,800
FY 1999 Budget Request	1Q 1998	2Q 2000	2Q 1999	4Q 2002	42,500	52,800
FY 2000 Budget Request	4Q 1998	4Q 2001	2Q 1999	4Q 2002	24,800	33,200
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	4Q 1998	4Q 2001	2Q 1999	4Q 2003	24,800	33,200

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1998	6,450	8	8
1999	10,700	4,181	2,382
2000	0 ^a	4,305	3,482
2001	0	6,500	6,878
2002	6,850	6,850	8,850
2003	800	800	3,200

^a FY 2000 general reduction reduced the appropriation from \$3,150 to \$0 for FY 2000.

3. Project Description, Justification and Scope

In 1994, production operations were curtailed at three of the seven weapons production facilities (Mound in Ohio, Pinellas in Florida, and Rocky Flats in Colorado). Their production responsibilities were transferred to two of the remaining four production plants (Kansas City Plant (KCP) and Savannah River Site (SRS)) and to two of the national laboratories (Los Alamos National Laboratory (LANL) and Sandia National Laboratories, New Mexico). After the closure of these production operations, studies were continued to determine the optimum size and configuration of the nuclear weapons complex. It was recognized that the remaining four production facilities provided excess capacity than that required to support the projected stockpile, and that further closure and consolidation or significant downsizing of operations was necessary. Studies were begun in late 1994 to address whether the reduced stockpile levels necessitated further plant closures and consolidation/collocation at the weapons laboratories or supported the downsizing of operations at the existing production plants. These studies were used to assess all reasonable alternatives which required little or no construction of new facilities. The result of the programmatic assessments of these alternatives studies culminated in the initial development of the Stockpile Management Restructuring Initiative (SMRI). In 1995, the Department formally evaluated production facility downsizing and relocation of missions in the Stockpile Stewardship and Management (SSM) Programmatic Environmental Impact Statement (PEIS). The preferred alternative for restructuring the stockpile management complex was approved by the Secretary of Energy on December 19, 1996.

The goal of the Stockpile Stewardship Program is to attain the following objectives: (1) fully support the evaluation, enhanced surveillance, maintenance, and repair of the enduring stockpile; (2) provide flexibility to respond to new requirements or to achieve further reductions in the stockpile size; (3) maintain and improve (where necessary) the manufacturing technology necessary to fully support the stockpile; and (4) achieve significant reductions in operating costs for the complex.

The SMRI involves (1) the downsizing of weapons assembly/disassembly and high explosives missions at the Pantex Plant; (2) downsizing nonnuclear component manufacturing at the KCP; (3) downsizing weapons secondary and case fabrication at the Y-12 Plant; and (4) consolidation of existing tritium operations at the SRS.

The original scope of 98-D-124, Stockpile Management Restructuring Initiative--Y-12 Consolidation, was based on the assumed activity levels for the weapons complex evaluated by the Programmatic Environmental Impact Statement (PEIS) and the Record of Decision (ROD). To see if excessive downsizing or impact to meeting mission requirements may occur, a Y-12-specific evaluation, the Y-12 Capacity Study, was begun in 1997, and the project scope was also evaluated against the Nuclear Weapons Production and Planning Directive (P&PD) 00-0 and the Albuquerque Workload Planning Guidance (AWLPG) 99-1 (U). The completed studies revealed that the initial project scope, if completed, would downsize the Y-12 Plant to a point that would impact the expected mission requirements. Therefore, the project scope was reduced.

No new facilities are being proposed for implementing the SMRI. Existing facilities will be utilized to the maximum extent possible. All existing facilities that have been identified for utilization under each site-specific

| recommended alternative will be repaired, upgraded, and/or modified to meet current environment, safety, and health requirements. In addition, they will be configured to maximize effectiveness and efficiency in support of the site-specific downsizing and/or consolidation management capability requirements for the smaller stockpile.

| The consolidation of the production mission at Y-12 will reduce the existing Defense Programs (DP) manufacturing footprint to approximately 1,200,000 square feet of active production space, a reduction of 50 percent. The consolidation work will take place in Buildings 9201-5N, 9204-2E, 9204-2, 9201-5W, 9212, and the 9215/9998 complex and peripheral support buildings. The facilities work required includes (1) capital equipment relocation; (2) capital equipment procurement and installation; and (3) reactivation of 9201-5W.

The primary purpose of this project is to complete the overall downsizing of the Y-12 manufacturing footprint. This project is part of a long range consolidation plan that began in 1992. Along with previously completed projects and other currently funded consolidation projects, SMRI completes the consolidation of manufacturing operations into a smaller footprint area. After completing process consolidation activities at Y-12 and the subsequent safe and compliant shut down of excess facilities, an annual savings of \$10 million to \$12 million dollars has been projected.

| This Y-12 downsizing will consolidate manufacturing processes for secondaries, cases and other components traditionally supplied by Y-12 into a significantly smaller production footprint.

The activities associated with the project centralizes the DP production functions in the western area of the Y-12 Plant. The subprojects will consist of the following tasks:

- # Relocation and/or hook-up of several machine tools to Building 9215 M-wing for the Enriched Uranium machining function.
- | # Providing a depleted uranium sawing operation, and a furnace for dismantled weapon material consolidation in Building 9212 A-2 wing.
- | # Refurbishing casting furnaces (2) in Building 9998.
- | # Relocating Ceramic Machining equipment to Building 9204-2 Area and providing enclosures and ventilation.
- | # Restart the existing Special Materials Facility in Building 9404-11.
- # Placing Building 9201-5W Machine Shop in active status to meet the current projected workload.

Project Milestones:

- | FY 1999: Physical Construction Start 2Q FY 1999
- | FY 2001: Initiate design on the furnace and maintain construction schedules to complete construction by 2Q FY 2002
- | FY 2002: Complete Title I & II design and maintain construction schedules to complete construction of the abrasive saw by 4Q FY 2002
- | FY 2003 Maintain construction schedules to complete construction by 4Q FY 2003

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications - \$1,055) . .	1,810	1,810
Project Management Costs (0.5% of TEC)	390	390
Total, Design Costs (8.2% of TEC)	2,200	2,200
Construction Phase		
Buildings	3,270	3,270
Special Equipment	13,540	13,540
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	240	240
Construction Management (0% of TEC)	230	230
Project Management (5.1% of TEC)	710	710
Total, Construction Costs (71.9% of TEC)	17,990	17,990
Contingencies		
Design Phase (1.5% of TEC)	430	430
Construction Phase (18.4% of TEC)	4,180	4,180
Total, Contingencies (19.9% of TEC)	4,610	4,610
Total, Line Item Costs (TEC) ^a	24,800	24,800

^a A Conceptual Design Report (CDR) defining the costs was completed in FY 1998. The annual escalation rates assumed for FY 2000 through FY 2002 are 2.3, 2.3, and 2.4 percent respectively.

5. Method of Performance

Design and inspection will be performed by the Management and Operating (M&O) Contractor. Construction shall be accomplished by MK-Ferguson direct-hire forces with some fixed-price contractor support. M&O Contractor personnel will perform construction support and plant support activities in support of the line item.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	874	901	80	45	0	1,900
Construction	1,516	2,581	6,798	8,805	3,200	22,900
Total, Line item TEC	<u>2,390</u>	<u>3,482</u>	<u>6,878</u>	<u>8,850</u>	<u>3,200</u>	<u>24,800</u>
Total, Facility Costs (Federal and Non-Federal)	2,390	3,482	6,878	4,850	0	24,800
Other Project Costs						
Conceptual design cost ^a	1,500	0	0	0	0	1,500
Other project-related costs ^b	684	910	1,620	1,310	2,376	6,900
Total, Other Project Costs	<u>2,184</u>	<u>910</u>	<u>1,620</u>	<u>1,310</u>	<u>2,376</u>	<u>8,400</u>
Total, Project Cost (TPC)	<u>4,574</u>	<u>4,392</u>	<u>8,498</u>	<u>10,160</u>	<u>5,576</u>	<u>33,200</u>

^a The Systems Requirements Document (SRD), the Conceptual Design Report (CDR), and the National Environmental Policy Act (NEPA) documentation was initiated in the prior years for a cost of \$1,500,000.

^b General support in FY 1998 included project execution plan, feasibility, and other studies and discussions at a cost of \$200,000. Purification studies and design criteria, and Alpha 5 West restart efforts were initiated and continue through FY 1999 at an estimated cost of \$484,000. Change requests, Project Execution Plan revisions, procedures and process prove-in will initiate for EU machine relocation, and safety document revisions for Ceramic Relocation will be initiated and continue through FY 2001 at an estimated cost of \$1,030,000. Procedural development for Ceramic Relocation, Saw, and Casting furnaces will be initiated in FY 2001 at an estimated cost of \$1,620,000. Completion of the ongoing procedures for the Saw, Casting furnaces, Ceramic Machinery procedures, process prove-ins and safety documentation are scheduled for FY 2002. Final procedures and prove-in are required for the furnace in the outyears.

7. Related Annual Funding Requirements

(FY 2002 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	38,400	38,400
Annual facility maintenance/repair costs	1,000	1,000
Total related annual funding (operating from FY 2002 through FY 2021)	<u>39,400</u>	<u>39,400</u>

97-D-123, Structural Upgrades, Kansas City Plant, Kansas City, Missouri

(Changes from FY 2001 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

- # The TEC for this project was reduced in the FY 2001 Appropriation by \$54,000 due to the Safeguards and Security Amendment. This reduction does not affect the scope of work for this project.
- # The TEC for this project was reduced by the FY 2001 Consolidated Appropriations Act from \$17,946,000 to \$17,940,000. The rescission will be absorbed within project contingency and, therefore, will not affect the project scope.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1997 Budget Request (<i>Preliminary Estimate</i>)	2Q 1997	3Q 1999	3Q 1998	3Q 2003	18,000	19,800
FY 1998 Budget Request.	2Q 1997	3Q 1999	3Q 1998	3Q 2003	18,000	19,800
..	2Q 1997	3Q 1999	3Q 1998	3Q 2003	18,000	19,800
FY 1999 Budget Request ^a	1Q 1998	3Q 1999	3Q 1998	3Q 2003	18,000	19,800
FY 2000 Budget Request	1Q 1998	4Q 1999	2Q 1999	2Q 2003	18,000	21,200
FY 2001 Budget Request	1Q 1998	4Q 1999	2Q 1999	2Q 2003	17,946	21,146
FY 2002 Budget Request (<i>Current</i>						
<i>Baseline Estimate</i>)	1Q 1998	4Q 1999	2Q 1999	2Q 2003	17,940 ^b	21,140

^a Reflected baseline changes to ensure that all areas within the Stockpile Management Restructuring Initiative (SMRI) footprint are repaired/reinforced.

^b Original appropriation was \$17,946,000. This was reduced by \$6,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
1997	1,400	0	0
1998	0	594	0
1999	6,400	1,540	818
2000	4,282 ^a	3,640	2,216
2001	2,858 ^{b c}	9,166	7,606
2002	3,000	3,000	3,900
2003	0	0	2,700
2004	0	0	700

3. Project Description, Justification and Scope

This project is required to correct structural overstress caused by gravity loads and will reinforce masonry walls to resist seismic loading within the DOE controlled portion of the Bannister Federal Complex to ensure life safety. On December 16, 1993, a Kansas City Susceptibility Review and Walkdown was held at the Kansas City Plant (KCP) by Albuquerque Operations Office, and Headquarters. This review was initiated as a result of a September 1993 report by an outside structural consulting firm that documented two principal areas of concern: existing structural overstresses and numerous unreinforced interior masonry walls. It was determined during the review that the structural overstresses and unreinforced masonry walls findings were an immediate concern.

To provide an immediate response to initiate risk reduction and potential loss of government assets, structural modifications were incorporated into all ongoing projects which appreciably renovated affected areas. Deficiencies in the remainder of the plant not affected by on-going projects are being addressed in this line item submission.

The first part of this line item is required to provide structural overstress relief in accordance with current building code and DOE Order requirements to ensure life safety. This type of overstress is caused by gravity loads (dead loads, live load and snow load) and wind loading only. Overstressed locations will be repaired to reduce the possibility of structural failure and bring the structure into compliance with DOE Orders and codes.

^a Original appropriation was \$4,800,000. This was reduced by \$18,000 for the FY 2000 rescission enacted by P.L. 106-113, and by \$500,000 for an FY 2000 general reduction.

^b Original appropriation request was \$2,918,000. This was reduced by \$54,000 by the Safeguards and Security (S&S) Amendment. The comparable S&S amount for FY 2000 for this project was \$79,000; the comparable appropriated amount was \$4,203,000.

^c Original appropriation was \$17,946,000. This was reduced by \$6,000 for a rescission enacted by Section 1403 of the FY 2001 Consolidated Appropriations Act.

The second part of this line item is required to reinforce masonry walls to resist the seismic loading up to a "500 year event." The existing masonry walls will fall at a "100 year event." Approximately 40 percent of the masonry walls in the DOE controlled part of the Federal Complex (upon completion of the Stockpile Management Restructuring Initiative Line Item) are not reinforced to resist seismic loading. Seismic codes were not in place when the KCP was constructed. Potential seismic overstresses have been identified because of the presence of many unreinforced masonry walls added to the building for fire protection purposes. Failure of these walls would constitute a life safety hazard in the event of seismic activity.

The Federal Complex is currently occupied by several Federal Government Agencies. Corrective activities will be performed in DOE controlled areas only, unless an item is identified through the engineering study that would affect both DOE and the General Services Administration. This project will include the following upgrades:

- # Column ribs will be post tensioned on end bays to increase bending moment capacity. This will be done by tensioning two steel rods underneath the subject ribs. The rods will be anchored into the end bay roof beam and bolted through to the interior roof beam.
- # Selected rib ends will be supported with steel suspenders and long threaded rods through the roof shell or saddles and fastened to the roof beams to increase rib shear capacity and overcome the member strength loss due to existing cracking caused by excessive shear loading.
- # Roof shell openings will be reinforced with steel straps adjacent to openings and parallel to the barrel axis. This provides a means of externally reinforcing the thin concrete shell.
- # The mezzanine roof slab will be reinforced with intermediate steel beams supported by the concrete roof support beams.
- # Supplemental support will be provided to mezzanine concrete roof structure integrity. This would stop further deterioration of the shell.
- # Roof shell cracks will be injected with epoxy to reestablish roof structure integrity. This would stop further deterioration of the shell.
- # Structural steel blocking will be attached to the roof structure on each side of existing masonry walls. This will eliminate drift during seismic activity and ultimately failure of the walls independent of the remaining structure. This blocking would be spaced approximately 4 feet center to center. The blocking would consist of steel angles fastened to a horizontal surface with the vertical leg of the angle placed against the top of the masonry wall and flat plates fastened to vertical surfaces of the roof structure and lapped down over the top course of the masonry walls.
- # Steel strong-backs will be installed adjacent to masonry walls. This strong-back will be a structural tube fixed to the building floor at the bottom of the wall and roof structure at the top. The wall would be bolted to the strong-backs at approximately 4 feet centers. The strong-backs themselves would be on 8 foot centers. This would prevent a tall wall from collapse during a seismic event that produced lateral movement normal to the wall.
- # The top of free-standing masonry walls will be supported with roof structure mounted braces. These braces would then be mounted to a steel strut fastened to the roof.

Main Manufacturing Building Overstresses Under Gravity Loading:

- # Roof Ribs - 4 percent of the ribs are overstressed.
- # Roof Beams - < 1 percent of the beams are overstressed.
- # Roof Shell With Openings - 34 percent of the roof shells are overstressed.
- # Columns - 0 percent of the columns are overstressed.
- # Basement Level Supported Floor Slab - 5 percent of the floor slab is overstressed.
- # 2nd Level Supported Floor Slab - 6 percent of the floor slab is overstressed

Seismic events at KCP can be generated by two faults. The New Madrid Fault is approximately 250 miles east of the KCP. The New Madrid fault system extends 120 miles from the area of Charleston, Missouri and Cario, Illinois through New Madrid, Missouri and to Marked Tree, Arkansas. It crosses five state lines and crosses the Mississippi River in three places and the Ohio River in two places. The fault is active, averaging more than 200 measured events per year (1.0 or more on the Richter scale). Tremors large enough to be felt (2.5-3.0 on the Richter scale) are noted annually. Every 18 months the fault releases a shock of 4.0 or more capable of local minor damage. Magnitudes of 5.0 or greater occur about once per decade, can do significant damage, and can be felt in several states. A damaging earthquake along the fault of 6.0 or greater occurs about every 80 years with the last one in 1895. A major earthquake along the fault of 7.5 or greater happens every 200-300 years, with the last one in 1812. A quake of this magnitude would be felt throughout half of the United States. This information is based on a document titled "About the New Madrid Fault" from Southeast Missouri State University Center for Earthquake Studies, David Stewart, Director. The document is undated.

The other fault that could affect the KCP is the Humbolt Fault Zone (Nehemma Ridge) located approximately 80 miles west of Kansas City in the Manhattan-Wamego, Kansas area. The largest earthquake that has occurred in Kansas is a probable Richter magnitude of about 5.2-5.3, which occurred in 1867 and events of this size can be expected to occur every 100 years. An earthquake of Richter magnitude 6.0-6.5 at this fault is likely to occur on average once in about 1000 years. This information is based on a document titled "Kansas Geological Survey" from the University of Kansas on October 10, 1990 by Don W. Steeples, Ph.D., Seismologist and Deputy Director.

In March 1994, the KCP was placed in performance Category 1, based on an extensive study of mission dependency of specific KCP operations, Production Risk Evaluation Program, and the hazard assessment in the Site Safety Assessment. This recommendation was agreed to by Kansas City Area Office (KCAO), Albuquerque (AL) Operations Office, DOE-HQ, and AlliedSignal. A site specific Seismic Hazard Analysis was performed during the first quarter of FY 1994 by DOE-HQ for the KCP. This resulted in a reduction of the seismic zone factor from 0.15g to 0.06g. The Design Basis Earthquake (DBE) of 0.06g is comparable to a 500-year event. The former values are required by the 1994 Uniform Building Code for Zone 2A where the KCP is located. The lower seismic zone factor resulted in significant reduction in the calculations used in the analysis and has been taken into account in the cost estimate. The existing masonry walls are currently protected to a 100-year event.

The applicable DOE Orders and Codes that apply to this project are as follows:

DOE Order 420.1, "Facility Safety."

Executive Order 12941 "Seismic Safety of Existing Federally Owned or Leased Buildings."

The American Institute of Steel Construction (A.I.S.C.), American Concrete Institute (A.C.I.), and Uniform Building Code (UBC) define analysis and design requirements for corrective actions.

The consequence of not funding this line item is a continued life safety risk due to structural overstresses and, in the event of seismic activity, potential failure of unreinforced masonry walls. This project is in accordance with current mission needs and is being coordinated with the Stockpile Management Restructuring Initiative.

| Relationship to Other Projects

| If the Gas Transfer Capacity Expansion line item is funded, the Tool Room will be consolidated into the Model Shop area. This will result in a slight increase to the SMRI footprint and Structural Upgrades will be required in the retained area.

Project Milestones:

FY 1998: A-E Work Initiated	1Q
FY 1999: A-E Work Completed	4Q
Physical Construction Starts	2Q
FY 2003: Physical Construction Complete	2Q

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	1,626	1,626
Design Management Costs (2.8% of TEC)	504	504
Project Management Costs (0.3% of TEC)	49	49
Total, Design Costs (12.1% of TEC)	2,179	2,179
Construction Phase		
Buildings	10,830	10,830
Standard Equipment	360	360
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	918	918
Construction Management (4.4% of TEC)	788	842
Project Management (1.1% of TEC)	195	195
Total, Construction Costs (72.9% of TEC)	13,091	13,145
Contingencies		
Design Phase (0.7% of TEC)	131	131
Construction Phase (14.2% of TEC)	2,539	2,545
Total, Contingencies (14.9% of TEC)	2,670	2,676
Total, Line Item Costs (TEC) ^a	17,940	18,000

5. Method of Performance

Design and inspection will be performed under a KCP negotiated architect-engineer subcontract. Construction will be accomplished by fixed-price contracts awarded on the basis of competitive proposals and administered by Honeywell.

^a The Conceptual Design Report was completed in June 1995. Escalation is calculated to the midpoint of each activity. Escalation rates were taken from the FY 1997 DOE escalation multiplier tables. Overhead rates were calculated at a factor of 14% for procurement and 77% for internal labor.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 2000	FY 2001	FY 2002	Outyears	Total
Project Cost						
Facility Cost						
Design	818	1,492	0	0	0	2,310
Construction	0	724	7,606	3,900	3,400	15,630
Total, Line item TEC	818	2,216	7,606	3,900	3,400	17,940
Total, Facility Costs (Federal and Non-Federal) ...	818	2,216	7,606	3,900	3,400	17,940
Other Project Costs						
Conceptual design cost	110	0	0	0	0	110
Other project-related costs	1,130	60	60	60	1,780	3,090
Total, Other Project Costs	1,240	60	60	60	1,780	3,200
Total, Project Cost (TPC)	2,058	2,276	7,666	3,960	5,180	21,140

7. Related Annual Funding Requirements ^a

(FY 2003 dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs	0	0
Annual facility maintenance/repair costs	0	0
Total related annual funding (operating from FY 2003 through FY 2032)	0	0

^a This project is to repair the structural elements of the KC Plant and there is no associated annual operating or maintenance cost associated with this project.

96-D-102, Nuclear Weapons Stockpile Stewardship Facilities Revitalization, Phase VI, Various Locations

(Changes from FY 2000 Congressional Budget Request are denoted with a vertical line [|] in the left margin.)

Significant Changes

None.

1. Construction Schedule History

	Fiscal Quarter				Total Estimate d Cost (\$000)	Total Project Cost (\$000)
	A-E Work Initiated	A-E Work Completed	Physical Constructio n Start	Physical Constructio n Complete		
FY 1996 Budget Request ^a	1Q 1996	1Q 1999	3Q 1997	4Q 1999	33,700	^a 34,660
FY 1997 Budget Request	1Q 1996	4Q 1999	3Q 1997	1Q 2002	69,659	70,748
FY 1998 Budget Request	1Q 1996	4Q 1999	3Q 1997	1Q 2002	72,876	75,475
FY 1999 Budget Request	1Q 1996	4Q 1999	3Q 1997	4Q 2000	74,226	76,254
FY 2000 Budget Request	1Q 1996	3Q 2002	3Q 1997	4Q 2003	74,226	76,298
FY 2002 Budget Request (<i>Current Baseline Estimate</i>)	1Q 1996	3Q 2002	3Q 1997	4Q 2003	71,725 ^b	73,817

^a The TEC/TPC for this project in FY 1996 includes only two subprojects. Additional subprojects were included in the FY 1997 (two) and FY 1998 (two) Construction Project Data Sheets bringing the total number of subprojects funded within this line item to six.

^b The FY 2001 appropriation amount of \$2,640,000 was reduced by \$1000 for the FY 2000 rescission enacted by P.L. 106-113, and by \$2,500,000 which was offset by the use of prior year balances available from the Water Well Replacements subproject as required by the FY 2001 appropriation.

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Design/Construction			
1996	2,520	2,520	340
1997	19,250	19,250	3,744
1998	19,810	19,810	21,470
1999	24,106 ^a	24,106	21,149
2000	139 ^b	139	14,323
2001	0	0	4,739
2002	2,900	2,900	1,900
2003	3,000	3,000	3,436
2004	0	0	624

3. Project Description, Justification and Scope

This series of projects provides for the construction of new facilities, and modifications, relocations, and additions to existing facilities for the Nuclear Weapons Stockpile Stewardship facilities at Sandia National Laboratories (SNL), Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL) and the Nevada Test Site (NTS). These projects are a multiyear capital investment program to revitalize the Nuclear Weapons Stockpile Stewardship complex. These facilities will replace or add to existing facilities and infrastructure that are overaged, deteriorated, overcrowded, or are inadequate to preserve capabilities required for the current and future weapons stockpile stewardship program.

The Nuclear Weapons Stockpile Stewardship program is made up of a highly complex set of activities which are extremely dependent on current and advanced technology facilities and equipment to meet its varied needs. The successful performance of the Stockpile Stewardship program contributes directly to the quality and reliability of the nuclear weapons stockpile. In addition to unremitting requirements for reliability and performance, we are committed to pursue new safety and safeguards features for the enduring stockpile. These standards require innovative physics concepts and designs, the development of new materials and material applications, and extension of both engineering and manufacturing technologies beyond the current "state-of-the-art." All of this requires support of a reliable infrastructure.

^a A reprogramming action that received final Congressional approval on November 5, 1998, increased FY 1999 funding for the 138 kV Substation Modernization subproject by \$3,683,000 and eliminated the corresponding FY 2001 funding requirement.

^b The FY 2001 appropriation amount of \$2,640,000 was reduced by \$1000 for the FY 2000 rescission enacted by P.L. 106-113, and by \$2,500,000 which was offset by the use of prior year balances available from the Water Well Replacements subproject as required by the FY 2001 appropriation.

The revitalization effort was initiated in FY 1984 with Project 84-D-107, Nuclear Testing Facilities Revitalization, and was followed in FY 1985, FY 1988, FY 1990, FY 1992 and FY 1994 by follow-on phases. These projects were defined based on needs identified by representatives from the Albuquerque and Nevada Operations Offices, and the three weapons laboratories. Since the initiation of these projects, all aspects of the laboratory complex capital asset base continued to be critically reviewed and have resulted in the initiation of this line item project which contains six subprojects.

The consolidation of the Nuclear Weapons Stockpile Stewardship revitalization needs into one project data sheet focuses the issue of the total needs of the Stockpile Stewardship program. With the decreased demand for new weapon systems, this project is oriented toward preserving the critically needed infrastructure at LANL, NTS, SNL, and LLNL. These subprojects all cover general purpose facilities at various DOE locations that are an integral part of the installation support infrastructure. Included are basic utility systems, such as electrical power distribution, sewage, roads, parking lots, gas distribution, water supply, and the like. Many of these systems were constructed during the 1940s to World War II specifications with a 10-year maximum life expectancy. Despite extensive preventative maintenance over the intervening years, many of them are now deteriorated beyond economic repair and do not meet present-day standards for safety and environmental protection.

Full funding for subprojects 01, Water Well Replacements; 02, Fire Protection Improvements; 03, 138 kV Substation Modernization; 04, Roof Replacement; and 06, Site 300 Fire Station/Medical Facility has been provided through prior year appropriations.

Details for subproject 05, Storm Drain, Sanitary Sewer, and Domestic Water Systems, Modernization, which requires no funding in FY 2001, but will require funding in FY 2002 and FY 2003, is provided.

Subproject 01 - Water Well Replacements, LANL, Los Alamos, New Mexico

TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Construction Start - Completion Dates
\$14,200	\$16,800	-\$ 2,600 ^a	\$ 0	\$ 0	\$ 0	3Q 1997 - 2Q 2000

This project received its final funding in FY 1999. No additional funding is required.

Project Milestones:

None.

^a \$2,500,000 was used to meet the required prior year balance reduction contained in the FY 2001 appropriation. \$100,000 in uncosted prior year balances available in this subproject were transferred to subproject 02, Fire Protection Improvements at LANL to complete that project.

Subproject 02 - Fire Protection Improvements, LANL, Los Alamos, New Mexico

TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Construction Start - Completion Dates
\$17,000	\$16,900	\$ 100 ^a	\$ 0	\$ 0	\$ 0	4Q 1997 - 2Q 2001

This project received its final funding in FY 1999. No additional funding is required.

Project Milestones:

None.

Subproject 03 - 138kV Substation Modernization, NTS, Las Vegas, Nevada

TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Construction Start - Completion Dates
\$ 11,991	\$10,017 ^b	\$ 1,974	\$ ^b 0	\$ 0	\$ 0	4Q 1997 - 4Q 2000

This project received its final funding in FY 2000. No additional funding is required.

Project Milestones:

FY 2001: Start and complete SCADA final acceptance test 3Q

Complete project financial close-out 4Q

Subproject 04 - Roof Reconstruction - Protection of Real Property, LLNL, Livermore, California

TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Construction Start - Completion Dates
\$7,810	\$7,810	\$ 0	\$ 0	\$ 0	\$ 0	2Q FY 1998 - 4Q FY 1999

This project received its final funding in FY 1998. No additional funding is required.

Project Milestones:

None.

^a \$100,000 in uncosted prior year balances available in subproject 01, Water Well Replacements at LANL were transferred to this subproject.

^b A reprogramming action that received final Congressional approval on November 5, 1998, increased FY 1999 funding by \$3,683,000 and eliminated the FY 2001 funding requirement.

Subproject 05 - Storm Drain, Sanitary Sewer, and Domestic Water Systems, Modernization, SNL, Albuquerque, New Mexico

TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Construction Start - Completion Dates
\$15,374	\$ 8,809	\$ 665	\$ 0	\$ 2,900	\$ 3,000	1Q 1999 - 4Q 2003

Much of the storm drain system, sanitary sewer system, and water distribution system at SNL have been in place for 30 to 50 years. Studies and video inspection have shown that the systems are in need of rehabilitation and expansion. As time passes, utilities that support DOE programs will be threatened, and the probability of losses of equipment and time will increase. Systems in deteriorated condition have high maintenance costs.

This subproject at SNL will: (1) rehabilitate and enlarge the storm drain system to reduce the risk of flooding of existing facilities, reduce or eliminate risks of soil and groundwater contamination, and minimize maintenance costs caused by the erosion of unlined channels; (2) rehabilitate the sanitary sewer system to address the issues of old, deteriorating sewer lines, and the threat of contamination of soil and water due to leakage by rehabilitating sewer lines and manholes; and (3) improve the water distribution system and fire protection by improving electronic controls, installing water meters, and replacing several deteriorated water lines.

One of Sandia's environmental missions is to be in full compliance with the Federal environmental regulations, including all appropriate permitting. Regulatory drivers for this subproject include the Safe Drinking Water Act, National Pollutant Discharge Elimination System, 40 CFR 122, 123, and 124, the Clean Water Act, DOE Order 6430.1A, and Tiger Team Finding SW/CF-04.

Storm Drain System

Comprehensive drainage system analyses have been completed for SNL. These system analyses showed that six facilities in Technical Areas I, II, and IV would be impacted by the 100-year floodplain, including Building 880, which houses several Cray mainframe computers, key to a number of programs. Eight facilities in Technical Areas III and V would be impacted by the 100-year floodplain. Improvement to and expansion of the storm drain system as described below would remove the facilities in Technical Areas I, II, III, IV, and V from the 100-year floodplain.

Camera equipment was used to inspect the storm drain lines in 1992 and showed that approximately 26,524 feet of storm drain systems require major repair or replacement to alleviate flooding and structural failure. The majority of the failing system is in Technical Area I and has exceeded its 40-year design life.

A sedimentation and capacity analysis performed for existing earth-lined channels determined that existing utilities adjacent to the channels are at risk to damage due to erosion of the channel flow. The results show that no matter how well the channels are maintained, failure is imminent. Failure will lead to roads being washed out leading to Technical Area IV, overtopping of the channel, and possibly flooding of facilities. This project proposes to line the existing channels with concrete to prevent erosion, increase capacity, protect utilities, and reduce the amount of sediment carried downstream.

The following improvements will be made to the Storm Drain System:

- # Enlarge the 9th Street and 17th Street storm drains to accommodate the 100-year developed-conditions runoff, including the diversion of flows from the 14th Street and H Avenue intersection.
- # Line the 9th Street, 14th Street, 17th Street, and a portion of the 20th Street channels to eliminate erosion and minimize sediment transport.
- # Install a storm-drain pipe in the 20th Street channel from Hardin Blvd. to M Avenue.
- # Construct berms, channels, and inlets and upsize culverts in Technical Areas III and V.
- # Further integrate streets and storm inlets to ensure that storm flows can reach the storm sewer systems.
- # Replace deteriorated storm drain inlets and manholes.

Sanitary Sewer System

A condition assessment report for the sewer system was completed in 1992 using in-line camera inspection data. The report was updated in 1995. The report categorized 25 percent of the sanitary sewer lines in Technical Areas I, II, and IV, and 164 sewer manholes as in either "poor" or "fair" condition. This means that several miles of pipe have a high probability of leaking industrial wastewater into the surrounding soil through cracks, separated joints, and corroded pipes. The worst section of pipe are also in danger of collapsing and backing wastewater up into buildings, many of which are critical to the mission of SNL. The proposed project will mitigate the poor condition of the system.

The following improvements will be made to the Sanitary Sewer System:

- # Rehabilitate approximately 22,000 linear feet of the existing, deteriorated system using u-liner, slip lining, and open cut methods.
- # Repair approximately 100 sewer manholes that are in "fair" or "poor" condition.

Water Distribution System

The existing water distribution system does not have electronic storage-tank monitoring devices needed to monitor the system properly. SNL is responsible via an interagency agreement with the Air Force for the operation and maintenance of the water system within SNL boundaries. With basic electronic monitoring, SNL will be able to monitor the system with confidence.

SNL is currently unable to monitor water consumption. As part of a Memorandum of Understanding with Federal and state agencies, SNL has agreed to cooperate in a water conservation effort. This project will provide meters at tie-in points to the KAFB system and will provide consumption data. This data will be used as part of a water conservation effort.

The following improvements will be made to the water distribution system:

- # Install electronic monitoring equipment on the system.
- # Install water meters at connections between Sandia and KAFB.
- # Rehabilitate or replace selected deteriorated water lines.

Project Milestones:

FY 2001: Complete Storm Drain System, Phase 1	1Q
FY 2002: Verify Title II Design on the Storm Drain, Phase 2	1Q
Complete Design for Water Line Rehabilitation	1Q
Start Construction on Storm Drain, Phase 2	3Q
FY 2003: Start Construction on Water Line Rehabilitation	2Q
Complete Construction on Storm Drain, Phase 2	4Q
Complete Construction on Water Line Rehabilitation	4Q

Subproject 06 - Site 300 Fire Station/Medical Facility, LLNL, Livermore, California

TEC	Previous	FY 2000	FY 2001	FY 2002	Outyears	Construction Start - Completion Dates
\$ 5,350	\$ 5,350	\$ 0	\$ 0	\$ 0	\$ 0	3Q 1999 - 4Q 2000

This project received its final funding in FY 1999. No additional funding is required.

Project Milestones:

None.

4. Details of Cost Estimate

(dollars in thousands)		
	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	5,311	5,232
Design Management Costs (1.3% of TEC)	969	1,041
Project Management Costs (1.0% of TEC)	773	635
Total Design Costs (9.5% of TEC)	7,053	6,908
Construction Phase		
Improvements to Land	11,335	11,335
Buildings	8,616	8,616
Special Equipment	8,235	8,235
Other Structures	7,452	7,452
Utilities	15,757	14,219
Standard Equipment	200	200
Removal Cost Less Salvage	704	704
Inspection, Design and Project Liaison, Testing, Checkout and Acceptance	3,317	2,906
Construction Management (2.7% of TEC)	2,011	2,175
Project Management (2.1% of TEC)	1,592	1,522
Total Construction Costs (77.1% of TEC)	59,219	57,364
Contingencies		
Design Phase (1.5% of TEC)	135	1,122
Construction Phase (11.9% of TEC)	5,318	8,832
Total Contingencies (13.4% of TEC)	5,453	9,954
Total, Line Item Costs (TEC) ^c	71,725	74,226

5. Method of Performance

Design and procurement of the conventional facilities will be performed under negotiated architect-engineer contracts. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding.

^c Rates used for escalation were taken from applicable DOE Departmental Price Change Indices, applied to the mid-point of the construction schedule.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 1999	FY 2000	FY 2001	Outyears	Total
Total project costs						
Total facility costs						
Design	5,102	1,285	656	145	0	7,188
Construction	20,452	19,864	13,667	4,594	5,960	64,537
Total facility costs (Federal and Non-Federal)	25,554	21,149	14,323	4,739	5,960	71,725
Other project costs						
Conceptual design cost	1,072	0	0	0	0	1,072
Decontamination and Decommissioning (D&D)	10	0	0	0	0	10
NEPA documentation costs	124	0	0	0	0	124
Other ES&H costs	60	25	15	0	15	115
Other project-related costs	458	118	55	10	130	771
Total other project costs	1,724	143	70	10	145	2,092
Total Project Cost (TPC)	27,278	21,292	14,393	4,749	6,105	73,817

7. Related Annual Funding Requirements

(FY 2003 dollars in
thousands)

	Current Estimate	Previous Estimate
Related annual costs (estimated life of project--40 years)		
Facility operating costs	155	155
Facility maintenance and repair costs	208	208
Programmatic operating expenses directly related to the facility	660	660
GPP or other construction related to the programmatic effort in the facility	50	50
Other costs	1	1
Total related annual costs (operating from FY 2003 through FY 2042)	1,074	1,074